

STATE GAME COMMISSION MEETING AND RULE MAKING NOTICE

The New Mexico State Game Commission (“Commission”) will be hosting a meeting and rule hearing on Friday October 27, 2023 beginning at 9:00 a.m. at the Farmington Civic Center, 200 W. Arrington St., Farmington, NM 87401. The purpose of this meeting is to hear and consider action as appropriate on the presentation of proposed changes to the Bear and Cougar Rule 19.31.11 NMAC.

Synopsis

The proposal is to amend the Bear and Cougar Rule 19.31.11 NMAC which will become effective April 1, 2024. The most recent version of the rule will expire on March 31, 2024.

PROPOSED CHANGES TO THE BEAR AND COUGAR RULE

Allow licensed deer or elk hunters who draw WMA hunts to harvest a bear or cougar during their hunt if the zone is open and they possess a Bear and/or Cougar License.

Bears

- Increase bear harvest limits in BMZs 1 and 10 based on population estimates from new NMDGF research from 2019-2021;
- Adjust BMZs 5, 6, and 7 such that GMU 57 will be moved from BMZ 7 into BMZ 5, and GMUs 56 and 58 will be moved from BMZ 7 into BMZ 6, thus dissolving BMZ 7 into those zones. Harvest limit allocations from those GMUs in previous BMZ 7 will be re-allocated to the new BMZs of which they are a part;
- Increase number of permits for bear draw permit BER-1-104 from 32 permits to 60 permits to increase opportunity. Draw hunters will still be subject to the existing harvest limit structure;
- Increase number of permits for bear draw permit BER-1-103 from 5 permits to 10 permits, in recognition of the expanded hunt area resulting from the Department’s acquisition of the LBar property. Draw hunters will still be subject to the existing harvest limit structure;
- Move the season start date for BMZs 12 and 13 from September 1st back to August 16th.

Cougars

Reduce harvest limits for CMZ Q based on research studies and statistical modelling efforts.

A full text of changes for all rules will be available on the Department’s website at: www.wildlife.state.nm.us.

Interested persons may submit comments on the proposed changes for the Bear and Cougar Rule to: DGF-Bear-Cougar-Rules@state.nm.us. Individuals may also submit written comments to the physical address below. Comments are due by 1:00 p.m. on October 25, 2023. The final proposed rules will be voted on by the Commission during a public meeting on October 27, 2023. Interested persons may also provide data, views or arguments, orally or in writing, at the public rule hearings to be held on October 27, 2023.

Full copies of text of the proposed new rules, technical information related to proposed rule changes, and the agenda can be obtained from the Office of the Director, New Mexico Department of Game and Fish, 1 Wildlife Way, Santa Fe, New Mexico 87507, or from the Department’s website at www.wildlife.state.nm.us/commission/proposals-under-consideration/. This agenda is subject to change up to 72 hours prior to the meeting. Please contact the Director’s Office at (505) 476-8000, or the Department’s website at www.wildlife.state.nm.us for updated information.

If you are an individual with a disability who is in need of a reader, amplifier, qualified sign language interpreter, or any other form of auxiliary aid or service to attend or participate in the hearing or meeting, please contact the Department at (505) 476-8000 at least one week prior to the meeting or as soon as possible. Public documents, including the agenda and minutes, can be provided in various accessible formats. Please contact the Department at 505-476-8000 if a summary or other type of accessible format is needed.

Legal authority for this rulemaking can be found in the General Powers and Duties of the State Game Commission 17-1-14, et seq. NMSA 1978; Commission's Power to establish rules and regulations 17-1-26, et seq. NMSA 1978.

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 31 HUNTING AND FISHING
PART 11 BEAR AND COUGAR

19.31.11.1 ISSUING AGENCY: New Mexico department of game and fish.
[19.31.11.1 NMAC - Rp, 19.31.11.1 NMAC, 4/1/2024]

19.31.11.2 SCOPE: Sportspersons interested in bear and cougar management and hunting. Additional requirements may be found in Chapter 17 NMSA 1978 and Title 19 NMAC.
[19.31.11.2 NMAC - Rp, 19.31.11.2 NMAC, 4/1/2024]

19.31.11.3 STATUTORY AUTHORITY: 17-1-14 and 17-1-26 NMSA 1978 provide that the New Mexico state game commission has the authority to establish rules and regulations that it may deem necessary to carry out the purpose of Chapter 17 NMSA 1978 and all other acts pertaining to protected mammals, birds, and fish.
[19.31.11.3 NMAC - Rp, 19.31.11.3 NMAC, 4/1/2024]

19.31.11.4 DURATION: April 1, 20202024 through March 31, 20242028.
[19.31.11.4 NMAC - Rp, 19.31.11.4 NMAC, 4/1/2024]

19.31.11.5 EFFECTIVE DATE: April 1, 20202024, unless a later date is cited at the end of a section.
[19.31.11.5 NMAC - Rp, 19.31.11.5 NMAC, 4/1/2024]

19.31.11.6 OBJECTIVE: Establishing open hunting seasons and regulations, rules and procedures governing the distribution and issuance of bear and cougar licenses and permits by the department.
[19.31.11.6 NMAC - Rp, 19.31.11.6 NMAC, 4/1/2024]

19.31.11.7 DEFINITIONS:

- A. “Bear entry permit”** shall mean a permit awarded through a public drawing which entitles the holder of an over-the-counter bear license to hunt in a limited entry area during season dates established in rule.
 - B. “Bear zones”** shall define-mean hunt areas consisting of one or more game management units as described in 19.30.4 NMAC.
 - C. “Cougar zones”** shall define-mean hunt areas consisting of one or more game management units as described in 19.30.4 NMAC.
 - D. “Department”** shall mean the New Mexico department of game and fish.
 - E. “Director”** shall mean the director of the New Mexico department of game and fish.
 - F. “Game management unit” or “GMU”** shall mean those areas as described in 19.30.4 NMAC.
 - G. “Wildlife management areas” or “WMAs”** shall mean those areas as described in 19.34.5 NMAC.
- [19.31.11.7 NMAC - Rp, 19.31.11.7 NMAC, 4/1/2024]

19.31.11.8 ADJUSTMENT OF LICENSES, PERMITS AND HARVEST LIMITS:

- A. The director, with verbal concurrence of the chairperson or their designee, may adjust the number of licenses, permits or harvest limits, up or down by no more than twenty percent within a bear zone or cougar zone, to address critical department management needs, significant changes in population levels or habitat availability. This adjustment may be applied for bear and cougar within the specified zones to any or all of: the specific hunt codes; total harvest limits; or female harvest sub-limits.**
 - B. The director, with verbal concurrence of the chairperson or their designee, may take management actions independent of seasons and restrictions, harvest limits or female sub-limits for population management, or to address critical situations including ungulate population protection, depredation, human health and safety or other wildlife management issues. The decision to take management actions pursuant to this subsection shall be reported to the commission.**
- [19.31.11.8 NMAC - Rp, 19.31.11.8 NMAC, 4/1/2024]

19.31.11.9 BEAR AND COUGAR LICENSE APPLICATION REQUIREMENTS AND RESTRICTIONS:

~~A. Bear entry hunt: It shall be unlawful to hunt bear in designated wildlife management areas or other specifically designated special entry hunt areas without having a valid bear entry permit and a valid bear license in the hunter's possession or as otherwise allowed by game commission rule. Bear entry hunters shall be allowed to hunt in any other open bear zone provided they have a valid bear license.~~

~~B. Mandatory cougar identification course: All persons shall complete the mandatory cougar identification course offered on the department's website prior to purchasing a cougar license.~~
[19.31.11.9 NMAC - Rp, 19.31.11.10 NMAC, 4/1/2020]

19.31.11.9 [RESERVED]

[19.31.11.9 NMAC - Repealed, 4/1/2024]

19.31.11.10 BEAR AND COUGAR ZONE CLOSURES, BAG LIMITS AND AREA CLOSURES RESTRICTIONS:

A. **Zone closures:** Bear and cougar may be hunted or taken only in zones designated as open on the department hotline or website. Zones will close within 72 hours of when the reported number of bears or cougars harvested is within ten percent of the total limit or female sub-limit for that zone, whichever occurs first.

B. **Bag limit:** The bag limit for bear is one; the bag limit for cougar is two. It is unlawful to kill a bear sow with cub(s) or any bear cub less than one year old, or to kill a spotted cougar kitten or any female cougar accompanied by spotted kitten(s).

C. ~~Areas closed to bear and cougar hunting~~ **Limited entry hunt areas:** ~~It shall be unlawful to hunt bear or cougar in designated WMAs or other specifically designated special entry hunt areas with the following exceptions:~~

(1) ~~Legally licensed bear hunters possessing a valid bear entry hunt permit may hunt bears in the area(s) specified on the permit, or as otherwise allowed by rule. Bear entry hunters shall be allowed to hunt in any other open bear zone provided they have a valid bear license.~~

(2) ~~Legally licensed deer and elk hunters whose license is valid on a WMA or the Valle Vidal and are in possession of a valid over-the-counter bear or cougar license, may hunt bear or cougar in the WMA or the Valle Vidal as specified on their deer or elk license. Deer or elk hunters choosing to hunt bear or cougar under this provision may not use dogs, may hunt only in open bear or cougar zones, and must adhere to the weapon type restriction and season dates as specified by their deer or elk licenses.~~

D. Cougar hunting requirements and restrictions:

(1) ~~All persons shall complete the mandatory cougar identification course offered on the department's website prior to purchasing a cougar license.~~

(2) ~~Cougar hunting is closed in the Florida mountains hunt area during any open Persian ibex season, except by legally licensed Persian ibex hunters in possession of a valid cougar license. Persian ibex hunters may hunt cougar only if the cougar zone is open, and must adhere to the weapon type restrictions and season dates as specified by their Persian ibex license.~~

~~C. Areas closed to bear and cougar hunting: Limited entry hunt areas listed in 19.31.11 NMAC are closed to over the counter bear hunters who do not possess an entry permit. Cougar hunting in these areas is allowed only by licensed deer or elk hunters in possession of a valid cougar license in the E.S. Barker, Colin Neblett, Humphries, Marquez, Sargent, and Urraca WMAs, and the Valle Vidal. Deer or elk hunters choosing to hunt cougar under this provision may not use dogs, may only hunt in open cougar zones, and must adhere to the weapon type restriction and season dates as specified by their deer or elk licenses. Cougar hunting is closed in the Florida mountains hunt area during any open Persian ibex season, except by legal Persian ibex hunters in possession of a valid cougar license. Persian ibex hunters may only hunt cougar if the cougar zone is open, and must adhere to the weapon type restrictions and season dates as specified by their Persian ibex license.~~

[19.31.11.10 NMAC - Rp, 19.31.11.10 NMAC, 4/1/2024]

19.31.11.11 BEAR HUNTING SEASONS:

A. **Over-the-counter bear hunts for the 2020-212024-25 through 2023-242027-28 seasons:** The following table lists bear zones, open GMUs, ~~weapon type sporting arm~~ restrictions, season dates, total harvest limits, and female harvest sub-limits.

Bear zone	open GMUs or areas	bow only	any big game sporting arms	2020-24 2024-25 total limit (female)	2021-22 2025-26 total limit (female)	2022-23 2026-27 total limit (female)	2023-24 2027-28 total limit (female)
1	4, 5, 6, 7, 51, 52	9/1 - 24	9/25 - 11/15	158 (63) 168 (67)	158 (63) 168 (67)	158 (63) 168 (67)	158 (63) 168 (67)
2	2	9/1 - 24	9/25 - 11/15	15 (6)	15 (6)	15 (6)	15 (6)
3	49, 50, 53	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	65 (26)	65 (26)	65 (26)	65 (26)
4	45, 46, 48	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	109 (43)	109 (43)	109 (43)	109 (43)
5	54, 55, 57	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	92 (37) 108 (43)	92 (37) 108 (43)	92 (37) 108 (43)	92 (37) 108 (43)
6	39, 40, 41, 42, 43, 47, 56, 58 , 59	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	33 (13) 51 (20)	33 (13) 51 (20)	33 (13) 51 (20)	33 (13) 51 (20)
7	56, 57, 58	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	35 (14)	35 (14)	35 (14)	35 (14)
8	8	9/1 - 24	10/15 - 11/15	11 (4)	11 (4)	11 (4)	11 (4)
9	9, 10	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	36 (14)	36 (14)	36 (14)	36 (14)
10	12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27	9/1 - 24	9/25 - 12/15	146 (58) 197 (79)	146 (58) 197 (79)	146 (58) 197 (79)	146 (58) 197 (79)
11	37, 38	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	36 (14)	36 (14)	36 (14)	36 (14)
12	34	9/1 - 24	8/16 - 8/31 and 9/25 - 12/15	33 (13)	33 (13)	33 (13)	33 (13)
13	36	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	16 (6)	16 (6)	16 (6)	16 (6)
14	14	9/1 - 24	10/15 - 11/15	19 (7)	19 (7)	19 (7)	19 (7)

B. Entry hunts for the ~~2020-24~~2024-25 through ~~2023-24~~2027-28 seasons shall be as indicated below, listing the open ~~GMUs and~~ areas, eligibility requirements or restrictions, hunt dates, hunt codes, legal sporting arms and number of permits.

open GMUs or and areas	2020-24 2024-25 hunt dates	2021-22 2025-26 hunt dates	2022-23 2026-27 hunt dates	2023-24 2027-28 hunt dates	hunt code	Licenses permits
2: youth only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-100	5
4: Sargent WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-101	10
4: Humphries WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-102	5
9: Marquez/ <u>LBar</u> WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-103	5 10
54:55: Uracca, E.S. Barker, and Colin Neblett WMAs, and Valle Vidal	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-104	32 60
55: Valle Vidal	4/15-5/20	4/15-5/20	4/15-5/20	4/15-5/20	BER-1-105	20
57: Sugarite Canyon State Park/ bow only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-2-106	5

[19.31.11.11 NMAC - Rp, 19.31.11.11 NMAC, 4/1/2024]

19.31.11.12 COUGAR HUNTING SEASONS:

A. Over-the-counter cougar hunting season shall be from April 1 through March 31, or until the total harvest limit or female sub-limit, whichever comes first, is met in any given cougar zone.

B. The following table lists cougar zones, open GMUs, total harvest limits and female harvest sub-limits for the ~~2020-21~~2024-25 to ~~2023-24~~2027-28 seasons.

zone	open GMUs or areas	2020-21 <u>2024-25</u> total limit (female)	2021-22 <u>2025-26</u> total limit (female)	2022-23 <u>2026-27</u> total limit (female)	2023-24 <u>2027-28</u> total limit (female)
A	2, 7	42 (13)	42 (13)	42 (13)	42 (13)
B	5, 6, 50, 51	25 (8)	25 (8)	25 (8)	25 (8)
C	43, 45, 46, 48, 49, 53	57 (17)	57 (17)	57 (17)	57 (17)
D	41, 42, 47, 59	15 (5)	15 (5)	15 (5)	15 (5)
E	9, 10	43 (13)	43 (13)	43 (13)	43 (13)
G	13, 17	50 (15)	50 (15)	50 (15)	50 (15)
H	18, 19, 20	29 (9)	29 (9)	29 (9)	29 (9)
I	36, 37, 38	24 (7)	24 (7)	24 (7)	24 (7)
J	15, 16, 21	84 (25)	84 (25)	84 (25)	84 (25)
K	22, 23, 24	45 (14)	45 (14)	45 (14)	45 (14)
L	25, 26, 27	19 (6)	19 (6)	19 (6)	19 (6)
M	31, 32, 33, 39, 40	25 (7)	25 (7)	25 (7)	25 (7)
N	4, 52	13 (4)	13 (4)	13 (4)	13 (4)
O	12	17 (5)	17 (5)	17 (5)	17 (5)
P	56, 57, 58	14 (7)	14 (7)	14 (7)	14 (7)
Q	28, 29, 30, 34	35 (11) 17 (6)	35 (11) 17 (6)	35 (11) 17 (6)	35 (11) 17 (6)
R	54, 55	26 (8)	26 (8)	26 (8)	26 (8)
S	8, 14	17 (5)	17 (5)	17 (5)	17 (5)

[19.31.11.12 NMAC - Rp, 19.31.11.12 NMAC, 4/1/2024]

HISTORY OF 19.31.11 NMAC:

Pre-NMAC History: The material in this part was derived from that previously filed with the state records center and archives under:

Regulation No. 482, Establishing Seasons on Deer, Bear, Turkey, Elk, Antelope, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, and Barbary Sheep, filed 5/31/1967;

Regulation No. 487, Establishing 1967 Seasons on Javelina and Barbary Sheep, filed 12/15/1967;

Regulation No. 489, Establishing Turkey Seasons for the Spring of 1968, filed 3/1/1968;

Regulation No. 491, Establishing Big Game Seasons for 1968 for Jicarilla Reservation, filed 3/1/1968;

Regulation No. 492, Establishing Seasons on Deer, Bear, Turkey, Elk, Antelope, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, and Barbary Sheep, filed 6/6/1968;

Regulation No. 495, Establishing a Season on Bighorn Sheep, filed 10/2/1968;

Regulation No. 496, Establishing an Elk Season in the Tres Piedras Area, Elk Area P-6, filed 12/11/1968;

Regulation No. 502, Establishing Turkey Seasons for the Spring Of 1969, filed 3/5/1969;

Regulation No. 503, Establishing 1969 Deer Seasons for Bowhunting Only and Big Game Seasons for the Jicarilla Indian Reservation, filed 3/5/1969;

Regulation 504, Establishing Seasons on Deer, Bear, Turkey, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, and Barbary Sheep, filed 6/4/1969;

Regulation No. 507, Establishing a Season on Bighorn Sheep, filed 8/26/1969;

Regulation No. 512, Establishing Turkey Season for the Spring Of 1970, filed 2/20/1970;

Regulation No. 513, Establishing Deer Season for Bowhunting Only in Sandia State Game Refuge, filed 2/20/1970;

Regulation No. 514, Establishing Seasons on Deer, Bear, Turkey, Elk, Antelope, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Barbary Sheep and Bighorn Sheep, filed 6/9/1970;

Regulation No 520, Establishing Turkey Seasons for the Spring of 1971, filed 3/9/1971;

Regulation No. 522, Establishing 1971 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 3/9/1971;

Regulation No. 523, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Elk, Antelope, Barbary Sheep and Bighorn Sheep, filed 6/9/1971;

Regulation No. 531, Establishing a Season on Javelina, filed 12/17/1971;
 Regulation No. 532, Establishing Turkey Seasons for the Spring of 1972, filed 3/20/1972;
 Regulation No. 534, Establishing 1972 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 3/20/1972;
 Regulation No. 536, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, Elk, Antelope, Barbary Sheep and Bighorn Sheep, filed 6/26/1972;
 Regulation No. 542, Establishing a Season on Javelina, filed 12/1/1972;
 Regulation No. 545, Establishing Turkey Seasons for the Spring Of 1973, filed 2/26/1973;
 Regulation No. 546, Establishing 1973 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 2/26/1973;
 Regulation No. 547, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, Elk, Antelope, Barbary Sheep and Bighorn Sheep, and Javelina, filed 5/31/1973;
 Regulation No. 554, Establishing Special Turkey Seasons for the Spring of 1974, filed 3/4/1974;
 Regulation No. 556, Establishing 1974 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 3/14/1974;
 Regulation No. 558, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex, filed 5/29/1974;
 Regulation No. 565, Establishing Special Turkey Seasons for the Spring of 1975, filed 3/24/1975;
 Regulation No. 567, Establishing 1975 Seasons on Deer, Bear, and Turkey on the Jicarilla Apache and Navajo Indian Reservations and on Elk on the Jicarilla Apache Indian Reservation, filed 3/24/1975;
 Regulation No. 568, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 6/25/1975;
 Regulation No. 573, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/23/1976;
 Regulation No. 583, Establishing Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/11/1977;
 Regulation No. 590, Establishing Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/15/1978;
 Regulation No. 596, Establishing Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/23/1979;
 Regulation No. 603, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1980 through March 31, 1981, filed 2/22/1980;
 Regulation No. 609, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1981 through March 31, 1982, filed 3/17/1981;
 Regulation No. 614, Establishing Open Seasons on Deer, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1982 through March 31, 1983, filed 3/10/1982;
 Regulation No. 622, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1983 through March 31, 1984, filed 3/9/1983;
 Regulation No. 628, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1984 through March 31, 1985, filed 4/2/1984;
 Regulation No. 634, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1985 Through March 31, 1986, filed 4/18/1985;
 Regulation No. 640, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1986 through March 31, 1987, filed 3/25/1986;
 Regulation No. 645, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1987 through March 31, 1988, filed 2/12/1987;
 Regulation No. 653, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1988 through March 31, 1989, filed 12/18/1987;
 Regulation No. 663, Establishing Opening Spring Turkey for the Period April 1, 1989 through March 31, 1990, filed 3/28/1989;
 Regulation No. 664, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1989 through March 31, 1990, filed 3/20/1989;
 Regulation No. 674, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1990 through March 31, 1991, filed 11/21/1989;
 Regulation No. 683, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex for the Period April 1, 1991 through March 31, 1992, filed 2/8/1991;

Regulation No. 689, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex for the Period April 1, 1992 through March 31, 1993, filed 3/4/1992; Regulation No. 700, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex for the Period April 1, 1993 through March 31, 1995, filed 3/11/1993.

History of Repealed Material:

19.31.8 NMAC, Big Game, filed 3/1/2001 - duration expired 3/31/2003.
19.31.8 NMAC, Big Game and Turkey, filed 3/3/2003 - duration expired 3/31/2005.
19.31.8 NMAC, Big Game and Turkey, filed 12/15/2004 - duration expired 3/31/2007.
19.31.11 NMAC, Bear and Cougar, filed 12/1/2006 - duration expired 3/31/2009.
19.31.11 NMAC, Bear and Cougar, filed 3/13/2009 - duration expired 3/31/2011.
19.31.11 NMAC, Bear and Cougar, filed 2/22/2011 - duration expired 3/31/2016.
19.31.11 NMAC, Bear and Cougar, filed 2/29/2016 - duration expired 3/31/2020.
19.31.11 NMAC, Bear and Cougar, filed 12/3/2019 - duration expired 3/31/2024.

NMAC

Transmittal Form



2023 NOV -9 AM 8: 29

Volume: Issue: Publication date: Number of pages: (ALD Use Only) Sequence No.

Issuing agency name and address:

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Contact person's name:

Phone number:

E-mail address:

Type of rule action:

(ALD Use) Recent filing date:

New ☒ Amendment ☐ Repeal ☐ Emergency ☐ Renumber ☐

Title number:

Title name:

Chapter number:

Chapter name:

Part number:

Part name:

Amendment description (If filing an amendment):

Amendment's NMAC citation (If filing an amendment):

Are there any materials incorporated by reference?

Please list attachments or Internet sites if applicable.

Yes ☐ No ☒

If materials are attached, has copyright permission been received?

Yes ☐

No ☐

Public domain ☐

Specific statutory or other authority authorizing rulemaking:

Notice date(s):

Hearing date(s):

Rule adoption date:

Rule effective date:

Concise Explanatory Statement For Rulemaking Adoption:

2023 NOV -9 AM 8:29

Findings required for rulemaking adoption:

Findings MUST include:

- Reasons for adopting rule, including any findings otherwise required by law of the agency, and a summary of any independent analysis done by the agency;
- Reasons for any change between the published proposed rule and the final rule; and
- Reasons for not accepting substantive arguments made through public comment.

The rulemaking was undertaken to adopt a new Bear and Cougar Rule, 19.31.11 NMAC, which will become effective April 1, 2024. The current Bear and Cougar Rule will expired on March 31, 2024.

The new rule will include:

Statewide Changes

Allow licensed deer or elk hunters who draw WMA hunts to harvest a bear or cougar during their hunt if the zone is open and they possess a Bear and/or Cougar license.

Bear

- 1) Increase bear harvest limits based on population estimates from new NMDGF research from 2019-2021 in BMZs 1 and 10;
- 2) Adjust BMZs 5, 6, and 7 such that GMU 57 is moved from BMZ 7 into BMZ 5, and GMUs 56 and 58 is moved from BMZ 7 into BMZ 6, thus dissolving BMZ 7 into those zones. Harvest limit allocations from those GMUs in previous BMZ 7 are re-allocated to the new BMZs of which they are a part;
- 3) Increase number of permits for bear draw permit BER-1-104 from 32 permits to 60 permits to increase opportunity. Draw hunters are still subject to the existing harvest limit structure;
- 4) Increase number of permits for bear draw permit BER-1-103 from 5 to 10 permits, in recognition of the Department's acquisition of the LBar property. Draw hunters are subject to the existing harvest limits;
- 5) Move the season start date for BMZs 12 and 13 from September 1st back to August 16th.

Cougar

Adjust harvest limits for CMZ Q based on research studies and statistical modelling efforts.

There have been no changes between the published proposed rule and the final rule. A wide variety of public comments were submitted. It was not possible to incorporate all of the comments into the final rule as many of the comments were mutually exclusive. To view public comments, please visit www.wildlife.state.nm.us/commission/meeting-agendas/ and click on the Hearing Archive tab. The resulting rule was based on what was best for the resource and overall hunter satisfaction.

Issuing authority (If delegated, authority letter must be on file with ALD):

Name:

Michael B. Sloane

Check if authority has been delegated

☐

Title:

Director, New Mexico Department of Game and Fish

Signature: (BLACK ink only OR Digital Signature)

Date signed:

Michael B. Sloane

Digitally signed by Michael B. Sloane
Date: 2023.11.01 14:15:07 -06'00'

2023 NOV -9 AM 8:30

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 31 HUNTING AND FISHING
PART 11 BEAR AND COUGAR

19.31.11.1 ISSUING AGENCY: New Mexico department of game and fish.
[19.31.11.1 NMAC - Rp, 19.31.11.1 NMAC, 4/1/2024]

19.31.11.2 SCOPE: Sportspersons interested in bear and cougar management and hunting. Additional requirements may be found in Chapter 17 NMSA 1978 and Title 19 NMAC.
[19.31.11.2 NMAC - Rp, 19.31.11.2 NMAC, 4/1/2024]

19.31.11.3 STATUTORY AUTHORITY: 17-1-14 and 17-1-26 NMSA 1978 provide that the New Mexico state game commission has the authority to establish rules and regulations that it may deem necessary to carry out the purpose of Chapter 17 NMSA 1978 and all other acts pertaining to protected mammals, birds and fish.
[19.31.11.3 NMAC - Rp, 19.31.11.3 NMAC, 4/1/2024]

19.31.11.4 DURATION: April 1, 2024 through March 31, 2028.
[19.31.11.4 NMAC - Rp, 19.31.11.4 NMAC, 4/1/2024]

19.31.11.5 EFFECTIVE DATE: April 1, 2024, unless a later date is cited at the end of a section.
[19.31.11.5 NMAC - Rp, 19.31.11.5 NMAC, 4/1/2024]

19.31.11.6 OBJECTIVE: Establishing open hunting seasons and regulations, rules and procedures governing the distribution and issuance of bear and cougar licenses and permits by the department.
[19.31.11.6 NMAC - Rp, 19.31.11.6 NMAC, 4/1/2024]

19.31.11.7 DEFINITIONS:

A. "Bear entry permit" shall mean a permit awarded through a public drawing which entitles the holder of an over-the-counter bear license to hunt in a limited entry area during season dates established in rule.

B. "Bear zones" shall mean hunt areas consisting of one or more game management units as described in 19.30.4 NMAC.

C. "Cougar zones" shall mean hunt areas consisting of one or more game management units as described in 19.30.4 NMAC.

D. "Department" shall mean the New Mexico department of game and fish.

E. "Director" shall mean the director of the New Mexico department of game and fish.

F. "Game management unit" or "GMU" shall mean those areas as described in 19.30.4 NMAC.

G. "Wildlife management areas" or "WMAs" shall mean those areas as described in 19.34.5 NMAC.

[19.31.11.7 NMAC - Rp, 19.31.11.7 NMAC, 4/1/2024]

19.31.11.8 ADJUSTMENT OF LICENSES, PERMITS AND HARVEST LIMITS:

A. The director, with verbal concurrence of the chairperson or their designee, may adjust the number of licenses, permits or harvest limits, up or down by no more than twenty percent within a bear zone or cougar zone, to address critical department management needs, significant changes in population levels or habitat availability. This adjustment may be applied within the specified zones to any or all of: the specific hunt codes; total harvest limits; or female harvest sub-limits.

B. The director, with verbal concurrence of the chairperson or their designee, may take management actions independent of seasons and restrictions, harvest limits or female sub-limits for population management, or to address critical situations including ungulate population protection, depredation, human health and safety or other wildlife management issues. The decision to take management actions pursuant to this subsection shall be reported to the commission.

[19.31.11.8 NMAC - Rp, 19.31.11.8 NMAC, 4/1/2024]

19.31.11.9 [RESERVED]

[19.31.11.9 NMAC - Repealed, 4/1/2024]

19.31.11.10 BEAR AND COUGAR ZONE CLOSURES, BAG LIMITS AND RESTRICTIONS:

A. Zone closures: Bear and cougar may be hunted or taken only in zones designated as open on the department hotline or website. Zones will close within 72 hours of when the reported number of bears or cougars harvested is within ten percent of the total limit or female sub-limit for that zone, whichever occurs first.

B. Bag limit: The bag limit for bear is one; the bag limit for cougar is two. It is unlawful to kill a bear sow with cub(s) or any bear cub less than one year old, or to kill a spotted cougar kitten or any female cougar accompanied by spotted kitten(s).

C. Limited entry hunt areas: It shall be unlawful to hunt bear or cougar in designated WMAs or other specifically designated special entry hunt areas with the following exceptions:

(1) Legally licensed bear hunters possessing a valid bear entry hunt permit may hunt bears in the area(s) specified on the permit, or as otherwise allowed by rule. Bear entry hunters shall be allowed to hunt in any other open bear zone provided they have a valid bear license.

(2) Legally licensed deer and elk hunters whose license is valid on a WMA or the Valle Vidal and are in possession of a valid over-the-counter bear or cougar license, may hunt bear or cougar in the WMA or the Valle Vidal as specified on their deer or elk license. Deer or elk hunters choosing to hunt bear or cougar under this provision may not use dogs, may hunt only in open bear or cougar zones, and must adhere to the weapon type restriction and season dates as specified by their deer or elk licenses.

D. Cougar hunting requirements and restrictions:

(1) All persons shall complete the mandatory cougar identification course offered on the department's website prior to purchasing a cougar license.

(2) Cougar hunting is closed in the Florida mountains hunt area during any open Persian ibex season, except by legally licensed Persian ibex hunters in possession of a valid cougar license. Persian ibex hunters may hunt cougar only if the cougar zone is open, and must adhere to the weapon type restrictions and season dates as specified by their Persian ibex license.

[19.31.11.10 NMAC - Rp, 19.31.11.10 NMAC, 4/1/2024]

19.31.11.11 BEAR HUNTING SEASONS:

A. Over-the-counter bear hunts for the 2024-25 through 2027-28 seasons: The following table lists bear zones, open GMUs, sporting arm restrictions, season dates, total harvest limits and female harvest sub-limits

Bear zone	open GMUs	bow only	any big game sporting arms	2024-25 total limit (female)	2025-26 total limit (female)	2026-27 total limit (female)	2027-28 total limit (female)
1	4, 5, 6, 7, 51, 52	9/1 - 24	9/25 - 11/15	168 (67)	168 (67)	168 (67)	168 (67)
2	2	9/1 - 24	9/25 - 11/15	15 (6)	15 (6)	15 (6)	15 (6)
3	49, 50, 53	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	65 (26)	65 (26)	65 (26)	65 (26)
4	45, 46, 48	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	109 (43)	109 (43)	109 (43)	109 (43)
5	54, 55, 57	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	108 (43)	108 (43)	108 (43)	108 (43)
6	39, 40, 41, 42, 43, 47, 56, 58, 59	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	51 (20)	51 (20)	51 (20)	51 (20)
8	8	9/1 - 24	10/15 - 11/15	11 (4)	11 (4)	11 (4)	11 (4)
9	9, 10	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	36 (14)	36 (14)	36 (14)	36 (14)
10	12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27	9/1 - 24	9/25 - 12/15	197 (79)	197 (79)	197 (79)	197 (79)
11	37, 38	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	36 (14)	36 (14)	36 (14)	36 (14)
12	34	9/1 - 24	8/16 - 8/31 and	33 (13)	33 (13)	33 (13)	33 (13)

			9/25 - 12/15				
13	36	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	16 (6)	16 (6)	16 (6)	16 (6)
14	14	9/1 - 24	10/15 - 11/15	19 (7)	19 (7)	19 (7)	19 (7)

B. Entry hunts for the 2024-25 through 2027-28 seasons shall be as indicated below, listing the open GMUs and areas, eligibility requirements or restrictions, hunt dates, hunt codes, legal sporting arms and number of permits.

open GMUs and areas	2024-25 hunt dates	2025-26 hunt dates	2026-27 hunt dates	2027-28 hunt dates	hunt code	permits
2: youth only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-100	5
4: Sargent WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-101	10
4: Humphries WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-102	5
9: Marquez/LBar WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-103	10
54:55: Uracca, E.S. Barker, and Colin Neblett WMAs, and Valle Vidal	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-104	60
55: Valle Vidal	4/15-5/20	4/15-5/20	4/15-5/20	4/15-5/20	BER-1-105	20
57: Sugarite Canyon State Park/ bow only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-2-106	5

[19.31.11.11 NMAC - Rp, 19.31.11.11 NMAC, 4/1/2024]

19.31.11.12 COUGAR HUNTING SEASONS:

A. Over-the-counter cougar hunting season shall be from April 1 through March 31, or until the total harvest limit or female sub-limit, whichever comes first, is met in any given cougar zone.

B. The following table lists cougar zones, open GMUs, total harvest limits and female harvest sub-limits for the 2024-25 to 2027-28 seasons.

zone	open GMUs	2024-25 total limit (female)	2025-26 total limit (female)	2026-27 total limit (female)	2027-28 total limit (female)
A	2, 7	42 (13)	42 (13)	42 (13)	42 (13)
B	5, 6, 50, 51	25 (8)	25 (8)	25 (8)	25 (8)
C	43, 45, 46, 48, 49, 53	57 (17)	57 (17)	57 (17)	57 (17)
D	41, 42, 47, 59	15 (5)	15 (5)	15 (5)	15 (5)
E	9, 10	43 (13)	43 (13)	43 (13)	43 (13)
G	13, 17	50 (15)	50 (15)	50 (15)	50 (15)
H	18, 19, 20	29 (9)	29 (9)	29 (9)	29 (9)
I	36, 37, 38	24 (7)	24 (7)	24 (7)	24 (7)
J	15, 16, 21	84 (25)	84 (25)	84 (25)	84 (25)
K	22, 23, 24	45 (14)	45 (14)	45 (14)	45 (14)
L	25, 26, 27	19 (6)	19 (6)	19 (6)	19 (6)
M	31, 32, 33, 39, 40	25 (7)	25 (7)	25 (7)	25 (7)
N	4, 52	13 (4)	13 (4)	13 (4)	13 (4)
O	12	17 (5)	17 (5)	17 (5)	17 (5)
P	56, 57, 58	14 (7)	14 (7)	14 (7)	14 (7)
Q	28, 29, 30, 34	17 (6)	17 (6)	17 (6)	17 (6)
R	54, 55	26 (8)	26 (8)	26 (8)	26 (8)
S	8, 14	17 (5)	17 (5)	17 (5)	17 (5)

[19.31.11.12 NMAC - Rp, 19.31.11.12 NMAC, 4/1/2024]

HISTORY OF 19.31.11 NMAC:

Pre-NMAC History: The material in this part was derived from that previously filed with the state records center and archives under:

Regulation No. 482, Establishing Seasons on Deer, Bear, Turkey, Elk, Antelope, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, and Barbary Sheep, filed 5/31/1967;

Regulation No. 487, Establishing 1967 Seasons on Javelina and Barbary Sheep, filed 12/15/1967;

Regulation No. 489, Establishing Turkey Seasons for the Spring of 1968, filed 3/1/1968;

Regulation No. 491, Establishing Big Game Seasons for 1968 for Jicarilla Reservation, filed 3/1/1968;

Regulation No. 492, Establishing Seasons on Deer, Bear, Turkey, Elk, Antelope, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, and Barbary Sheep, filed 6/6/1968;

Regulation No. 495, Establishing a Season on Bighorn Sheep, filed 10/2/1968;

Regulation No. 496, Establishing an Elk Season in the Tres Piedras Area, Elk Area P-6, filed 12/11/1968;

Regulation No. 502, Establishing Turkey Seasons for the Spring Of 1969, filed 3/5/1969;

Regulation No. 503, Establishing 1969 Deer Seasons for Bowhunting Only and Big Game Seasons for the Jicarilla Indian Reservation, filed 3/5/1969;

Regulation 504, Establishing Seasons on Deer, Bear, Turkey, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, and Barbary Sheep, filed 6/4/1969;

Regulation No. 507, Establishing a Season on Bighorn Sheep, filed 8/26/1969;

Regulation No. 512, Establishing Turkey Season for the Spring Of 1970, filed 2/20/1970;

Regulation No. 513, Establishing Deer Season for Bowhunting Only in Sandia State Game Refuge, filed 2/20/1970;

Regulation No. 514, Establishing Seasons on Deer, Bear, Turkey, Elk, Antelope, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Barbary Sheep and Bighorn Sheep, filed 6/9/1970;

Regulation No 520, Establishing Turkey Seasons for the Spring of 1971, filed 3/9/1971;

Regulation No. 522, Establishing 1971 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 3/9/1971;

Regulation No. 523, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Elk, Antelope, Barbary Sheep and Bighorn Sheep, filed 6/9/1971;

Regulation No. 531, Establishing a Season on Javelina, filed 12/17/1971;

Regulation No. 532, Establishing Turkey Seasons for the Spring of 1972, filed 3/20/1972;

Regulation No. 534, Establishing 1972 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 3/20/1972;

Regulation No. 536, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, Elk, Antelope, Barbary Sheep and Bighorn Sheep, filed 6/26/1972;

Regulation No. 542, Establishing a Season on Javelina, filed 12/1/1972;

Regulation No. 545, Establishing Turkey Seasons for the Spring Of 1973, filed 2/26/1973;

Regulation No. 546, Establishing 1973 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 2/26/1973;

Regulation No. 547, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, Elk, Antelope, Barbary Sheep and Bighorn Sheep, and Javelina, filed 5/31/1973;

Regulation No. 554, Establishing Special Turkey Seasons for the Spring of 1974, filed 3/4/1974;

Regulation No. 556, Establishing 1974 Seasons on Deer, Bear, Turkey, and Elk on the Jicarilla Apache Indian Reservation, filed 3/14/1974;

Regulation No. 558, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex, filed 5/29/1974;

Regulation No. 565, Establishing Special Turkey Seasons for the Spring of 1975, filed 3/24/1975;

Regulation No. 567, Establishing 1975 Seasons on Deer, Bear, and Turkey on the Jicarilla Apache and Navajo Indian Reservations and on Elk on the Jicarilla Apache Indian Reservation, filed 3/24/1975;

Regulation No. 568, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Chickaree and Tassel-Eared Squirrel, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 6/25/1975;

Regulation No. 573, Establishing Seasons on Deer, Turkey, Bear, Cougar, Dusky Grouse, Tassel-Eared and Chickaree Squirrel, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/23/1976;

Regulation No. 583, Establishing Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/11/1977;

Regulation No. 590, Establishing Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/15/1978;

Regulation No. 596, Establishing Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex, filed 2/23/1979;

Regulation No. 603, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1980 through March 31, 1981, filed 2/22/1980;

Regulation No. 609, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1981 through March 31, 1982, filed 3/17/1981;
 Regulation No. 614, Establishing Open Seasons on Deer, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1982 through March 31, 1983, filed 3/10/1982;
 Regulation No. 622, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1983 through March 31, 1984, filed 3/9/1983;
 Regulation No. 628, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1984 through March 31, 1985, filed 4/2/1984;
 Regulation No. 634, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1985 Through March 31, 1986, filed 4/18/1985;
 Regulation No. 640, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1986 through March 31, 1987, filed 3/25/1986;
 Regulation No. 645, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1987 through March 31, 1988, filed 2/12/1987;
 Regulation No. 653, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1988 through March 31, 1989, filed 12/18/1987;
 Regulation No. 663, Establishing Opening Spring Turkey for the Period April 1, 1989 through March 31, 1990, filed 3/28/1989;
 Regulation No. 664, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1989 through March 31, 1990, filed 3/20/1989;
 Regulation No. 674, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx and Ibex for the Period April 1, 1990 through March 31, 1991, filed 11/21/1989;
 Regulation No. 683, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex for the Period April 1, 1991 through March 31, 1992, filed 2/8/1991;
 Regulation No. 689, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex for the Period April 1, 1992 through March 31, 1993, filed 3/4/1992;
 Regulation No. 700, Establishing Open Seasons on Deer, Turkey, Bear, Cougar, Elk, Antelope, Barbary Sheep, Bighorn Sheep, Javelina, Oryx, and Ibex for the Period April 1, 1993 through March 31, 1995, filed 3/11/1993.

History of Repealed Material:

19.31.8 NMAC, Big Game, filed 3/1/2001 - duration expired 3/31/2003.
 19.31.8 NMAC, Big Game and Turkey, filed 3/3/2003 - duration expired 3/31/2005.
 19.31.8 NMAC, Big Game and Turkey, filed 12/15/2004 - duration expired 3/31/2007.
 19.31.11 NMAC, Bear and Cougar, filed 12/1/2006 - duration expired 3/31/2009.
 19.31.11 NMAC, Bear and Cougar, filed 3/13/2009 - duration expired 3/31/2011.
 19.31.11 NMAC, Bear and Cougar, filed 2/22/2011 - duration expired 3/31/2016.
 19.31.11 NMAC, Bear and Cougar, filed 2/29/2016 - duration expired 3/31/2020.
 19.31.11 NMAC, Bear and Cougar, filed 12/3/2019 - duration expired 3/31/2024.

Bear and Cougar

19.31.11 NMAC



October 27, 2023
State Game Commission Meeting

Stewart Liley, October 27, 2023

Rule Development Timeline

- **April, August, & October** – present at SGC meetings
- **April** – Rule opens, initial NMDGF ideas posted on the website
- **July** – Public meetings throughout the state
- **September** – Final NMDGF proposed rule posted on the website
- **October 27th** – Act on rule



Public Comment Summary

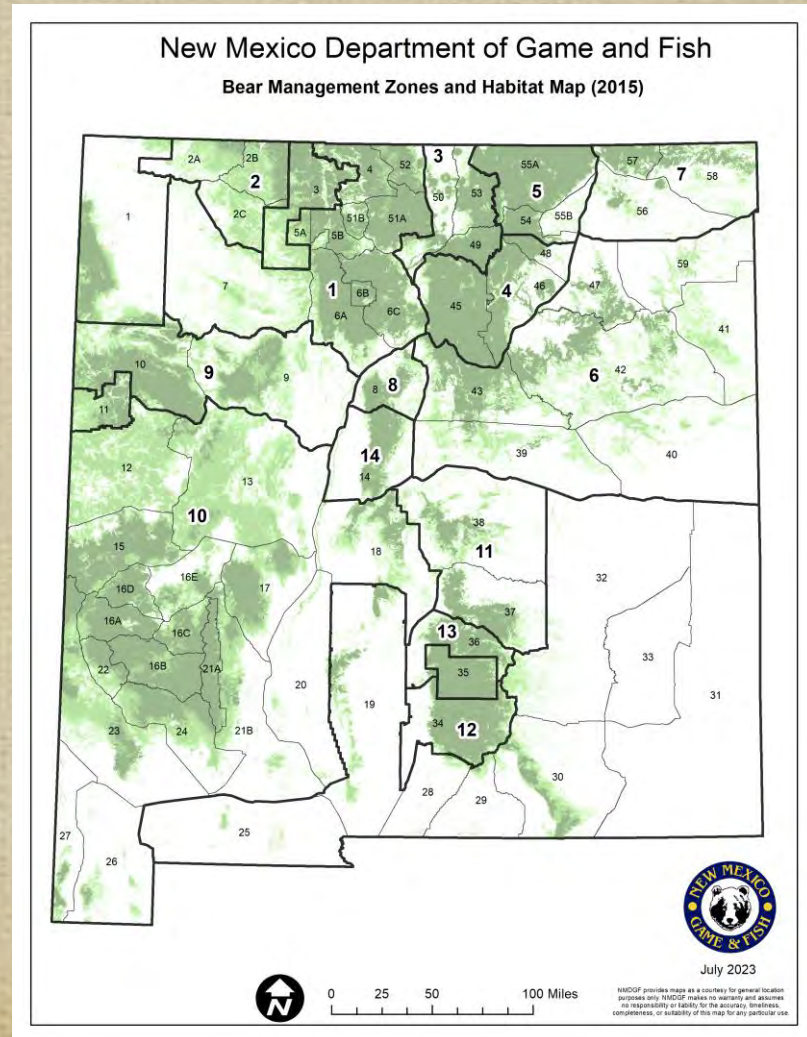
- Hosted 4 public meetings
 - Raton (11 attendees), Albuquerque (15), Las Cruces (12), Roswell (4)
- Received 2,813 emails, 10 written comments

TOPIC	
Support	1,702
Oppose	988
Alternate Proposals or Ambiguous	133



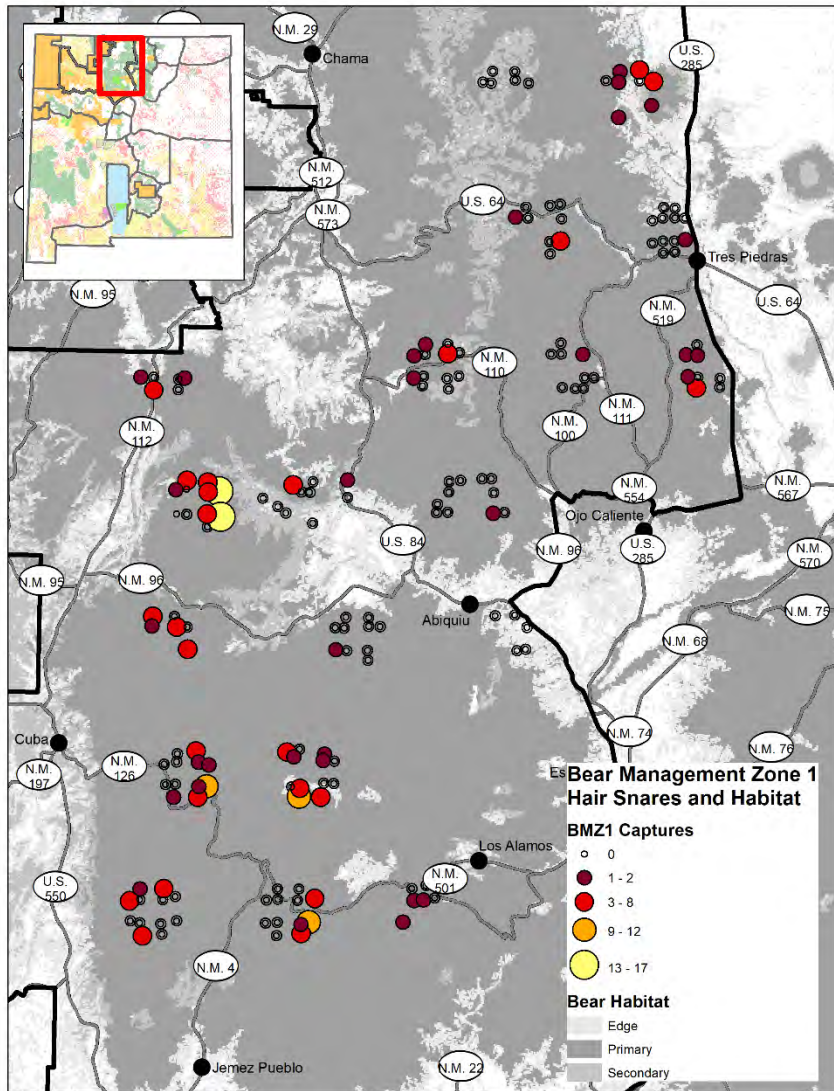
Black Bear Management Structure, Monitoring and Research

- Manage by zones
- Population estimate
- Conservative harvest limits

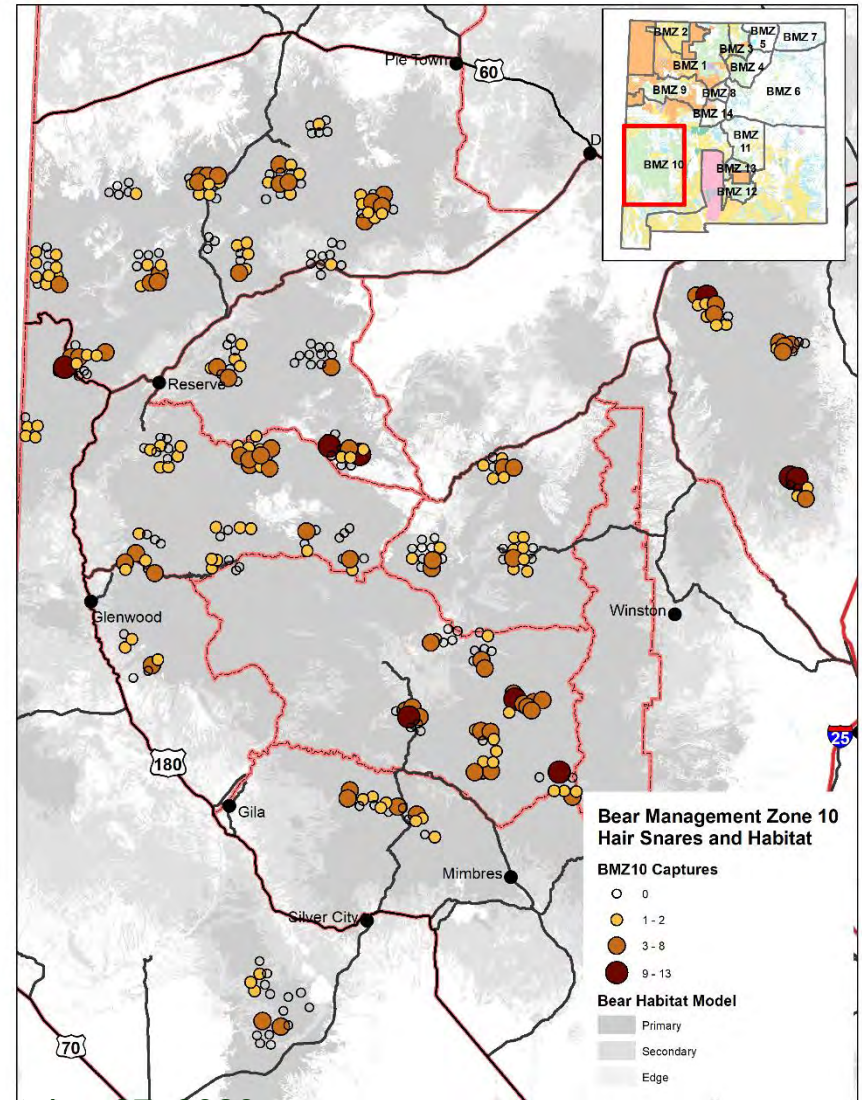


Map of Study Areas

BMZ 1 - 2019



BMZ 10 – 2020 & 2021



Stewart Liley, October 27, 2023

Bear Harvest

Year	Sport Harvest (females)	Max Allowable Harvest	Depredation	Other	Total	# of Zones Closed
2019	473 (172)	804	40	22	535	3
2020	603 (240)	804	100	41	745	6
2021	502 (192)	804	60	18	580	3
2022	523 (194)	804	83	31	637	4
AVG	525 (201)	804	71	28	624	4



Bear Proposals



- Increase harvest limits in BMZ 1 & 10
- Move GMU 57 to BMZ 5, and move GMUs 56 & 58 to BMZ 6
- Increase permit numbers for Marquez/Lbar and GMUs 54/55A draw hunts
- Move start date in BMZ 12 & 13 to August 16th



Bear Harvest Limits

BMZ	Current Total Limit (Female Sub-limit)	Proposed Total Limit (Female Sub-limit)
1	158 (63)	168 (67)*
2	15 (6)	15 (6)
3	65 (26)	65 (26)
4	109 (43)	109 (43)
5	92 (37)	108 (43)+
6	33 (13)	51 (20)+
7	35 (14)	---+
8	11 (4)	11 (4)
9	36 (14)	36 (14)
10	146 (58)	197 (79)*
11	36 (14)	36 (14)
12	33 (13)	33 (13)
13	16 (6)	16 (6)
14	19 (7)	19 (7)
STATEWIDE	804 (318)	864 (342)

*Change reflects the change in harvest limit as a result of added/subtracted GMU

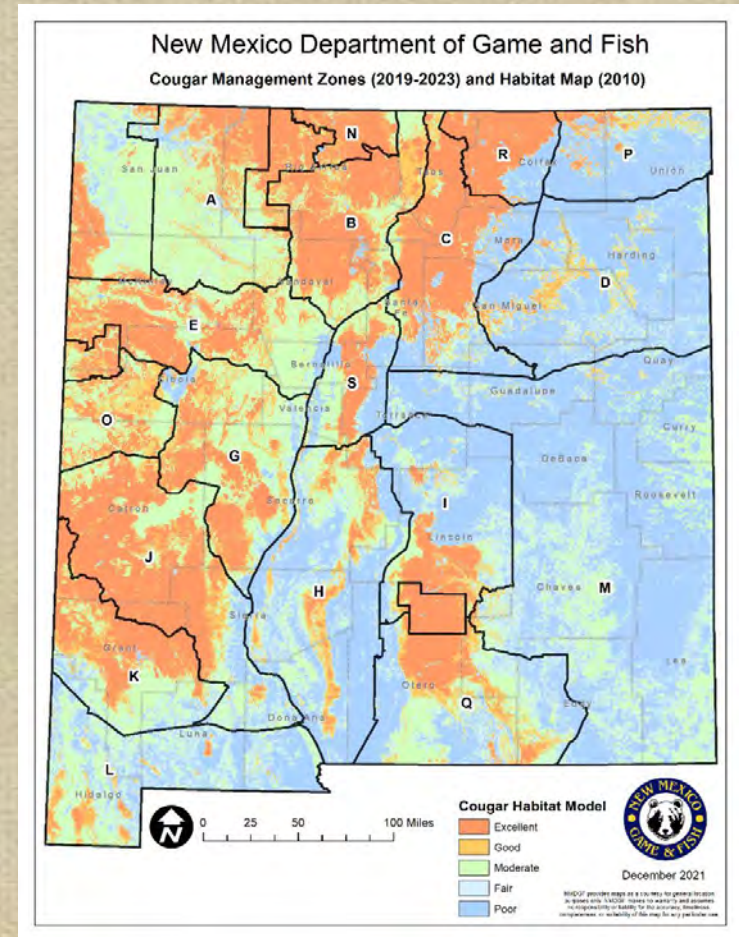
+Change reflects the change in harvest limit due to GMUs being added or removed from zone

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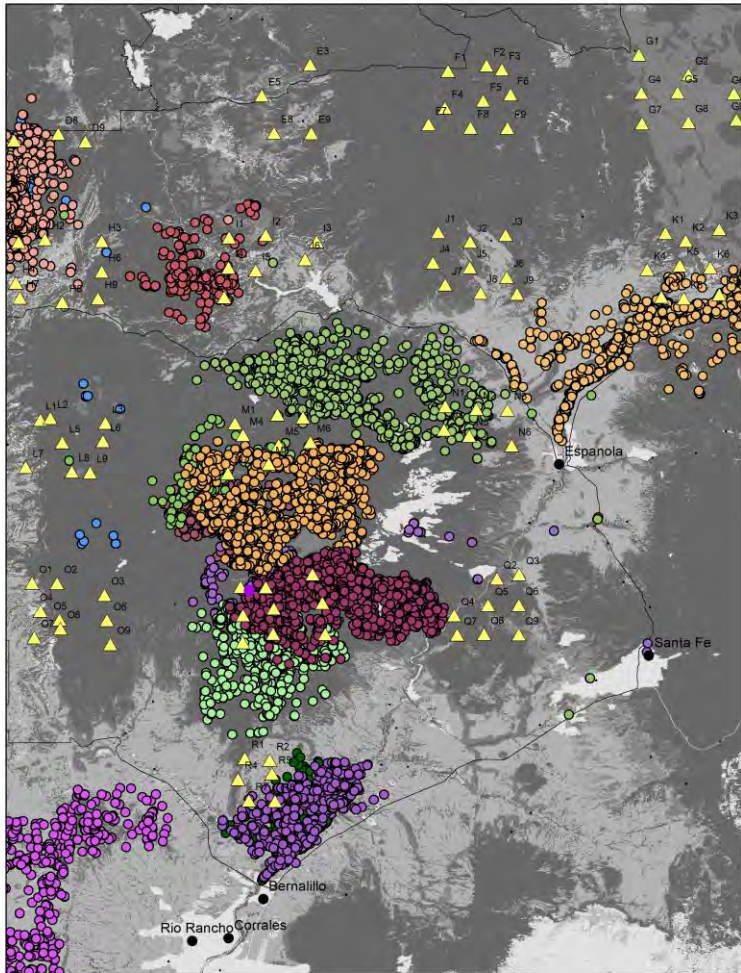
Cougar Management Structure, Monitoring and Research

- Cougar population size = density estimates applied to habitat map (different densities for different habitats)

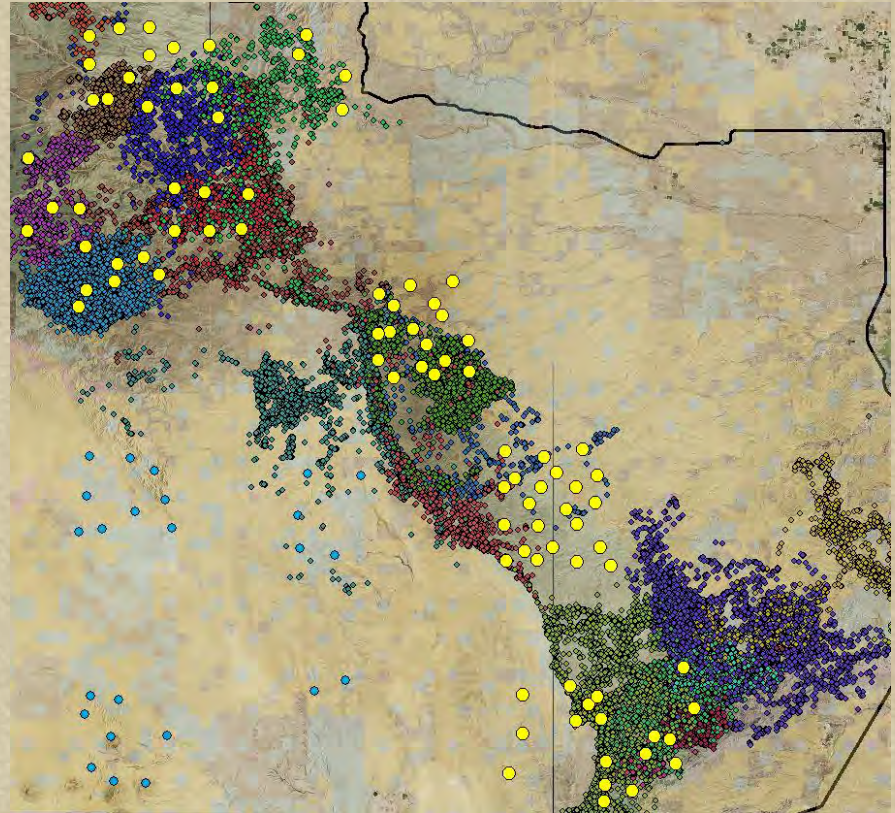


Map of Study Areas

CMZ BF – 2017-18



CMZ Q – 2019-21



Cougar Collar and Cameras

- **CMZs B & F, 2018:** 128 camera sites, 14 lions collared
 - Population estimate of 149 (~ 1 cougar/100km²)
- **CMZ Q, 2019-21:** 157 camera sites, 25 lions collared
 - Population estimate of 100 (~ 0.55 cougar/100km²)



Cougar Harvest

Year	Sport Harvest (females)	Max Allowable Harvest	Depredation	Other	Total	# of Zones Closed
2019	282 (112)	740	8	33	323	3
2020	272 (122)	580	17	42	331	9
2021	262 (91)	580	24	35	321	7
2022	304 (105)	580	21	48	373	6
AVG	280 (108)	---	18	40	337	8



Cougar Proposals

- Lower cougar harvest limit in CMZ Q



CMZ	2020-24 Total Limit (Female Sub-limit)	2024-28 Proposed Total Limit (Female Sub-limit)
A	42 (13)	42 (13)
B	25 (8)	25 (8)
C	57 (17)	57 (17)
D	15 (5)	15 (5)
E	42 (13)	42 (13)
G	50 (15)	50 (15)
H	29 (9)	29 (9)
I	24 (7)	24 (7)
J	84 (25)	84 (25)
K	45 (14)	45 (14)
L	19 (6)	19 (6)
M	25 (7)	25 (7)
N	15 (5)	15 (5)
O	17 (5)	17 (5)
P	14 (7)	14 (7)
Q	34 (11)	17 (6)
R	26 (8)	26 (8)
S	17 (5)	17 (5)

QUESTIONS



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BEAR AND COUGAR RULE - PROPOSED CHANGES SUMMARY

(Updated: 8/28/2023; these proposals will be updated throughout the rule development process)

PURPOSE

Maintain sustainable bear and cougar populations and hunting opportunities throughout New Mexico using bear and cougar biology, modern monitoring and analytical methods, harvest data, and public input.

BEAR AND COUGAR BIOLOGY, MANAGEMENT, AND RESEARCH

Bear and cougar populations are distributed across the state where suitable habitat exists, and both species have been documented in nearly all of the habitat types present in the state. The disjunct mountain ranges of the state serve as clusters of preferred habitats for both species, which can drive localized population dynamics. Given these spatial dynamics, both species are managed at a Bear or Cougar Management Zone (BMZ or CMZ) level, with zones being comprised of multiple Game Management Units that encompass areas of habitat that presumably have localized population dynamics. However, both species are capable of long-distance movements, resulting in mixture and recruitment patterns at a statewide population level. Thus, population dynamics are also understood to occur at a statewide level and monitored as such.

Unregulated hunter harvest can have a negative impact on populations, therefore the Department restricts harvest so that the number of individuals harvested in a year does not exceed a harvest limit. The harvest limit is a percentage of the total population estimate for a zone. For bears the harvest limit is 8-12% of the independent-age population estimate (no harvest of cubs or females accompanied by cubs is allowed), and for cougars is 17-24% of the independent-age population estimate (no harvest of spotted-kittens, or females accompanied by spotted-kittens is allowed). In addition to the total harvest limit, the Department also restricts the number of females that can be taken by imposing a female harvest limit (40% of the total harvest limit for bears, 30% for cougars), to limit impact on the reproductive capacity of the population. Once either the total or female harvest is within 10% remaining on the limit, a zone closes to bear or cougar hunting. To ensure these harvest limits are not exceeded, it is mandatory that all hunters must present their harvested animal to a Department official.

To ensure harvest limits are set at an appropriate number, we estimate population size for each BMZ or CMZ using the best available data. Since 2012 for bears we have been using non-invasive genetic sampling techniques in combination with advanced statistical modeling to estimate zone-specific population size (for more information see: <https://www.wildlife.state.nm.us/hunting/information-by-animal/big-game/bear/>). Starting in 2017 for cougars we have been using GPS-tracking collars, trail cameras, and statistical models to estimate zone-specific population size (for more information see: <https://www.wildlife.state.nm.us/hunting/information-by-animal/big-game/cougar/>). For both species we have also recently begun building Integrated Population Models that incorporate all available data sources (survival from collared animals, age and sex data from harvested animals, hunter effort, etc.) to have annual modelling capability to keep track of these populations. By incorporating these modern techniques to generate contemporary estimates we have robust data from which to make management decisions.

PROPOSED CHANGES

General Statewide Proposed Changes

- ~~1) Change zone closure requirements such that zones close when the female harvest limit is reached, in response to updated pelt tag reporting procedures.~~
- 2) Allow licensed deer or elk hunters who draw WMA hunts to harvest a bear or cougar during their hunt if the zone is open and they possess a Bear and/or Cougar license.

Bear-specific Changes

- 1) Increase bear harvest limits based on population estimates from new NMDGF research from 2019-2021 in BMZs 1 and 10, as detailed in table below (research findings can be found at <https://www.wildlife.state.nm.us/download/hunting/species/bear/publications/Bear-NGS-and-SCR-Research-Summary-2019-2021.pdf>).

BMZ	Current 2020-2024 Total Limit (Female Sub-limit)	Proposed 2024-2028 Total Limit (Female Sub-limit)
1	158 (63)	168 (67)*
2	15 (6)	15 (6)
3	65 (26)	65 (26)
4	109 (43)	109 (43)
5	92 (37)	108 (43) ⁺
6	33 (13)	51 (20) ⁺
7	35 (14)	--- ^{+#}
8	11 (4)	11 (4)
9	36 (14)	36 (14)
10	146 (58)	197 (79)*
11	36 (14)	36 (14)
12	33 (13)	33 (13)
13	16 (6)	16 (6)
14	19 (7)	19 (7)

*Change in harvest limit reflects new research findings

+Change in harvest limit reflects GMUs being added or removed from zone

#Bear Management Zone 7 will no longer be a zone

- 2) Adjust BMZs 5, 6, and 7 such that GMU 57 will be moved from BMZ 7 into BMZ 5, and GMUs 56 and 58 will be moved from BMZ 7 into BMZ 6, thus dissolving BMZ 7 into those zones (see maps below). Harvest limit allocations from those GMUs in previous BMZ 7 will be re-allocated to the new BMZs of which they are a part (as seen in above table).

Cougar-specific Changes

- 1) Adjust harvest limits for CMZ Q based on research studies and statistical modelling efforts, as detailed in table below (research reports can be found at <https://www.wildlife.state.nm.us/download/publications/wildlife/Cougar-SMR-Research-Summary-2018-2021.pdf>).

CMZ	Current 2020-2024 Total Limit (Female Sub-limit)	Proposed 2024-2028 Total Limit (Female Sub-limit)
A	42 (13)	42 (13)
B	25 (8)	25 (8)
C	57 (17)	57 (17)
D	15 (5)	15 (5)
E	42 (13)	42 (13)
G	50 (15)	50 (15)
H	29 (9)	29 (9)
I	24 (7)	24 (7)
J	84 (25)	84 (25)
K	45 (14)	45 (14)
L	19 (6)	19 (6)
M	25 (7)	25 (7)
N	15 (5)	15 (5)
O	17 (5)	17 (5)
P	14 (7)	14 (7)
Q	34 (11)	17 (6)
R	26 (8)	26 (8)
S	17 (5)	17 (5)

PUBLIC INVOLVEMENT

The Department encourages the public to comment on the proposals by sending an email to: DGF-Bear-Cougar-Rules@state.nm.us.

Table 1. Black Bear Mortality in New Mexico, 2012, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.*	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	39	81	0	7	9	0	1	6	1	144
2	2	5	4	0	2	2	0	0	0	0	13
3	48 - 50, 53	15	30	0	8	3	0	1	2	0	59
4	45, 46	29	69	0	2	5	0	2	6	1	114
5	54, 55	31	20	0	0	8	0	5	9	1	74
6	41 - 43, 47, 59	3	5	0	0	0	0	2	3	0	13
7	56, 57, 58	12	11	0	2	1	0	1	2	0	29
8	8	1	0	0	1	1	0	2	1	0	6
9	9, 10	6	11	0	1	3	0	2	0	0	23
10	12, 13, 15-18, 20-24, 26, 27	47	76	0	3	14	1	1	3	0	145
11	37, 38	5	7	0	0	1	0	0	1	0	14
12	34	11	19	0	0	3	1	0	0	0	34
13	36	12	13	0	2	4	0	0	1	0	32
14	14	5	1	0	1	4	0	1	1	1	14
		221	347	0	29	58	2	18	35	4	714

*Unk – Unknown, sometimes the sex is impossible to determine due to decomposition or physical damage.

The year given for each table is the year the license year began. License years run from April 1 to March 31 the subsequent year.

Table 2. Black Bear Mortality in New Mexico, 2013, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	46	81	1	5	12	1	5	2	0	153
2	2	3	2	0	0	0	0	0	0	0	5
3	49, 50, 53	13	15	0	3	12	0	1	0	1	45
4	45, 46, 48	29	42	0	4	19	0	3	6	0	103
5	54, 55	15	24	0	7	21	0	3	3	0	73
6	41 - 43, 47, 59	7	14	0	1	3	0	0	1	1	27
7	56, 57, 58	11	11	0	4	7	0	1	5	0	39
8	8	1	0	0	6	11	0	9	2	0	29
9	9, 10	10	14	0	0	6	0	1	0	0	31
10	12, 13, 15-18, 20-24, 26, 27	52	84	0	6	22	0	2	4	0	170
11	37, 38	6	14	0	0	2	0	0	0	0	22
12	34	11	4	0	0	2	0	0	0	0	17
13	36	11	16	0	6	4	0	1	1	0	39
14	14	4	4	0	5	4	0	1	5	2	25
		219	325	1	47	125	1	27	29	4	778

Table 3. Black Bear Mortality in New Mexico, 2014, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	44	85	1	1	2	0	0	0	0	133
2	2	2	3	0	0	0	0	0	0	0	5
3	49, 50, 53	15	19	0	0	1	0	0	0	0	35
4	45, 46, 48	23	21	0	1	4	0	1	6	0	56
5	54, 55	15	7	0	2	8	0	2	6	1	41
6	41 - 43, 47, 59	3	9	0	0	1	0	0	1	0	14
7	56, 57, 58	9	17	0	2	3	0	1	0	1	33
8	8	0	1	0	0	0	0	1	0	0	2
9	9, 10	12	6	0	0	2	0	2	2	3	27
10	12, 13, 15-18, 20-24, 26, 27	39	80	1	2	13	0	1	2	0	138
11	37, 38	5	11	0	0	0	0	0	1	0	17
12	34	13	8	0	1	1	0	1	1	1	26
13	36	5	12	0	1	5	0	0	0	0	23
14	14	5	5	0	0	0	0	0	0	1	11
		190	284	2	10	40	0	9	19	7	561

Table 4. Black Bear Mortality in New Mexico, 2015, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	59	82	0	4	4	1	1	4	0	155
2	2	4	4	0	0	0	0	0	0	0	8
3	49, 50, 53	10	19	0	0	1	0	0	0	0	30
4	45, 46, 48	10	19	0	0	0	0	0	4	0	33
5	54, 55	10	7	0	0	7	0	1	2	0	27
6	41 - 43, 47, 59	3	1	0	0	1	0	0	3	0	8
7	56, 57, 58	8	6	0	1	4	0	1	0	0	20
8	8	1	0	0	0	1	0	0	0	0	2
9	9, 10	9	7	0	1	1	0	0	2	0	20
10	12, 13, 15-18, 20-24, 26, 27	34	62	0	1	0	0	0	1	0	98
11	37, 38	8	8	0	0	0	0	0	0	0	16
12	34	8	20	0	0	1	0	0	0	0	29
13	36	5	5	0	2	3	0	1	0	0	16
14	14	5	0	0	2	0	0	0	0	0	7
		174	240	0	11	23	1	4	16	0	469

Table 5. Black Bear Mortality in New Mexico, 2016, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	43	94	0	4	7	0	3	1	0	152
2	2	4	3	0	1	0	0	0	0	0	8
3	49, 50, 53	13	14	0	0	0	0	0	0	0	27
4	45, 46, 48	13	8	0	0	5	0	0	1	0	27
5	54, 55	7	14	0	0	8	0	1	2	0	32
6	41 - 43, 47, 59	2	2	0	0	2	0	1	0	0	7
7	56, 57, 58	5	26	0	0	2	0	1	0	0	34
8	8	0	0	0	0	0	0	0	0	0	0
9	9, 10	10	8	0	1	3	1	1	0	0	24
10	12, 13, 15-18, 20-24, 26, 27	29	69	0	0	8	0	0	2	0	108
11	37, 38	9	8	0	1	0	0	0	0	0	18
12	34	8	22	0	2	1	0	0	0	0	33
13	36	5	11	0	0	3	0	0	0	0	19
14	14	6	4	0	0	0	0	0	0	0	10
		154	283	0	9	39	1	7	6	0	499

Table 6. Black Bear Mortality in New Mexico, 2017, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	25	45	0	1	7	1	3	6	1	89
2	2	4	12	0	0	3	0	1	3	0	23
3	49, 50, 53	10	32	0	4	5	1	2	1	0	55
4	45, 46, 48	18	21	0	4	3	0	1	4	0	51
5	54, 55	12	18	0	8	12	0	1	7	0	58
6	41 - 43, 47, 59	3	8	0	0	2	0	2	3	1	19
7	56, 57, 58	12	19	0	3	7	0	4	6	0	51
8	8	0	0	0	0	1	0	1	3	0	5
9	9, 10	8	8	0	0	1	0	0	1	0	18
10	12, 13, 15-18, 20-24, 26, 27	57	96	1	1	10	0	0	1	1	167
11	37, 38	6	16	0	0	0	0	0	0	0	22
12	34	13	16	1	0	1	0	0	0	0	31
13	36	2	11	0	0	4	0	0	0	0	17
14	14	8	2	0	0	4	0	0	4	0	18
None	GMU 19	0	0	0	0	0	0	1	0	0	1
		178	304	2	21	60	2	16	39	3	625

Table 7. Black Bear Mortality in New Mexico, 2018, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	44	78	0	4	6	0	0	2	0	134
2	2	1	4	0	0	0	0	0	0	0	5
3	49, 50, 53	10	16	0	0	2	0	1	0	0	29
4	45, 46, 48	20	30	0	3	8	0	3	3	1	68
5	54, 55	9	12	0	1	5	0	2	2	0	31
6	41 - 43, 47, 59	2	3	0	0	4	0	0	4	1	14
7	56, 57, 58	11	19	0	1	6	0	1	4	0	42
8	8	0	2	0	0	4	0	1	2	0	9
9	9, 10	8	12	0	0	1	0	0	1	0	22
10	12, 13, 15-18, 20-24, 26, 27	54	89	0	2	9	0	1	3	0	158
11	37, 38	8	13	0	0	1	0	0	0	0	22
12	34	13	19	0	3	5	0	0	1	0	41
13	36	4	9	0	0	0	0	0	0	0	13
14	14	4	3	0	0	3	0	2	0	0	12
None	GMU 32	0	0	0	0	0	0	0	1	0	1
		188	309	0	14	54	0	11	23	2	601

Table 8. Black Bear Mortality in New Mexico, 2019, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	46	62	0	1	3	0	1	1	0	114
2	2	3	2	0	1	0	0	0	0	0	6
3	49, 50, 53	11	15	0	0	2	0	0	1	0	29
4	45, 46, 48	18	29	0	0	5	0	1	2	0	55
5	54, 55	6	23	0	0	2	0	0	2	0	33
6	41 - 43, 47, 59	1	5	0	3	3	0	0	2	0	14
7	56, 57, 58	9	23	0	0	2	0	1	3	0	38
8	8	0	0	0	1	0	0	0	1	0	2
9	9, 10	5	6	0	0	0	0	0	2	0	13
10	12, 13, 15-18, 20-24, 26, 27	46	97	0	1	6	0	0	3	0	153
11	37, 38	7	12	0	0	1	0	1	0	0	21
12	34	13	18	0	0	0	0	0	1	0	32
13	36	4	5	0	0	5	0	0	0	0	14
14	14	3	4	0	1	3	0	0	0	0	11
		172	301	0	8	32	0	4	18	0	535

Table 9. Black Bear Mortality in New Mexico, 2020, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	54	69	0	3	4	1	2	1	0	134
2	2	5	7	0	1	2	0	1	0	0	16
3	49, 50, 53	18	25	0	0	2	0	0	1	1	47
4	45, 46, 48	20	50	0	3	17	0	3	3	0	96
5	54, 55	9	8	0	6	7	0	4	1	0	35
6	41 - 43, 47, 59	11	14	0	5	6	0	1	5	1	43
7	56, 57, 58	14	26	0	8	16	0	3	4	0	71
8	8	2	1	0	1	1	0	0	0	0	5
9	9, 10	11	12	1	0	0	0	0	2	0	26
10	12, 13, 15-18, 20-24, 26, 27	60	100	0	3	10	0	2	4	1	180
11	37, 38	14	20	0	0	0	0	0	0	0	34
12	34	11	21	0	1	0	0	0	0	0	33
13	36	4	5	0	1	2	0	0	1	0	13
14	14	7	5	0	0	0	0	0	0	0	12
		240	363	1	32	67	1	16	22	3	745

Table 10. Black Bear Mortality in New Mexico, 2021, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	48	78	0	1	5	0	1	0	0	133
2	2	1	0	0	0	1	0	0	0	0	2
3	49, 50, 53	12	16	0	0	5	0	0	0	0	33
4	45, 46, 48	19	39	0	6	15	0	3	2	0	84
5	54, 55	15	17	0	1	6	0	1	1	0	41
6	39 - 43, 47, 59	3	11	0	1	4	0	0	3	0	22
7	56, 57, 58	12	13	0	0	2	0	1	1	0	29
8	8	0	0	0	0	0	0	0	0	0	0
9	9, 10	13	7	0	0	0	0	1	0	0	21
10	12, 13, 15-18, 20-24, 26, 27	45	94	0	1	2	0	0	3	1	146
11	37, 38	11	11	0	0	0	0	0	0	0	22
12	34	9	17	0	0	2	0	0	0	0	28
13	36	2	3	0	3	4	0	0	0	0	12
14	14	2	4	0	0	1	0	0	0	0	7
		192	310	0	13	47	0	7	10	1	580

Table 11. Black Bear Mortality in New Mexico, 2022, New Mexico Department of Game and Fish.

Zone	Game Management Units	Sport Harvest			Depredation			Road Kill/Other			Totals
		Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.	
1	4 - 7, 51, 52	53	84	0	0	2	0	0	3	0	142
2	2	2	2	0	2	2	0	0	0	0	8
3	49, 50, 53	13	26	0	0	5	0	0	0	0	44
4	45, 46, 48	15	30	0	6	17	0	1	5	0	74
5	54, 55	10	27	0	3	7	0	1	3	0	51
6	41 - 43, 47, 59	8	7	0	6	11	0	1	1	0	34
7	56, 57, 58	9	22	0	1	3	0	3	7	0	45
8	8	0	1	0	0	3	0	0	2	0	6
9	9, 10	12	21	0	0	0	0	0	0	0	33
10	12, 13, 15-18, 20-24, 26, 27	52	83	0	0	8	0	1	2	0	146
11	37, 38	9	6	0	0	1	0	0	0	0	16
12	34	10	17	0	0	0	0	0	0	0	27
13	36	1	3	0	0	3	0	0	1	0	8
14	14	0	0	0	0	2	0	0	0	0	2
N/A	32	0	0	0	0	1	0	0	0	0	1
		194	329	0	18	65	0	7	24	0	637

Table 1. Annual Black Bear Mortality Statistics 2001-2022/23, New Mexico Department of Game and Fish

Year	Sport Harvest			Depredation Kill			Other (road kill, accident, etc.)			Total	% Female
	Female	Male	Unk.*	Female	Male	Unk.	Female	Male	Unk.		
2001-02	213	318	3	8	38	1	6	9	0	596	38.20%
2002-03	271	397	6	13	33	2	8	15	0	745	39.70%
2003-04	167	255	1	5	13	0	10	7	1	459	39.70%
2004-05	78	154	1	2	1	0	2	8	0	246	33.30%
2005-06	103	168	0	8	9	0	2	4	0	294	38.40%
2006-07	112	210	3	4	15	0	2	10	1	357	33.30%
2007-08	105	226	0	7	14	0	3	13	0	368	31.30%
2008-09	86	189	0	2	31	0	6	19	0	333	28.20%
2009-10	119	238	0	2	19	0	5	15	0	398	31.70%
2010-11	104	223	0	13	43	0	8	12	0	403	31.10%
2011-12	189	287	2	62	179	1	17	37	3	777	34.70%
2012-13	221	347	0	29	58	2	18	35	4	714	37.50%
2013-14	219	325	1	47	125	1	27	29	4	778	37.70%
2014-15	190	284	2	10	40	0	9	19	7	561	37.30%
2015-16	174	240	0	11	23	1	4	16	0	469	40.30%
2016-17	154	283	0	9	39	1	7	6	0	499	34.10%
2017-18	178	304	2	21	60	2	16	39	3	625	34.40%
2018-19	188	309	0	14	54	0	11	23	2	601	35.40%
2019-20	172	301	0	8	32	0	4	18	0	535	34.40%
2020-21	240	363	1	32	67	1	16	22	3	745	38.66%
2021-22	192	310	0	13	47	0	7	10	1	580	36.55%
2022-23	194	329	0	18	65	0	7	24	0	637	34.38%

*Unk – Unknown, sometimes the sex is not determined due to decomposition or physical damage.

Table 1. Cougar Mortality in New Mexico, 2012-13, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.*	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	9	15	0	0	0	0	0	0	0	0	0	0	24
B	5, 50, 51	6	17	0	0	0	0	0	0	0	0	0	0	23
C	43,45,46, 48, 49, 53	13	21	0	3	0	0	0	1	0	0	0	0	38
D	41, 42, 47, 59	4	8	0	1	1	0	1	1	0	0	0	0	16
E	9, 10	0	4	0	0	0	0	0	0	0	0	0	0	4
F	6	11	8	0	0	0	0	1	0	0	0	0	0	20
G	13, 17, 18	4	6	0	0	0	0	0	0	0	1	1	0	12
H	19, 20	0	0	0	0	0	0	0	0	0	3	4	0	7
I	36-38	4	10	0	1	0	0	1	1	0	0	0	0	17
J	15, 16, 21, 25	9	26	0	1	0	0	0	2	0	0	2	0	40
K	22-24	8	9	0	3	5	0	0	0	0	1	11	0	37
L	26, 27	0	2	0	0	0	0	0	0	0	2	4	0	8
M	31-33, 39, 40	5	1	0	0	0	0	0	0	0	0	0	0	6
N	4, 52	4	4	0	0	0	0	0	0	0	0	0	0	8
O	12	1	4	0	0	0	0	0	0	0	0	0	0	5
P	56-58	1	5	0	0	0	0	0	0	0	0	0	0	6
Q	28-30, 34	2	7	0	2	0	0	0	0	0	0	0	0	11
R	54, 55	4	19	0	3	0	0	0	0	1	0	0	0	27
S	8, 14	2	4	0	0	0	0	1	0	0	0	1	0	8
Statewide Totals		87	170	0	14	6	0	4	5	1	7	23	0	317

*Unk. - Unknown, sometimes the sex is impossible to determine due to decomposition or physical damage.

Table 2. Cougar Mortality in New Mexico, 2013-14, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	11	8	0	0	0	0	0	0	0	0	0	0	19
B	5, 50, 51	7	10	0	2	0	0	0	0	0	0	0	0	19
C	43,45,46, 48, 49, 53	7	17	1	0	0	0	1	1	0	0	0	0	27
D	41, 42, 47, 59	4	8	0	2	3	0	0	0	0	0	0	0	17
E	9, 10	5	2	0	1	0	0	0	1	0	0	0	0	9
F	6	4	5	0	0	0	0	1	0	0	0	0	0	10
G	13, 17, 18	5	3	0	0	0	0	0	0	0	1	2	0	11
H	19, 20	0	0	0	0	0	0	0	0	0	1	0	0	1
I	36-38	7	10	0	1	2	0	1	0	0	0	0	0	21
J	15, 16, 21, 25	12	15	0	1	0	0	1	0	0	0	0	0	29
K	22-24	3	9	0	1	5	0	1	0	0	2	1	0	22
L	26, 27	1	4	0	0	0	0	0	0	0	1	5	0	11
M	31-33, 39, 40	0	1	0	2	1	0	0	0	0	0	0	0	4
N	4, 52	4	1	0	0	0	0	0	1	0	0	0	0	6
O	12	0	1	0	0	0	0	0	0	0	0	0	0	1
P	56-58	3	7	0	1	1	0	0	1	0	0	0	0	12
Q	28-30, 34	8	6	0	1	0	0	0	0	0	0	0	0	15
R	54, 55	2	8	0	0	0	0	0	0	0	0	0	0	10
S	8, 14	2	2	0	0	0	0	0	0	0	0	4	0	8
Statewide Totals		85	117	1	12	12	0	5	4	0	5	12	0	253

Table 3. Cougar Mortality in New Mexico, 2014-15, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	7	7	0	0	0	0	0	0	0	0	0	0	14
B	5, 50, 51	6	19	0	1	0	0	0	0	0	0	0	0	26
C	43,45,46, 48, 49, 53	17	18	0	1	1	0	0	1	0	0	0	0	38
D	41, 42, 47, 59	3	7	0	0	2	0	0	0	0	0	0	0	12
E	9, 10	4	5	0	1	1	0	0	0	0	0	0	0	11
F	6	4	4	0	0	0	0	1	0	0	0	0	0	9
G	13, 17, 18	6	6	0	0	0	0	0	0	0	1	1	0	14
H	19, 20	0	0	0	0	0	0	0	0	0	1	3	0	4
I	36-38	13	8	0	2	2	0	2	0	0	0	0	0	27
J	15, 16, 21, 25	9	11	0	2	0	0	0	0	0	1	0	0	23
K	22-24	6	13	0	4	1	0	1	1	0	1	4	0	31
L	26, 27	0	1	0	0	0	0	0	0	0	3	1	0	5
M	31-33, 39, 40	1	0	0	0	0	0	0	0	0	0	0	0	1
N	4, 52	0	5	0	0	1	0	0	0	0	0	0	0	6
O	12	1	2	0	0	0	0	0	0	0	0	0	0	3
P	56-58	7	1	0	0	0	0	0	1	0	0	0	0	9
Q	28-30, 34	10	5	0	1	2	1	0	2	0	0	0	0	21
R	54, 55	4	16	0	0	0	0	0	2	0	0	0	0	22
S	8, 14	4	2	0	0	0	0	0	0	0	1	1	0	8
Statewide Totals		102	130	0	12	10	1	4	7	0	8	10	0	284

Table 4. Cougar Mortality in New Mexico, 2015-16, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	10	10	0	0	1	0	1	0	0	0	0	0	22
B	5, 50, 51	2	10	0	0	0	0	0	0	0	0	0	0	12
C	43,45,46, 48, 49, 53	14	14	0	1	0	0	2	0	0	0	0	0	31
D	41, 42, 47, 59	1	4	0	0	2	0	0	0	0	0	0	0	7
E	9, 10	2	6	0	11	1	0	0	0	1	0	0	0	21
F	6	4	6	0	0	0	0	0	0	0	0	0	0	10
G	13, 17, 18	5	12	0	0	1	0	1	0	0	5	4	0	28
H	19, 20	2	1	0	0	1	0	0	1	0	0	5	0	10
I	36-38	8	15	0	0	0	0	0	1	0	0	0	0	24
J	15, 16, 21, 25	12	23	0	0	0	0	0	0	0	0	0	0	35
K	22-24	8	15	0	0	0	0	0	1	0	0	0	0	24
L	26, 27	1	1	0	0	0	0	0	0	0	2	4	0	8
M	31-33, 39, 40	1	3	0	0	1	0	0	0	0	0	0	0	5
N	4, 52	2	4	0	0	0	0	0	0	0	0	0	0	6
O	12	1	3	0	0	0	0	0	0	0	0	0	0	4
P	56-58	3	8	0	1	0	0	0	1	0	0	0	0	13
Q	28-30, 34	9	8	0	0	1	0	0	0	0	0	0	0	18
R	54, 55	1	7	0	1	0	0	2	1	0	0	0	0	12
S	8, 14	2	1	0	1	0	0	0	0	0	0	0	0	4
Statewide Totals		88	151	0	14	9	0	6	5	1	7	13	0	294

Table 5. Cougar Mortality in New Mexico, 2016-17, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	3	9	0	0	0	0	0	0	0	0	0	0	12
B	5, 50, 51	8	14	0	0	0	0	0	0	0	0	0	0	22
C	43,45,46, 48, 49, 53	5	20	0	3	0	0	0	3	0	0	0	0	31
D	41, 42, 47, 59	1	4	0	1	0	0	0	0	0	0	0	0	6
E	9, 10	1	0	0	0	1	0	0	1	0	0	0	0	3
F	6	2	9	0	1	0	0	1	0	0	0	0	0	13
G	13, 17, 18	7	6	0	1	0	0	1	0	0	2	3	0	20
H	19, 20	0	0	0	0	0	0	0	0	0	0	3	0	3
I	36-38	3	11	0	1	1	0	0	1	0	0	0	0	17
J	15, 16, 21, 25	19	29	1	0	1	0	0	0	0	0	0	0	50
K	22-24	15	9	0	1	2	0	0	0	0	0	3	0	30
L	26, 27	2	3	0	0	0	0	0	0	0	3	3	0	11
M	31-33, 39, 40	0	2	0	0	0	0	1	0	0	0	0	0	3
N	4, 52	5	5	0	0	0	0	0	1	1	0	0	0	12
O	12	2	3	0	1	1	0	0	0	0	0	0	0	7
P	56-58	2	11	0	2	0	0	1	0	1	0	0	0	17
Q	28-30, 34	5	8	0	3	0	0	1	0	0	0	0	0	17
R	54, 55	6	10	0	1	0	0	1	2	0	0	0	0	20
S	8, 14	3	1	0	0	0	0	1	1	0	0	0	0	6
Statewide Totals		89	154	1	15	6	0	7	9	2	5	12	0	300

Table 6. Cougar Mortality in New Mexico, 2017-18, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	7	7	0	1	0	0	0	0	0	0	0	0	15
B	5, 50, 51	5	15	0	0	0	0	0	0	0	0	0	0	20
C	43,45,46, 48, 49, 53	8	16	0	0	0	0	1	3	0	0	0	0	28
D	41, 42, 47, 59	6	5	0	0	0	0	0	0	0	0	0	0	11
E	9, 10	2	1	0	0	0	0	0	0	0	0	0	0	3
F	6	4	12	0	1	0	0	0	2	0	0	0	0	19
G	13, 17, 18	3	8	0	0	0	0	0	0	0	3	1	0	15
H	19, 20	2	2	0	0	0	0	0	0	0	2	1	0	7
I	36-38	7	4	0	1	0	0	0	0	0	0	0	0	12
J	15, 16, 21, 25	9	30	0	0	1	0	0	0	0	0	0	0	40
K	22-24	13	12	0	5	5	0	0	1	0	0	4	0	40
L	26, 27	1	2	0	0	0	0	0	0	0	4	4	0	11
M	31-33, 39, 40	3	1	0	0	0	0	0	0	1	0	0	0	5
N	4, 52	3	7	0	0	0	0	1	0	0	0	0	0	11
O	12	1	0	0	0	0	0	0	0	0	0	0	0	1
P	56-58	10	5	0	1	0	0	1	1	0	0	0	0	18
Q	28-30, 34	2	5	0	0	1	0	0	1	0	0	0	0	9
R	54, 55	7	10	0	2	2	0	1	1	0	0	0	0	23
S	8, 14	1	1	1	0	0	0	0	0	0	0	0	0	3
Statewide Totals		94	143	1	10	10	0	5	9	1	9	10	0	292

Table 7. Cougar Mortality in New Mexico, 2018-19, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	9	12	0	0	1	0	0	0	0	0	0	0	22
B	5, 50, 51	10	17	0	0	0	0	0	0	0	0	0	0	27
C	43,45,46, 48, 49, 53	14	33	0	1	1	0	2	0	0	0	0	0	51
D	41, 42, 47, 59	3	5	0	0	0	0	0	1	0	0	0	0	9
E	9, 10	4	3	0	2	0	0	0	0	0	0	0	0	9
F	6	4	16	0	0	0	0	0	1	1	0	0	0	22
G	13, 17, 18	7	22	0	0	1	0	0	0	0	2	9	0	41
H	19, 20	2	1	0	0	0	0	0	0	0	0	2	0	5
I	36-38	7	12	0	0	0	0	0	0	0	0	0	0	19
J	15, 16, 21, 25	23	56	0	0	1	0	0	1	0	0	0	0	81
K	22-24	10	16	0	2	1	0	0	0	0	1	2	0	32
L	26, 27	2	5	0	0	2	0	0	0	0	1	3	0	13
M	31-33, 39, 40	2	2	0	2	0	0	0	0	0	0	0	0	6
N	4, 52	6	4	0	0	0	0	1	0	0	0	0	0	11
O	12	3	3	0	0	0	0	0	0	0	0	0	0	6
P	56-58	5	8	0	2	2	0	0	2	0	0	0	0	19
Q	28-30, 34	4	6	0	0	0	0	0	1	0	2	6	0	19
R	54, 55	6	12	0	4	2	0	2	0	1	0	0	0	27
S	8, 14	1	3	0	1	0	0	0	0	0	0	0	0	5
Statewide Totals		122	236	0	14	11	0	5	6	2	6	22	0	424

Table 8. Cougar Mortality in New Mexico, 2019-20, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	8	9	0	0	0	0	0	0	0	0	0	0	17
B	5, 50, 51	8	14	0	0	0	0	0	0	0	0	0	0	22
C	43,45,46, 48, 49, 53	18	24	0	1	0	0	1	0	0	0	0	0	44
D	41, 42, 47, 59	3	1	0	0	1	0	0	0	0	0	0	0	5
E	9, 10	4	3	0	1	1	0	0	0	0	0	0	0	9
F	6	3	10	0	0	0	0	0	0	0	0	0	0	13
G	13, 17, 18	9	14	0	0	0	0	0	0	0	0	1	0	24
H	19, 20	0	1	0	0	0	0	0	2	0	0	3	0	6
I	36-38	7	9	0	0	1	0	0	0	0	0	0	0	17
J	15, 16, 21, 25	19	33	0	0	0	0	1	0	0	0	0	0	53
K	22-24	9	11	0	0	0	0	0	0	0	1	4	0	25
L	26, 27	0	1	0	0	0	0	0	0	0	3	9	0	13
M	31-33, 39, 40	1	1	0	0	0	0	0	0	0	0	0	0	2
N	4, 52	5	7	0	0	0	0	0	0	0	0	0	0	12
O	12	1	3	0	0	0	0	0	0	0	0	0	0	4
P	56-58	5	8	0	0	1	0	0	0	0	0	0	0	14
Q	28-30, 34	7	4	0	0	0	0	0	0	0	3	2	0	16
R	54, 55	5	15	0	1	1	0	1	0	0	0	0	0	23
S	8, 14	0	2	0	0	0	0	1	1	0	0	0	0	4
Statewide Totals		112	170	0	3	5	0	4	3	0	7	19	0	323

Table 9. Cougar Mortality in New Mexico, 2020-21, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	12	14	0	0	0	0	1	0	0	0	0	0	27
B	5, 6, 50, 51	3	23	0	0	0	0	1	0	0	0	0	0	27
C	43,45,46, 48, 49, 53	17	28	0	0	0	0	2	1	0	0	0	0	48
D	41, 42, 47, 59	5	2	0	0	0	0	0	0	0	0	0	0	7
E	9, 10	4	4	0	0	1	0	2	0	1	0	0	0	12
G	13, 17, 18	10	8	0	2	1	0	1	0	0	4	1	0	27
H	19, 20	2	8	0	0	0	0	0	0	0	0	4	0	14
I	36-38	6	4	0	2	1	0	0	0	0	0	0	0	13
J	15, 16, 21	23	21	0	1	0	0	0	1	0	0	0	0	46
K	22-24	6	7	0	1	2	0	0	0	0	1	5	0	22
L	25-27	6	1	0	0	0	0	0	0	0	1	6	0	14
M	31-33, 39, 40	3	1	0	0	0	0	0	1	0	0	0	0	5
N	4, 52	2	4	0	1	0	0	0	0	0	0	0	0	7
O	12	1	1	0	0	0	0	0	0	0	0	0	0	2
P	56-58	3	11	0	1	1	0	1	1	0	0	0	0	18
Q	28-30, 34	8	5	0	0	1	0	2	0	0	3	1	0	20
R	54, 55	7	7	0	2	0	0	1	0	0	0	0	0	17
S	8, 14	4	0	0	0	0	0	0	0	0	0	0	0	4
Statewide Totals		122	149	0	10	7	0	11	4	1	9	17	0	330

Table 10. Cougar Mortality in New Mexico, 2021-22, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	6	15	0	0	0	0	0	1	0	0	0	0	22
B	5, 6, 50, 51	8	22	0	0	0	0	0	0	0	0	0	0	30
C	43,45,46, 48, 49, 53	16	30	0	2	2	1	1	0	0	0	0	0	52
D	41, 42, 47, 59	4	3	0	1	0	0	0	1	0	0	0	0	9
E	9, 10	6	5	0	0	0	0	0	0	0	0	0	0	11
G	13, 17, 18	5	13	0	0	3	0	0	0	1	0	3	0	25
H	19, 20	0	0	0	0	0	0	0	0	0	0	5	0	5
I	36-38	6	11	0	0	0	0	0	0	0	0	0	0	17
J	15, 16, 21	12	26	0	0	1	0	1	0	0	0	0	0	40
K	22-24	4	12	0	1	4	0	3	0	0	0	1	0	25
L	25-27	1	2	0	0	0	0	0	0	0	5	6	0	14
M	31-33, 39, 40	0	0	0	0	1	0	0	0	0	0	0	0	1
N	4, 52	3	1	0	0	0	0	0	0	0	0	0	0	4
O	12	2	4	0	1	0	0	0	0	0	0	0	0	7
P	56-58	6	8	0	2	1	0	0	0	0	0	0	0	17
Q	28-30, 34	4	6	0	0	1	0	0	0	0	3	0	0	14
R	54, 55	4	7	0	1	1	0	1	1	0	0	0	0	15
S	8, 14	4	6	0	0	1	0	0	2	0	0	0	0	13
Statewide Totals		91	171	0	8	15	1	6	5	1	8	15	0	321

Table 11. Cougar Mortality in New Mexico, 2022-23, New Mexico Department of Game and Fish.

Zone	GMUs	Sport Harvest			Depredation			Roadkill/Other			Bighorn Sheep Removal			Totals
		Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	Female	Male	Unk.	
A	2, 7	9	24	0	0	0	0	1	1	0	0	0	0	35
B	5, 6, 50, 51	5	21	0	1	3	0	1	1	0	0	0	0	32
C	43,45,46, 48, 49, 53	16	23	0	3	4	0	5	0	0	0	0	0	51
D	41, 42, 47, 59	3	5	0	0	0	0	0	1	0	0	0	0	9
E	9, 10	3	9	0	0	0	0	0	1	0	0	0	0	13
G	13, 17, 18	11	9	1	0	0	0	0	0	0	1	6	0	28
H	19, 20	0	1	0	0	1	0	1	0	0	1	6	0	10
I	36-38	4	15	0	0	1	0	0	1	0	0	0	0	21
J	15, 16, 21	23	37	0	1	0	0	5	0	0	0	0	0	66
K	22-24	8	14	0	0	1	0	0	0	0	0	0	0	23
L	25-27	5	5	0	0	0	0	1	0	1	4	5	0	21
M	31-33, 39, 40	2	4	0	1	0	0	0	0	0	0	0	0	7
N	4, 52	3	4	0	2	1	0	0	0	0	0	0	0	10
O	12	2	4	0	0	0	0	0	0	0	0	0	0	6
P	56-58	2	11	0	0	0	0	0	0	0	0	0	0	13
Q	28-30, 34	3	7	0	0	2	0	0	0	0	1	2	0	15
R	54, 55	3	3	0	0	0	0	1	1	0	0	0	0	8
S	8, 14	4	3	0	1	0	0	0	0	0	0	0	0	8
Statewide Totals		106	199	1	9	13	0	15	6	1	7	19	0	376

Table 1. Annual Cougar Mortality Statistics 2001-2020, New Mexico Department of Game and Fish

License Ye	Sport Harvest			Depredation Kill			Bighorn Sheep Protection			Other (road kill, accident, etc.)			Total	% Female
	Fem	Male	Unk.*	Fem	Male	Unk.	Fem	Male	Unk.	Fem	Male	Unk.		
2001-02	76	110	0	3	3	1	5	6	0	3	0	2	209	41.2%
2002-03	82	120	1	14	13	1	14	11	0	6	3	2	267	43.4%
2003-04	84	114	0	17	5	0	5	12	0	3	2	0	242	45.0%
2004-05	72	89	0	16	16	1	3	8	0	4	0	0	209	46.3%
2005-06	34	72	0	5	5	0	6	8	0	1	3	0	134	34.8%
2006-07	82	95	0	11	13	1	8	10	0	3	1	0	224	46.7%
2007-08	59	104	0	13	13	0	3	8	0	1	1	0	202	37.6%
2008-09	50	72	0	5	11	0	4	11	0	4	1	0	158	39.9%
2009-10	55	103	0	7	11	0	8	7	0	1	5	0	197	36.0%
2010-11	57	110	1	1	3	0	8	6	0	5	5	0	196	36.2%
2011-12	75	123	0	14	7	0	4	8	0	5	7	0	243	40.2%
2012-13	87	170	0	14	6	0	7	23	0	4	5	1	317	35.3%
2013-14	85	117	1	12	12	0	5	12	0	5	4	0	253	42.4%
2014-15	102	130	0	12	10	1	8	10	0	4	7	0	284	44.8%
2015-16	88	151	0	14	9	0	6	5	1	7	13	0	294	39.1%
2016-17	89	154	1	15	6	0	5	12	0	7	9	2	300	38.7%
2017-18	94	143	1	10	10	0	9	10	0	5	9	1	292	40.4%
2018-19	122	236	0	14	11	0	6	22	0	5	6	2	424	34.7%
2019-20	112	170	0	3	5	0	7	19	0	4	3	0	323	39.0%
2020-21	122	150	0	10	7	0	9	17	0	11	4	1	331	45.9%
2021-22	91	171	0	8	15	1	8	15	0	6	5	1	321	35.2%
2022-23	106	199	1	9	13	0	7	19	0	15	6	1	376	36.4%

*Unk. - Unknown, sometimes the sex is impossible to determine due to decomposition or physical damage.

GRANT REPORTSTATE: New MexicoGRANT NUMBER: W-93-RSEGMENT NUMBER: 61GRANT TITLE: Big Game Surveys, Inventories and ManagementGRANT PERIOD: July 1, 2020 to June 30, 2021

- A. **Need:** This grant is crucial in meeting Department mission and goals and to insure compliance with state and federal mandates. Through the Commission, the Department has the responsibility, mandated by statute, to protect New Mexico's game while providing and maintaining an adequate supply for recreational use. This includes developing recommendations for hunter opportunity, engaging landowners in big game management, conducting population surveys, and restoring populations when feasible.
- B. **Purpose:** The information gathered under this grant will be used to prepare annual recommendations for big game and habitat management in accordance with the mission, goals and plans of the Commission and Department. This information may also be used by land management and other agencies and to provide the public with background biological information for their use.

Objective 5:**Conduct 15 investigations by June 30, 2021****Activity Tag 1****Fish and wildlife species data acquisition and analysis****Unit of Measure: # of investigations****Target Species : Deer, Elk, Pronghorn, Bear, Cougar, Bighorn, Oryx, Ibex****Approach**

- a. Surveys and population estimation.

Table 1. Approved population estimation/trend survey techniques, NMDGF.

Species	Approved techniques	Season	Comments
Deer	Aerial: composition	Fall, winter	Post-hunt
Deer	Ground: composition	Year-long	Post-hunt
Elk	Aerial: composition	Fall, winter, late summer (high altitudes)	None
Elk	Ground: composition	Year-long	Restricted to established roads
Pronghorn	Aerial: composition	Summer	Pre-hunt
Pronghorn	Ground: composition	Summer	Restricted to established roads

Bear	Extracted tooth; Age Est	Hunt season	Collected at Pelt tagging
Bear	Hair-snare mark-recapture	Spring/Summer	Non-invasive SECR estimates
Cougar	Mark-recapture	All seasons	Experimental w/restrictions
Cougar	Extracted tooth; Age Est	Hunt season	Collected at Pelt tagging
Bighorn	Aerial	Spring, summer, fall	
Bighorn	Ground	Spring, summer w/restrictions, fall	
Oryx	Aerial	Winter, spring	
ibex	Ground	Summer	Restricted to established roads
ibex	Aerial	All seasons	

Bear. Harvest continues to be monitored by the harvest/total sustainable mortality system. During the season, each zone remained open to black bear hunting until the total number of harvested bears (determined by mandatory check-in for successful hunters) or the female portion of the harvest equals the total limit or the female sub-limit, respectively, whichever comes first. Only a maximum of 40% of the harvest can be female in any bear management zone. Total bear mortality from all human causes this grant segment is similar to recent years (Appendix 5). For 2014-2020, reasonably low numbers of non-sport harvest bear mortalities occurred as a consequence of moderate to good availability of natural foods, resulting in decreased bear movement and decreased human contact, and a shift in Department policy regarding depredation bears.

Cougar. Harvest continues to be managed by the hunter harvest/total sustainable mortality system. During the hunting season, each zone remained open to mountain lion hunting from April 1 until March 31 or until the total number of harvested cougars (as determined by mandatory check-in for successful hunters) or the female portion of the harvest equals the total limit or the female sub-limit, respectively, whichever comes first. Only 30% of the harvest may be female in cougar management zones to manage for stable cougar populations. Harvest was similar to last year (Appendix 6), and relatively stable over the past five years with the exception of higher harvest in 2018-19 likely as a result excellent snow conditions.

- a. Cougar density estimation: Includes planning, implementing and assessment of a statewide cougar density estimation study Please see Appendix IV for the detailed Gila Project Proposal. In addition, outreach to private landowners in Cougar Management Zone P in the northeast corner of New Mexico will occur with the intent of implementing the cougar density estimation study on their private property in the future. As part of working with the landowners, up to 5 cougars may be captured and radiocollared by the Department Predator Specialist.

Cougars may be captured using traps, snares, or running hounds. The data collected from the radiocollars will help us understand home range sizes, movement patterns, and preferred habitat characteristics.

RESULTS:

Preliminary analysis was conducted on the data collected from 2018 in Cougar Management Zone B, and the findings were consistent with findings from data collected in 2017. Further refinement of the model to incorporate all data collected, model selection and a final report are still in preparation.

In November 2018, the scope of this project was extended to CMZ Q, a survey area of approximately 17,800 km², for a multi-year effort in that area. This grant period was the final year of capture for this iteration of the project, with an additional seven cougars captured and fitted with GPS collars (3 females; 3 males), or ear-tagged (1 male) in addition to the cougars captured and collared or marked in previous years. The 157 camera sites that were established in the previous years were maintained and cameras were monitored to replenish batteries, memory cards, and scent lure as needed. In April 2021, the scope of this project was extended to CMZs J and K, a survey area of approximately 33,000 km². Five cougars were captured and fitted with GPS collars (2 females; 3 males).

- b. Bear population density estimate in Bear Management Zone 10. Please see Appendix VI for the detailed Project Proposal.

RESULTS:

Hair snare sites were set up in the northern half of the Greater Gila region Bear Management Zone 10, and samples were collected throughout the summer of 2020 at the 203 established sites. Remote cameras were deployed at 41 of the sites to monitor visitation patterns and sample collection efficiency. We collected 1,013 hair samples, which are currently being analyzed to assign individual identities, for future analyses in a spatial capture-recapture framework.

In May 2021, we initiated similar efforts in the remaining areas of the Gila region of Bear Management Zone 10, and established 107 hair snare sites, of which approximately 22 were monitored by remote cameras. Sample collection began in the second week of June, and samples will be analyzed to assign individual identities to provide data for a spatial capture-recapture estimation of population density in this zone.

GRANT STATEMENT

STATE: New Mexico

GRANT NUMBER: W-93-R62

GRANT TITLE: Big Game Surveys, Inventories and Management

GRANT PERIOD: July 1, 2021 to June 30, 2022

- A. **Need:** This grant is crucial in meeting Department mission and goals and to insure compliance with state and federal mandates. Through the Commission, the Department has the responsibility, mandated by statute, to protect New Mexico's game while providing and maintaining an adequate supply for recreational use. This includes developing recommendations for hunter opportunity, engaging landowners in big game management, conducting population surveys, and restoring populations when feasible.
- B. **Purpose:** The information gathered under this grant will be used to prepare annual recommendations for big game and habitat management in accordance with the mission, goals and plans of the Commission and Department. This information may also be used by land management and other agencies and to provide the public with background biological information for their use.

Objective 5:

Research, survey, data collection
and analysis

Conduct 15 investigations by June
30, 2022 Activity Tag 1

Fish and wildlife species data acquisition
and analysis Unit of Measure: # of
investigations

Species: elk (*Cervus canadensis*), deer (*Odocoileus hemionus*, *Odocoileus virginianus*), pronghorn (*Antilocapra americana*), bighorn sheep (*Ovis canadensis*), bear (*Ursus americanus*), cougar (*Puma concolor*), oryx (*Oryx gazella*), ibex (*Capra aegagrus*), barbary sheep (*Ammotragus lervia*)

Approach

- a. Surveys and population estimation.

Table 1. Approved population estimation/trend survey techniques, NMDGF.

Species	Approved techniques	Season	Comments
Deer	Aerial: composition	Fall, winter	Post-hunt
Deer	Ground: composition	Year-long	Post-hunt
Elk	Aerial: composition	Fall, winter, summer (high altitudes)	None
Elk	Ground: composition	Year-long	Restricted to established roads
Pronghorn	Aerial: composition	Summer	Pre-hunt
Pronghorn	Ground: composition	Summer	Restricted to established roads

Bear	Extracted tooth; Age Est	Hunt season	Collected at Pelt tagging
Bear	Hair-snare mark-recapture	Spring/Summer	Non-invasive SECR estimates
Cougar	Mark-recapture	All seasons	Experimental w/restrictions
Cougar	Extracted tooth; Age Est	Hunt season	Collected at Pelt tagging
Bighorn	Aerial	Spring, summer, fall	
Bighorn	Ground	Spring, summer w/restrictions, fall	Vehicle travel restricted to established roads
Oryx	Aerial	Winter, spring	
Oryx	Ground	Summer	Vehicle travel restricted to established roads
Ibex	Ground	Summer	Vehicle travel restricted to established roads
Ibex	Aerial	All seasons	
Barbary	Ground: composition	All seasons	Vehicle travel restricted to established roads
Barbary	Aerial	All seasons	

Bear. Harvest continues to be monitored by the harvest/total sustainable mortality system. During the season, each zone remains open to black bear hunting until the total number of harvested bears (determined by mandatory check-in for successful hunters) or the female portion of the harvest equals the total limit or the female sub-limit, whichever comes first. Only a maximum of 40% of the harvest can be female in any bear management zone. Total bear mortality from all human causes during this grant segment is similar to recent years, with the exception of the higher hunter harvest and depredation during 2020-21 that were likely due COVID-19 related increases in participation in outdoor activities and observations of bears while people were at home (Appendix 10).

Cougar. Harvest continues to be managed by the hunter harvest/total sustainable mortality system. During the hunting season, each zone remained open to mountain lion hunting from April 1 until March 31 or when the total number of harvested cougars (as determined by mandatory check-in for successful hunters) equaled the total sustainable mortality limit for that zone, or the female sub-limit had been met, whichever came first. Harvest was similar to last year (Appendix 11), and relatively stable over the past five years with the exception of higher harvest in 2018-19 that was likely a result of excellent snow conditions that year.

Big Game Survey Data

- a. Cougar density estimation: Includes planning, implementing and assessment of a cougar density estimation study in the Gila. The New Mexico Department of Game and Fish proposes to conduct capture and collaring of up to 40 cougars that will be 're-captured' via photographs from remote cameras. Department staff will capture cougars through live trapping and pursuit with dogs, and deploy remote cameras in a clustered-grid design. Cameras will be deployed for up to six months, and checked every two months.

RESULTS:

Cougar density estimation: Includes planning, implementing and assessment of a statewide cougar density estimation study. By March 2022, we retrieved all camera traps that were deployed in CMZ Q for that iteration of this survey. All photographs were downloaded, and photo identification was started for the 3-year data set.

In early 2021, the scope of this project was extended to portions of CMZs G, J and K, a survey area of approximately 23,000 km². During the grant period 36 cougars were captured and either fitted with GPS collars (14 females, 19 males) or ear-tagged (2 females, 1 males) if they were not large enough for a collar. During the spring of 2022 we established 81 camera sites (162 total cameras) in clusters across the main collaring area in GMUs 15, 16A, and 16D, which were operational through the end of the grant period.

- b. Bear population density estimate in Bear Management Zone 10. Hair will be collected via 'hair snare' devices consisting of a barbed wire corral with bait in the center of the corral. As the bear passes over or under the barbed wire, the barbs will pull hair which will be collected once a week. Sites will be checked for up to 10 weeks during the summer. At the end of field sampling, hairs will be sent to a genetics lab for analysis to build capture profiles for each individual that visited the hair snares.

RESULTS

The goal of this study is to provide black bear demographic and ecological information to inform black bear management in New Mexico using non-invasive collection of hair samples for genetic analysis. We monitored 107 hair snare sites from July to August 2021, and collected 694 hair samples. Hair samples are being analyzed to assign individual identities for future analyses in a spatial capture-recapture framework.

Results from the genetic analysis of the 2020 sampling in the Gila region were received in December of 2021. Of the 1,013 samples collected, 725 were able to be genotyped and assigned to an individual (71.5% overall genotyping success). Those 725 samples that were successfully genotyped were assigned to 152 individuals (74F:78M). Tissue samples collected from hunter harvested bears in 2020 from BMZ 1 (n=78, where the study was conducted in 2019) and BMZ 10 (n=92) were analyzed. Of those tissue samples, four individuals from the BMZ 1 harvest matched to individuals identified from hair snares in 2019, and 9 individuals from the BMZ 10 harvest matched to individuals identified from hair snares in 2020.

In June 2022, we initiated similar efforts in Bear Management Zones 5 and 7, and established 197 hair snare sites, of which 124 were monitored by remote cameras. Sample collection began late June.

SCIENTIFIC REPORTS

OPEN

Improving estimation of puma (*Puma concolor*) population density: clustered camera-trapping, telemetry data, and generalized spatial mark-resight models

Sean M. Murphy^{1,5}, David T. Wilckens¹, Ben C. Augustine², Mark A. Peyton³ & Glenn C. Harper⁴

Obtaining reliable population density estimates for pumas (*Puma concolor*) and other cryptic, wide-ranging large carnivores is challenging. Recent advancements in spatially explicit capture-recapture models have facilitated development of novel survey approaches, such as clustered sampling designs, which can provide reliable density estimation for expansive areas with reduced effort. We applied clustered sampling to camera-traps to detect marked (collared) and unmarked pumas, and used generalized spatial mark-resight (SMR) models to estimate puma population density across 15,314 km² in the southwestern USA. Generalized SMR models outperformed conventional SMR models. Integrating telemetry data from collars on marked pumas with detection data from camera-traps substantially improved density estimates by informing cryptic activity (home range) center transiency and improving estimation of the SMR home range parameter. Modeling sex of unmarked pumas as a partially identifying categorical covariate further improved estimates. Our density estimates (0.84–1.65 puma/100 km²) were generally more precise (CV = 0.24–0.31) than spatially explicit estimates produced from other puma sampling methods, including biopsy darting, scat detection dogs, and regular camera-trapping. This study provides an illustrative example of the effectiveness and flexibility of our combined sampling and analytical approach for reliably estimating density of pumas and other wildlife across geographically expansive areas.

Pumas (cougars or mountain lions; *Puma concolor*) are the most widely distributed large carnivore in the western hemisphere¹. Similar to other large carnivores, pumas have considerable resource requirements and provide important ecological benefits over expansive areas^{1–3}. Their presence sometimes results in conflicts with humans, however, and predation by pumas can influence vital rates of terrestrial ungulate populations^{4,5}. Although some puma populations have recently expanded range and present novel management challenges^{6,7}, other populations are small, isolated, or otherwise imperiled and might necessitate conservation intervention^{8,9}. Conservation and management of pumas are often contentious issues that are influenced by multiple political, social, and economic interest groups, and resolving disputes has increasingly hinged on managing authorities possessing reliable and contemporary estimates of puma population density and abundance^{10–12}. However, pumas are wide-ranging, cryptic, and notoriously difficult to detect; consequently, few jurisdictions within the species' occupied range have reliable estimates of those demographic parameters. Most puma populations are instead managed based on population indices, such as hunter effort, mortality trends, or expert opinion, extrapolation of densities from

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small study areas and other jurisdictions, or a combination thereof^{10,13–15}, all of which may be unreliable and could result in flawed conservation and management^{16,17}.

Spatially explicit capture-recapture models integrate a detection process model with an ecological process model that describes the spatial distribution of animal activity centers, or home range centers, across a study area, and can produce unbiased estimates of population density^{18,19}. Recent studies have applied spatially explicit models to multiple types of detection data to estimate puma population density; for example, tissue samples collected by biopsy darting pumas that were treed using hounds^{20–22}, puma scat collected via area searches by scat detection dogs²³, and photographs of pumas collected from regular or contiguous arrays of remote camera-traps^{24–27}. However, biopsy darting and scat detection dog sampling necessitate often expensive laboratory genetic analyses to produce individual identities from detection data²⁸. Additionally, treeing pumas with hounds for biopsy darting is likely most efficient during winter and in locales with sufficient snow cover that improves tracking^{20,22}, and because of high DNA degradation rates in scat that can reduce sample sizes, optimal effectiveness of scat detection dog sampling is generally limited to locales with cool and dry climates^{29,30}. In contrast, remote camera-trapping can be a cost-efficient and logistically feasible approach for effectively detecting pumas and other large carnivores across habitats, ecosystems, and climatic conditions^{31,32}.

A critical assumption of most capture-recapture models is that all detected animals are individually identifiable¹⁹. This can be difficult to achieve if camera-traps are used to detect pumas or other wildlife that lack visible, individually unique natural markings, such as the rosettes on jaguars (*Panthera onca*)^{24,33}. To overcome this issue, mark-resight models and their spatially explicit analogues, spatial mark-resight (SMR) models, were developed to estimate the density of populations in which only a portion of animals are individually identifiable^{26,34–37}. Attempting to assign individual identities to pumas *ad hoc* based on perceived natural marks, such as scars, ear nicks, body shapes, or carriages^{25,27}, can result in biased and unreliable density estimates, however, because multiple individuals may have similar physical features, causing observers to agree on incorrect identity assignments or disagree on correct identity assignments²⁴. Furthermore, given the ambiguity, it is not always possible to identify a sufficient number of individually unique pumas based solely on natural marks to estimate population density^{24,38}.

For pumas and other species that lack unambiguous natural markings, physically capturing and applying artificial marks, such as radiocollars or ear tags, to a portion of animals in a population is likely necessary for accurate density estimation when using camera-traps for detection^{26,32,34–37}. Such mark-resight methods can be viable, cost-effective alternatives to capture-recapture methods, because only a single marking event of a portion of a population is required and camera-trapping to collect resighting data is efficient. Using Global Positioning Systems (GPS) collars as marks can permit unambiguous individual identification for nearly all camera-trap detections of marked individuals, assist with determining whether an animal is marked or unmarked, and also provide telemetry location data that can be integrated in spatially explicit models to improve estimation of individual activity centers, the detection function spatial scale (home range) parameter (σ), and ultimately, population density^{26,36,37,39}.

One challenge associated with using researcher-applied artificial marks is that in SMR models, the spatial distributions of marked and unmarked individuals across the landscape are informed by the capture and marking process; therefore, correctly specifying those distributions in the process model is critical for accurately estimating population density^{35,37}. Conventional spatial mark-resight (conSMR) models assume that marked and unmarked individuals have the same spatial distribution, typically uniformity or that the two distributions can be specified correctly with parametric distributions^{26,34,36}. Although the assumption of spatial uniformity may be valid for jaguars and other species that are identifiable by their individually unique natural markings, it is likely inappropriate if animals are physically captured and artificially marked, because of the juxtaposition between marking and resighting locations^{35,37}. If the marking and resighting detector arrays overlap, animals that are captured for marking are located on average closer to the resighting array than unmarked individuals and, therefore, likely will have higher detection rates than unmarked individuals. Consequently, if researcher-applied artificial marks are used for individual identification, conSMR models, which do not account for the capture and marking process, may underestimate the numbers of both unmarked and undetected individuals and thus, population density^{35,37}.

A generalized spatial mark-resight model (genSMR) was recently developed that resolves this problem by including sub-models for both the marking and resighting processes³⁷. This allows the differing spatial distributions of marked and unmarked individuals to be determined by the marking process, and simulations have demonstrated that the genSMR model produces unbiased estimates of population density when marking is not random across a study area³⁷. The parameters of the genSMR model developed by Whittington *et al.*³⁷ are estimated via Bayesian methods using Markov chain Monte Carlo (MCMC) algorithms. In contrast, Efford and Hunter³⁵ developed a pseudolikelihood-based model and estimation procedure that is analogous to genSMR, which they refer to as spatial capture-mark-resight. A primary limitation of this pseudolikelihood estimation procedure is that it ignores information contained in the spatial distribution of detections of unmarked individuals. Efford and Hunter³⁵ argued that the information lost by discarding these data is minimal; however, the magnitude of information in the spatial locations of detections of unmarked animals can be increased through the use of partial identity covariates^{34,39}.

A key source of uncertainty in SMR models stems from the need to probabilistically resolve the individual identities for detections of unmarked animals, as well as detections of marked but unidentifiable animals and animals with unknown mark status, if available^{34,39}. Reducing uncertainty in the individual identity assignments can reduce the uncertainty in population density estimates, which can be accomplished with partial identity covariates^{39,40}. The use of categorical partial identity covariates in the form of microsatellite loci genotypes has been demonstrated^{39,40}, but the utility of partially identifying information in camera-trap studies, where animal sex and other potential covariates are fewer in number and less reliably determined from photographs, has not been explored. Such covariates are typically either not recorded or are discarded from camera-trap detection data, so evaluating their effectiveness for improving the precision of parameter estimates from spatially explicit models could result in improved density estimation in camera-trapping studies.

Because of the logistical and financial constraints associated with currently available puma sampling methods and survey designs, researchers are often forced to estimate puma population density for areas that are smaller than the geographical extent of populations or the scale at which conservation and management occur^{10,15}. Population density estimates are then extrapolated to larger areas, typically with considerable uncertainty and unverified assumptions^{10,13–15}. By incorporating spatial information about when and where individual animals are detected, spatially explicit models are robust to irregular sampling designs, such as clusters of detectors with gaps between clusters, which can permit efficient surveying of large geographical areas^{18,41–45}. Recent studies evaluated clustered sampling designs of noninvasive genetic hair-traps in the spatially explicit framework for estimating American black bear (*Ursus americanus*) population density, which demonstrated that density estimates were improved, largely because more individuals were exposed to detectors and spatial recaptures were obtained over expansive areas^{41,43–45}. Remote camera-trapping is arguably the most widely used and practical noninvasive method for surveying wildlife populations globally^{31,32}; therefore, considerable potential exists for using clustered sampling designs in camera-trap studies to estimate population density over spatially extensive areas, which could have widespread practical utility across terrestrial wildlife species and geographical locales.

Herein, we apply clustered sampling to camera-traps in the spatially explicit framework to demonstrate the potential for this approach to survey pumas over expansive areas with reduced effort. We then apply recently developed genSMR models to the obtained camera-trap detection data to estimate puma population density and abundance. In addition, we evaluate the influence on parameter estimates of integrating telemetry data from GPS collars on marked pumas, incorporating sex as a categorical identity covariate for unmarked pumas, and accommodating activity center transiency. Our results demonstrate the flexibility of genSMR models and provide an illustrative example of the effectiveness of this combined sampling and analytical approach to produce precise and reliable population density estimates over large geographical areas.

Materials and Methods

Study area. Our study occurred during 2017 in the Southern Rocky Mountains ecoregion in north-central New Mexico, USA (Fig. 1). The area was rugged, with steep mountains, deep canyons, and expansive mesas, and elevations ranging from 1,540 to 3,524 m a.s.l. The climate was semi-arid, with average annual rainfall ranging from 22.58 to 57.63 cm and average annual snowfall ranging from 18.03 to 305.31 cm, depending on elevation; average annual high temperatures ranged from 13.72 to 22.05 °C and average annual low temperatures ranged from −4.17 to 3.00 °C, depending on elevation⁴⁶. The majority of lands (63%) were under federal management by the U.S. Forest Service, National Park Service, or Bureau of Land Management; tribal lands (29%) and a combination of state government, local government, and privately owned lands (8%) accounted for the remainder of land area.

Live-capture and marking. To apply artificial marks to a portion of individuals, we live-captured pumas throughout our study area using Aldrich spring-activated foothold cable restraints, foothold traps, and to a lesser extent, treeing with a team of trained hounds^{47,48}. We chemically immobilized captured pumas using one of the following drug combinations⁴⁹: (1) tiletamine and zolazepam (Telazol®; Zoetis Services LLC, Parsippany, USA) at a dosage of 5.0 mg/kg combined with 1.0 mg/kg of xylazine (AnaSed®, LLOYD Inc., Shenandoah, USA), the latter of which was antagonized using 0.12 mg/kg of yohimbine (ZooPharm, Windsor, USA); or (2) 2.0 mg/kg of ketamine combined with 0.07 mg/kg of medetomidine, the latter of which was antagonized using 0.30 mg/kg of atipamezole (ZooPharm). During immobilization, we monitored the respiratory rate, heart rate, and body temperature of each puma at five-minute intervals to ensure maintenance of bodily function. We outfitted captured pumas that were field-aged based on gum recession measurements⁵⁰ as being ≥ two years-old (i.e., subadults and adults)⁴⁸ with a uniquely numbered ear tag and an Iridium GPS collar (Advanced Telemetry Systems [Isanti, USA] or Vectronic Aerospace [Berlin, Germany]). We programmed collars to acquire location fixes every one to three hours (i.e., 8–24 fixes per calendar day) and we remotely downloaded location data every three to seven days. All pumas were released at the location where captured.

Clustered camera-trap resighting. We created a survey design comprised of nine total clusters of 3 × 3 sampling cells in each cluster (Fig. 1). Cell spacing within a cluster was 3.5 × 3.5 km, or 12.25-km² coverage per cell and 110.25-km² coverage per cluster; this spacing corresponded to the recommended ≥ two detectors within the smallest female home range size^{43,45} reported for pumas in New Mexico (30.10 km²)⁵¹. Clusters were staggered with 28-km longitudinal spacing and 36–45-km latitudinal spacing between the centers of clusters, or 4.5–7 × the diameter of said smallest female home range size, assuming a bivariate normal distribution (i.e., circular home range)¹⁹. Prior to deploying camera-traps, we used simulation to evaluate the performance of this clustered survey design for estimating population density, given pessimistic parameter estimates and various numbers of sampling occasions^{19,41,45}. For a simulated hypothetical population with low density (1.0 puma/100 km²), low baseline detection rate ($\lambda_0 = 0.05$), and large spatial scale of the detection function ($\sigma = 5.0$ km)^{20,25}, results from a fitted null spatial capture-recapture model indicated that surveying this design for 17 consecutive occasions would likely estimate population density with high precision and accuracy (CV = 0.18; RMSE = 0.19), negligible bias (+0.05, 95% CI = 0.00–0.09), and nominal coverage (0.97, 95% CI = 0.94–1.00; see Supplementary Table S1). These simulations assumed that all individuals had unambiguous identities, which deviates from the mark-resight framework, but the effectiveness of survey designs for spatial capture-recapture and SMR models are similar¹⁹.

We attempted to establish a single camera-trap within each sampling cell along canyon rims, ridges, saddles, drainages, trails, and other terrain features that could be likely travel routes for pumas; we did not place camera-traps on roads. Because of restricted property access, we were unable to establish camera-traps in some cells; thus, our final array was comprised of 68 total camera-traps (range: 3–9 camera-traps/cluster). Each camera-trap consisted of two cameras with passive infrared motion-activated sensors (Reconyx® HyperFire PC800; Holmen, USA), which we placed four to six m apart, facing each other, and mounted to trees

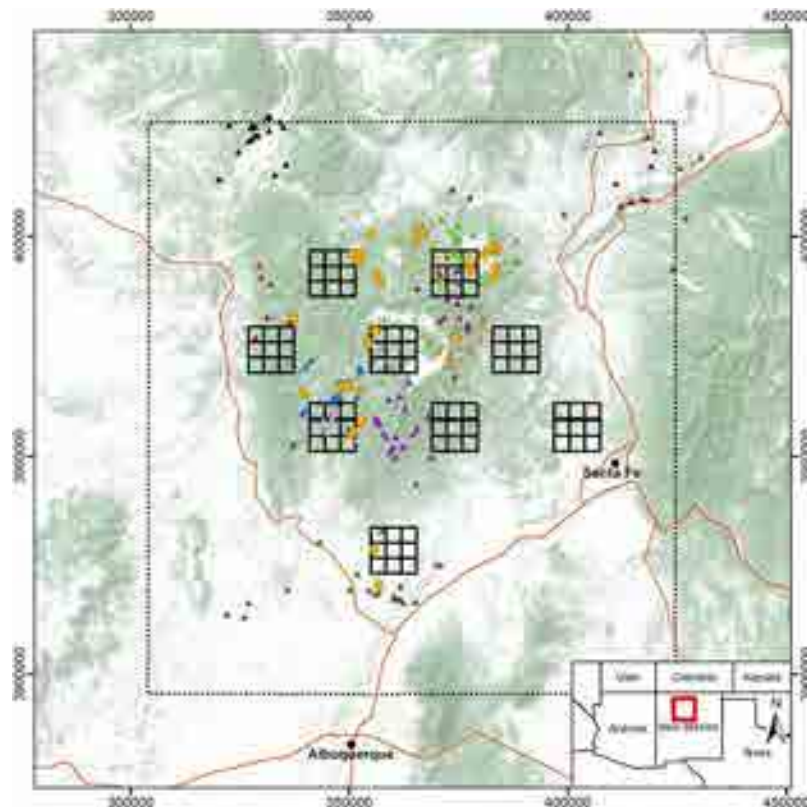


Figure 1. Study area in New Mexico, USA, where pumas were live-captured and marked with GPS collars, and camera-traps were deployed in a systematic cluster design for resighting of marked and unmarked pumas to estimate population density with generalized spatial mark-resight models. The spatial locations of live-traps (orange circles), camera-trap sampling cells (solid black outline squares), thinned telemetry locations collected during the resighting period (triangles with discrete colors corresponding to individual), and parameter estimation area (state space; dashed black line) are presented. Image created by S.M.M. with ESRI® ArcMap™ 10.4.1 software (<http://desktop.arcgis.com/en/>) under license (<https://technology.ky.gov/gis/Pages/PostSecondarySiteLicense.aspx>), with forest-shrub land cover data (green shaded areas) from the U.S. Government (<https://www.mrlc.gov/data/nlcd-2011-land-cover-conus>)⁷⁹; topography data (background) from ESRI, U.S. Geological Survey, and National Oceanic and Atmospheric Administration (https://server.arcgisonline.com/ArcGIS/rest/services/World_Terrain_Base/MapServer); and major highways data (red lines) from New Mexico Department of Transportation (http://services.arcgis.com/hOpd7wfnKm16p9D9/arcgis/rest/services/NMDOT_Functional_Class/FeatureServer).

or shrubs ~one m above the ground⁵². We set cameras to medium sensitivity with bursts of five photos per detection and 30-s delays between bursts. We placed ~1.0 mL of bobcat (*Lynx rufus*) gland-based or rub-eliciting scent lure on the ground in the center of each camera-trap. These lures provided no caloric reward, and felids do not have the extraordinary olfactory capabilities that canids and ursids do⁵³; neither pumas, jaguars, nor leopards (*Panthera pardus*) have exhibited a behavioral response (i.e., trap-happy or trap-shy) to detection when bobcat lure was applied^{54–56}. If a camera-trap is visited, however, bobcat lure can entice pumas to linger for a slightly extended period of time, thereby affording researchers the opportunity to identify the sex and marked status of an individual from photographs^{24,57,58}.

We operated camera-traps for 17 consecutive seven-day occasions from July to November 2017, and we visited each camera-trap every 21–28 days to retrieve photographs, check battery levels, and reapply lure. We considered individual photographs of pumas that were acquired \geq one hr apart as unique detections^{24,25}. We excluded dependent kittens, which are not reproductively mature, from the detection history to prevent inflation of density estimates^{13,20}; therefore, our results represent subadult and adult pumas only. We first classified photographs by the mark status of each puma based on the presence or absence of a GPS-collar: (1) marked and identifiable, (2) marked but unidentifiable, (3) unmarked, or (4) unknown. We then identified marked pumas to the individual level based on a combination of ear tag, collar type, sex, and telemetry locations from GPS collars^{26,37}. We did not attempt to assign individual identities to any non-collared pumas based on perceived natural marks, because of the inherent uncertainty that could bias density estimates²⁴. We reclassified all pumas that we initially assigned unknown mark status as unmarked if photograph date and time did not align with telemetry location data for GPS-collared individuals. Similarly, we resolved all cases of marked but unidentifiable individuals by comparing telemetry locations with photograph date and time. We identified the sex of unmarked pumas when possible; for photographs from which puma sex was inconclusive, we assigned individuals unknown sex.

Spatial mark-resight analysis. We estimated puma population density using the live-capture history (marking), the camera-trap detection history (resighting), and the telemetry locations from GPS-collared pumas. Because only two pumas were captured and marked via treeing with hounds, we did not explicitly model a separate hound capture process; however, we retained hound-captured pumas in our data as marked individuals that were exposed to both the marking and resighting processes, and they also provided telemetry data that informed their activity center locations and contributed to estimation of the detection function spatial scale parameter. To jointly use all of those sources of information and account for dependency among data types, we used a Bayesian genSMR model³⁷ that specified a spatial capture-recapture density and activity center process model that was observed in three ways: (1) through the marking process in which all individual identities were known; (2) through the resighting process in which only the individual identities of marked pumas were known and unmarked identities could be partially known if sex was observed; and (3) through the telemetry process for the marked individuals with known identity. To reduce the uncertainty in probabilistically resolving the latent identities of unmarked individuals³⁴, we used sex as a categorical identity covariate to exclude particular combinations of detections^{39,40}; for example, an unmarked male detection could not be from the same individual as an unmarked female detection. This assumed that the sex of individual i , $sex_i \sim \text{Bernoulli}(p^{sex})$, where p^{sex} is the probability that an individual is female, which must be estimated. Using this assumption, sex can be probabilistically resolved for detections of individuals whose sex was not identified from photographs²², and the individual identities of unmarked pumas can be probabilistically resolved using the algorithms developed by Chandler and Royle³⁴, excluding identity matches between detections of different sexes. We also fit conSMR models, which ignore the marking process^{26,34,36}, to permit comparisons with genSMR models. We accommodated all of the aforementioned features using MCMC algorithms that are maintained in the R statistical software package SPIM^{59,60}.

We considered the following two process models for activity centers (s). First, we used a typical spatial capture-recapture point process model in which individual i had a single s_i for the entirety of the study (marking and resighting combined), and all s_i were uniformly distributed across space ($s_i \sim \text{Uniform}(\mathbf{S})$ for $i = 1, \dots, N$, where \mathbf{S} denotes the two-dimensional state space [parameter estimation area])¹⁹. To define the state space for genSMR models, we buffered the minimum and maximum longitude and latitude extents of the combined live-trap and camera-trap locations by 25 km, or $\sim 3 \times$ the maximum estimated spatial scale of the detection function parameter that was pooled between marking and resighting processes (σ^d)¹⁹, resulting in $S^G = 15,314 \text{ km}^2$. In contrast, because conSMR models do not incorporate the marking process, the 25-km buffer was applied only to the camera-trap locations to define a state space for conSMR models of $S^C = 14,707 \text{ km}^2$. Second, GPS-collar telemetry data indicated that the activity centers for four marked pumas may have spatially shifted large distances between the marking and resighting processes, and one marked puma died prior to the onset of resighting (see Results). Therefore, we also specified a spatial point process model for activity center transiency, which estimated the locations of individuals' activity centers separately for each the marking and resighting processes^{61,62}. This process model accommodated activity center relocations between marking and resighting, including if individuals relocated to fill the territorial vacancy that resulted from the death of one marked puma^{63,64}. An individual's activity centers were connected by a spatially constrained relocation event (described in detail below), which entailed that resighting activity centers must be spatially linked to the location where each marked puma was live-captured, thereby constituting an activity center model that was intermediate between conSMR and genSMR models^{61,62}.

We defined data for the marking and resighting processes using the M and R superscripts, respectively. The previously mentioned two-step process model for genSMR models required us to specify two sets of activity centers, s_i^M and s_i^R , for $i = 1, \dots, N$. We assumed spatial uniformity of activity centers for the marking process, $s_i^M \sim \text{Uniform}(S^G)$. For the resighting process, we assumed $s_i^R \sim \text{Bivariate Normal}(s_i^M, \Sigma)[(x_{\min}, y_{\min}), (x_{\max}, y_{\max})]$, where $\Sigma = \sigma^t \mathbf{I}$, and σ^t is the spatial scale parameter for activity center transiency; the bivariate normal redistribution kernel was truncated by the extent of S^G to prevent σ^t underestimation⁶². This model for redistribution (i.e., spatial shift) has been used in both open and closed population spatial capture-recapture models^{62,65}, the latter of which allowed fully transient activity centers and was recently applied to conSMR models⁶¹. In contrast to those implementations, we only allowed one spatial redistribution of activity centers, because that was all that was necessary to accommodate the spatial dynamics that we observed, and fewer activity center shifts should maintain greater precision and better MCMC mixing, which is typically poor for spatially explicit models that accommodate transient activity centers^{61,62}.

Conditional on the aforementioned process models, the population was observed via three processes. For the marking and resighting processes, observations were made at the $J^M \times 2$ live-trap locations X^M and the $J^R \times 2$ camera-trap locations X^R , where J^M and J^R are the number of live-trap and camera-trap locations, respectively. We assumed a hazard half-normal detection function with binomial detections for the marking process, producing individual by live-trap detections summed across occasions, $Y_{ij}^M \sim \text{Binomial}(p_{ij}^M, K^M)$, where K^M is the number of marking occasions. For the resighting process, we assumed a Poisson detection function, producing individual by camera-trap counts that were summed across occasions; specifically, $Y_{ij}^R \sim \text{Poisson}(K^R \times p_{ij}^R)$, where K^R is the number of resighting occasions. These observation models had σ^d and baseline detection rate parameters that varied by process (λ_0^M and λ_0^R). Telemetry locations from GPS collars could be recorded anywhere within the extent of \mathbf{S} . We used only the telemetry locations that were collected during the resighting period, which we thinned to one randomly selected location per survey occasion for each marked puma (i.e., one location/week). We applied this thinning to decrease temporal dependence among telemetry locations for each puma, because temporal dependence could cause underestimation of the variance of σ^d and σ^t , activity centers, and population density^{26,36,37}. Telemetry locations informed the estimation of σ^d and s_i , or σ^d , s_i^M , and σ^t for models that included activity center transiency.

We accounted for unequal live-trap and camera-trap operation (effort) across time, and also a puma that died prior to initiation of resighting, using individual by trap exposure matrices. These matrices are similar to a trap

operation file¹⁹, except that the exposure of each puma to each trap and trap type could differ; this allowed for known entries and exits into and out of the population, but did not account for unknown violations of the population closure assumption^{37,39}. For the marking process, the $A \times J^M$ exposure matrix E^M contained the number of occasions that individual i was exposed to detection at a live-trap j , where A indicates the level of data augmentation⁶⁶. For the resighting process, the $A \times J^R$ exposure matrix E^R contained the number of occasions that individual i was exposed to detection at camera-trap j . These exposure matrices were substituted into the binomial and Poisson observation models for K^M and K^R , respectively. To correctly allocate latent identity samples for two pumas that were live-captured and marked during the resighting period and one marked puma that died prior to resighting, we used an $n^M \times K^M$ matrix m , where n^M is the number of marked pumas, to denote the marked status of each GPS-collared puma during each resighting occasion (0 = unmarked, 1 = marked, and 2 = dead)³⁷. Thus, if a puma was unmarked on occasion k , it could be allocated latent identity unmarked detections. If a puma was marked on occasion k , it could be allocated latent identity marked detections. If a puma was dead on occasion k , it could not be allocated any latent identity detections.

Several process and observation models were described, so we detail below exactly which combinations we fit. Our model specifications were designed to test the relative importance of four items: (1) telemetry data from marked pumas, (2) sex as a categorical identity covariate for unmarked pumas, (3) activity center transiency for marked pumas between the marking and resighting processes, and (4) conSMR versus genSMR models. The influence of telemetry data was of particular interest, because the activity centers for four marked pumas likely relocated between marking and resighting, and we also had limited prior home range size data to inform camera-trap and cluster spacing. Therefore, we fit two genSMR models that included sex identity constraints for the resighting process, but differed as to whether telemetry data were incorporated or not (models 1 and 2). We extended models 1 and 2 to accommodate activity center transiency between the marking and resighting processes for marked pumas (models 3 and 4). Because models 3 and 4 best described the observed spatial dynamics of pumas during our study, we tested the importance of sex identity constraints by fitting these models without sex identity constraints (models 5 and 6). To test the importance of using genSMR over conSMR models, we fit models 1 and 2 excluding the marking process (models 7 and 8). Finally, to investigate if sex-specific detection function parameters were necessary to estimate puma density and the sex ratio, we fit a version of model 1 that included sex-specific detection function parameters (model 9).

We ran each genSMR model for 5×10^5 iterations, thinned by 75 iterations, and we discarded the first 5×10^3 iterations as burn-in. The large number of iterations was more than required for the models that excluded activity center transiency, but for models that included activity center transiency, σ^d mixed poorly and required many iterations to accurately characterize this posterior distribution. In contrast, we ran each conSMR model for 4×10^4 iterations and discarded the first 5×10^3 iterations as burn-in. We used data augmentation to augment the sample of marked pumas with up to $A = 250, 325\text{--}375$, and 600 hypothetical individuals that had all-zero detection histories for conSMR models, genSMR models that included telemetry data, and genSMR models that excluded telemetry data, respectively^{26,36,37,66}. We used the posterior modes for parameter point estimates, and we used the 95% highest posterior density intervals (HPDI) for interval estimates. We assessed precision of density estimates using the widths of 95% HPDIs and the posterior coefficients of variation (CV), or the posterior standard deviation divided by the posterior mode.

Ethics statement. Experimental protocols were approved by New Mexico Department of Game & Fish (per NMAC 19.35.6), Pueblo of Santa Ana Tribal Council, and a U.S. National Park Service Institutional Animal Care and Use Committee (IMR-VALL-Cain-LargeMammals-2015.A2). Data collection methods were carried out in accordance with standardized guidelines for humane wild mammal handling and welfare⁶⁷, scientific research permits (VALL-2017-SCI-0002 and VALL-2017-SCI-0049), and with explicit permission from relevant authorities.

Results

Marking and resighting. We deployed 30 live-traps, each for an average of 22 days (range: 2–64 days). We live-captured and marked 15 pumas (12 males:3 females); one marked female died of starvation prior to initiation of camera-trapping. We used a total of 190 telemetry locations ($n_{\text{males}} = 156$; $n_{\text{females}} = 34$) collected from GPS collars during the resighting period (mean = 14 locations/puma; range = 3–17). We acquired 68 unique detections of subadult and adult pumas at 31 camera-traps (46% of traps); the average number of detections per occasion was four (range: 1–7). Twenty (29%) camera-trap detections were of eight marked pumas (6 males:2 females); 17 spatial recaptures of marked pumas were obtained during the marking and resighting processes combined ($n_{\text{males}} = 15$; $n_{\text{females}} = 2$). Among the 48 detections of unmarked pumas, sex was definitively identified for 25 detections (52%; 10 male:15 female).

Population density and abundance. Puma population density point estimates ranged from 0.66 to 1.65 pumas/100 km², with the lowest estimates produced by conSMR models and the highest estimates produced by genSMR models that excluded telemetry data (Table 1). Integrating telemetry data approximately doubled σ^d estimates and decreased estimates of puma density in the genSMR models, whereas estimated puma density from conSMR models were similar regardless of whether telemetry data were used or not (0.66 versus 0.70 puma/100 km², respectively). The estimated number of unmarked pumas that were detected during resighting (n^{UM}) was between 18 and 26 individuals, with the smallest estimates from conSMR models (18–20 pumas) and the genSMR models that excluded telemetry data (20–22 pumas). The genSMR model that included telemetry data, activity center transiency, and sex as a partially identifying categorical covariate (model 3), which best explained the observed spatial dynamics of pumas during our study, estimated population density to be 0.84 puma/100 km² (95% HPDI: 0.50–1.28) with a CV of 0.24. This corresponded to an estimated population size

Model	Type	Specifications	λ_0^M	λ_0^R	σ^d	σ^t	n^{UM}	D (95% HPDI)	Width	CV	N (95% HPDI)
1	Gen	Sex + Tel	0.004	0.016	7.54	—	25	0.94 (0.59–1.48)	0.89	0.25	144 (91–227)
2	Gen	Sex	0.016	0.061	2.85	—	22	1.54 (0.96–2.75)	1.79	0.31	236 (147–421)
3	Gen	Sex + Tel + Trans	0.007	0.019	6.51	17.40	26	0.84 (0.50–1.28)	0.78	0.24	129 (74–193)
4	Gen	Sex + Trans	0.018	0.064	2.89	0.35	22	1.57 (0.93–2.65)	1.72	0.29	240 (142–406)
5	Gen	Tel + Trans	0.008	0.020	6.54	17.02	26	0.84 (0.54–1.34)	0.81	0.26	129 (82–206)
6	Gen	Trans	0.021	0.068	2.63	2.71	20	1.65 (0.95–2.72)	1.77	0.29	252 (145–417)
7	Con	Sex + Tel	—	0.025	6.64	—	20	0.66 (0.37–1.03)	0.66	0.26	97 (55–151)
8	Con	Sex	—	0.082	3.62	—	18	0.70 (0.33–1.27)	0.94	0.37	102 (49–187)
9	Gen-SS	Males + Tel	0.005	0.015	8.10	—	24	0.95 (0.59–1.43)	0.84	0.24	145 (90–219)
		Females + Tel	0.005	0.042	4.22	—					

Table 1. Parameter estimates from generalized (Gen) and conventional (Con) spatial mark-resight models. Models with and without a categorical identity constraint for puma sex (Sex), telemetry data from GPS collars (Tel), activity center transiency between marking and resighting processes (Trans), and sex-specific detection functions (SS) were considered. Baseline detection rates for the marking (λ_0^M) and resighting (λ_0^R) processes, spatial scale of the detection function (σ^d ; km), spatial scale of activity center transiency (σ^t ; km), the number of unmarked pumas detected during resighting (n^{UM}), population density ($D = \text{puma}/100 \text{ km}^2$), and population size (N) were estimated. The 95% highest posterior density intervals (HPDI) are presented for D and N , as well as 95% HPDI width and coefficient of variation ($CV = SD/D$) for D . See Supplementary Table S2 for further details, including 95% HPDIs for all parameter estimates.

of 129 pumas (95% HPDI: 74–193) across the 15,314 km² estimation area, of which an estimated 26 unmarked pumas (95% HPDI: 18–32) were detected by camera-traps. Given those point estimates, 11.63% of pumas were marked and 22.81% of unmarked pumas were detected by camera-traps, indicating that we acquired spatial detection information for a combined 34.44% of pumas within S^G .

Density estimate precision. Modeling sex as a partially identifying categorical covariate for the detections of unmarked pumas improved precision of estimated density by 8%, reducing CV from 0.26 to 0.24 (model 5 versus model 3). Allowing activity center transiency for marked pumas between the marking and resighting processes improved precision of estimated puma density by 4% (based on CV), despite introducing more uncertainty into the process model via more complex model structure. Integrating telemetry data from GPS collars on marked pumas improved precision of estimated density by 17%, reducing CV from 0.29 to 0.24 (model 4 versus model 3); although, determining how much of the CV reduction resulted from a lower point estimate instead of a decrease in variance is difficult to disentangle.

Spatial scale of detection and activity center transiency. Estimates of σ^d from models that incorporated telemetry data ranged from 6.51 to 7.54 km, whereas estimates from models that excluded telemetry data ranged from 2.63 to 3.62 km. The smallest estimated σ^d was from the genSMR model that only included activity center transiency (model 6), whereas the largest σ^d was from the genSMR model that excluded activity center transiency but incorporated sex identity constraints and telemetry data (model 1). Estimated σ^t was 17.40 and 17.02 km from genSMR models that included both activity center transiency and telemetry data (models 3 and 5, respectively), but was just 0.35 and 2.71 km from genSMR models that excluded telemetry data (models 4 and 6, respectively). In models 4 and 6, σ^t was either not identifiable or was barely identifiable, so these considerably lower estimates are likely unreliable. Importantly, telemetry data from the GPS-collared pumas were critical to estimating σ^t , because the four individuals whose activity centers relocated between the marking and resighting processes were never detected by the camera-traps (Fig. 2).

Sex ratio. The genSMR model that included sex-specific detection functions (model 9) produced a similar population density estimate as the comparable genSMR model that had a pooled detection function (model 1). The estimated female and male σ^d from model 9 was 4.22 km (95% HPDI: 3.65–5.10) and 8.10 km (95% HPDI: 7.57–8.61), respectively, compared to the pooled estimate from model 1 of 7.54 km (95% HPDI: 7.06–8.12). The probability that a puma was female was 0.33 (95% HPDI: 0.16–0.49) and 0.34 (95% HPDI: 0.19–0.52) from models 3 and 9, respectively, which supports that sex-specificity of detection function parameters was unnecessary for accurately estimating the population sex ratio. The fact that the density and sex ratio estimates were nearly identical between models with and without sex-specificity suggests close to perfect compensation between λ_0^R and σ^d on the total exposure to detection⁶⁸. We note that with just two spatial recaptures for marked females, our female density and sex ratio estimates are largely dependent on how representative the telemetry data (i.e., movements) for the two marked females were of the entire female cohort within S^G .

Discussion

Previous puma mark-resight studies in the spatially explicit framework used conSMR models to estimate population density^{25–27}. If individual animals are live-captured to apply artificial marks, and this process occurs across the same area in which resighting will occur, marked individuals will on average likely reside closer to the resighting array than unmarked individuals³⁷. Modeling the marking process via genSMR models accounts for

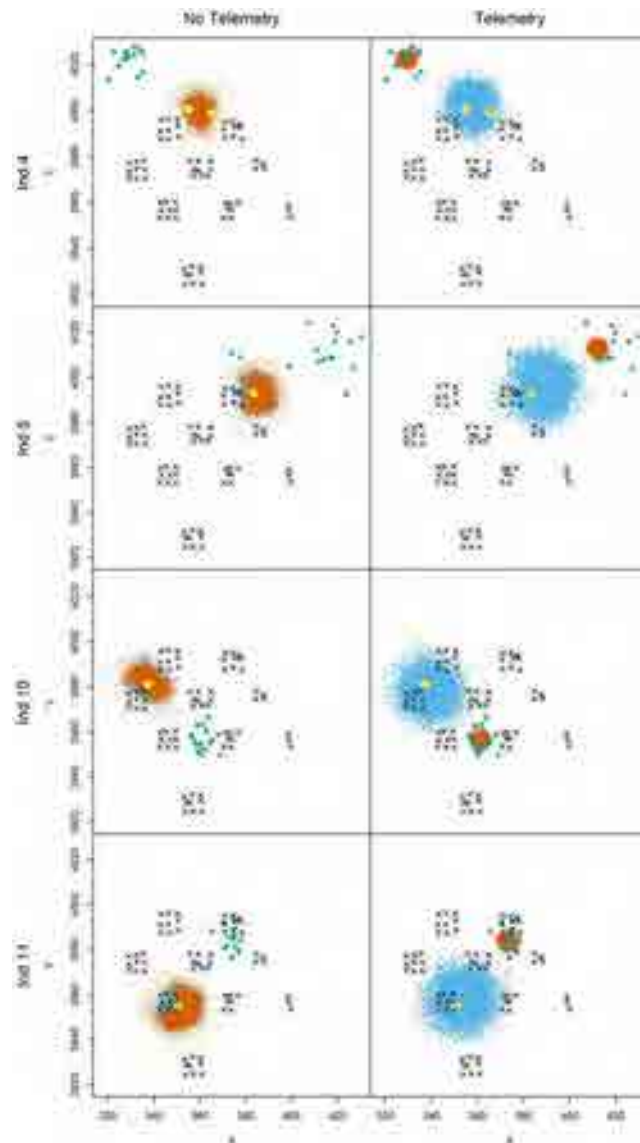


Figure 2. Estimated activity center locations for four marked pumas from generalized spatial mark-resight models that accommodated activity center transiency between marking and resighting processes, and excluded or included telemetry location data from GPS collars. The estimated posterior densities of individual activity centers for the marking and resighting processes are denoted by blue and orange, respectively. The spatial locations where each puma was live-captured, the locations of camera-traps, and thinned telemetry locations from the resighting period are denoted by yellow circles, black \times , and green circles, respectively. Image created by B.C.A. with the R statistical software⁶⁰.

these spatial patterns in activity centers, but conSMR models exclude the marking process and consequently may produce negatively biased density estimates^{37,39}. Indeed, our puma density estimates from conSMR models were ~17% lower than density estimated by our best genSMR model (model 3), chosen because of its most accurate characterization of the observed puma spatial dynamics (e.g., activity center transiency [through telemetry data] and spatial information about sex of unmarked pumas). Thus, our results support that genSMR models are preferable to conSMR models when the marking process involves live-capture and the marking and resighting arrays spatially overlap; particularly if researchers cannot assume that marked animals are uniformly distributed across the landscape, or the spatial distribution of marked animals is unknown and cannot be correctly specified.

Integrating telemetry data from GPS collars on marked pumas substantially improved parameter estimate precision and was critical for accurately estimating population density. First, the telemetry data allowed us to definitively determine individual identities from photograph detections. This was arguably more reliable than attempting to assign identities *ad hoc* based on researcher-perceived natural marks for a species that generally does not have unambiguous, individually unique physical features^{24–27}. Although researchers may be tempted to treat all pumas detected by camera-traps as unmarked and apply the ‘unmarked’ spatial capture-recapture model³⁴ to estimate population density, the large home ranges and generally low detection rates of pumas,

regardless of sampling method, will likely result in biased, imprecise, and unreliable density estimates from this model^{39,40}. Applying artificial marks to even a small portion of a population and using SMR models can greatly improve estimation of detection function parameters and population density^{26,34,36,37,39}.

Telemetry data also facilitated accurate estimation of σ^d , which our results suggest was substantially underestimated by the models that relied solely on camera-trap detection data (models 2, 4, and 6). To establish our clustered camera-trap design, we based simulations on parameter estimates from previously published spatially explicit puma density studies. Based on the σ that we used in simulations (5.0 km), we presumed that our camera-trap and cluster spacing were 0.70σ and $5.60\text{--}7.20\sigma$, respectively; however, based on the σ^d estimated by our best model (model 3), camera-trap and cluster spacing turned out to be 30% smaller ($0.54\sigma^d$ and $4.30\text{--}5.53\sigma^d$, respectively). If home ranges are large and detection rates are low ($\lambda_0 < 0.10$), detector spacing as small as 0.5σ may be too close to accurately characterize the true scale of animal movement within a single cluster^{43,45}. Estimated λ_0^R was < 0.10 among all of our considered models, and each of the nine clusters of camera-traps was considerably smaller than the average puma home range size derived from estimated σ^d , assuming a bivariate normal distribution¹⁹ (110.25-km² cluster size versus 799.23-km² home range size, based on model 3). Consequently, the full extent of individual puma space use likely could not be captured within a single cluster⁴⁵, which resulted in underestimation of σ^d and overestimation of puma density by the models that excluded telemetry data. Employing a wider camera-trap spacing of $1\text{--}2\sigma^d$ (6.51–13.02 km) within each cluster likely would have resulted in detections via the camera-traps alone that more accurately reflected the larger than expected puma space use⁴⁵. Although our spacing between clusters was well within the movement capabilities of pumas in the study area (based on estimated σ^d), a wider camera-trap spacing within clusters would also decrease the distance between clusters, which might have the added benefit of increasing the number of spatial recaptures^{43,45}.

An alternative but unlikely explanation for the smaller σ^d and higher puma density estimates from models that excluded telemetry data could be that the marked pumas were not a random sample of the population, but were instead representative of a cohort of pumas that had larger than average home ranges³⁶. Subadult male pumas are generally transient and typically have the largest home ranges among all sex-specific cohorts of puma populations⁶⁹. We live-captured and marked both subadults and adults and both males and females, however, and although just 20% of our marked pumas were females, genSMR model results suggested that only 33–34% of the population was female. Furthermore, the point and interval estimates of puma density from the genSMR model with sex-specific detection function parameters (model 9) were nearly identical to the analogous model with detection function parameters pooled between sexes (model 1). This strongly supports that a sex imbalance among marked individuals was not a source of incongruous σ^d estimates between models that included and excluded telemetry data, thereby indicating that density estimates from the genSMR models that integrated telemetry data more accurately reflected puma space use during our study.

A third reason supporting the importance of telemetry data, and a primary reason why the transient activity center model improved density estimation, was to accurately estimate activity center locations for the pumas who relocated considerable distances between the marking and resighting processes. Efford and Hunter³⁵ raised concerns about the potential for such activity center transiency between observation processes to influence SMR model parameter estimates, but those authors had no independent data to test for this. In contrast, the telemetry data that we had from marked pumas allowed us to document and model large activity center relocations between processes. Because the four marked pumas who relocated were not detected by camera-traps, the resighting data provided little information about whether or not those individuals' activity center locations moved, and if so, how far. Although two pumas (individuals 10 and 11) moved to areas of the camera-trap array where they likely had similar detectability as the locations at which they were live-captured and marked, two other pumas (individuals 4 and 5) moved to areas where they were effectively undetectable by all camera-traps (Fig. 2). In model 1, which did not accommodate activity center transiency, the distances between live-capture locations and the estimated activity center locations, which were primarily informed by the telemetry data, were larger than reality. This inflated the σ^d estimate (7.54 versus 6.51 km from models 1 and 3, respectively), which in turn decreased the λ_0^R and λ_0^M estimates. These differences in detection function parameters corresponded to a ~12% difference in puma density point estimates (0.94 versus 0.84 puma/100 km²), suggesting that accommodating activity center transiency may be important for reliably estimating population density in SMR studies. Additionally, σ' was substantially underestimated without the telemetry data, because all four major movements were not discernable from the camera-trap data; this caused poor estimation of those pumas' activity center locations and introduced bias into detection function and density parameter estimates. Thus, having considerable telemetry data likely will lead to a more robust application of SMR models, informing if activity center transiency needs to be accommodated in the model structure to improve parameter estimation.

Fully transient activity centers have been considered in conSMR models⁶¹, but our study is the first application of a single activity center transition that was used to explain observed animal movement dynamics. The base genSMR model provides an adequate description of the distribution of marked and unmarked individuals if they do not relocate between the marking and resighting processes; if individuals randomly relocate between processes, which is unlikely, the spatial uniformity activity center model may be appropriate. Accommodating activity center transiency as we did results in an intermediate activity center model in which individuals are not at exactly the same spatial location between processes and the similarity of locations is determined by the σ' parameter. However, if individual animals exhibit multiple substantial movements during observation processes, an activity center model that accommodates fully transient activity centers might be more appropriate^{61,62}. Nevertheless, distinguishing between a process model with stationary activity centers and a large σ^d value and a model with transient activity centers and a small σ^d value will be difficult without considerable telemetry data, given the sparsity of typical capture-recapture and mark-resight detection data.

Despite the relatively small improvement in density estimate precision from using sex as a categorical identity covariate compared to the substantial improvement from incorporating telemetry data, using categorical identity covariate data that is available from camera-trap detections has considerable promise. The 8% precision improvement that we observed by using sex of unmarked pumas comes from data that has not been used in SMR models to date, but ecologists and managers should be interested in extracting as much precision out of detection data as possible. Additionally, sex was a single categorical identity covariate that we confirmed for only approximately half of the detections of unmarked pumas. Other populations of pumas or other wildlife species may provide more categorical identity covariate information from photographs; for example, the natural marks used by previous studies to attempt to assign individual identities for estimating population density^{24,25,27,61,70} could instead be treated as categorical identity covariates, allowing for the possibility that more than one individual in a population has a similar physical feature. This would obviate the requirement that potentially erroneous individual identities are assigned, but it may also reduce the precision of density estimates, perhaps appropriately, depending on the accuracy of categorical identities assigned by observers.

We acknowledge that using GPS collars as the primary mark can be expensive, but our results indicate that the realized and potential benefits of marking a portion of a population with GPS collars outweigh the costs. Clearly, integrating telemetry data in spatially explicit analyses can substantially improve estimation of the spatial scale parameter, activity center locations, and population density, as also noted by previous studies^{26,36,37,39}. Furthermore, by marking a portion of animals with GPS collars, which are typically functional for multiple years, additional demographic and ecological information that are important to conservation and management can be obtained, effectively constituting SMR as a population ecology research approach. This includes data on survival and cause-specific mortality, home range size, and resource selection^{71,72}, as well as seasonal and annual variation in population density if camera-traps are active across seasons and years, respectively. Additionally, if population genetics are of interest, genetic samples can be collected when animals are captured for marking. If study budgets are limited, a cheaper alternative may be to mark some animals with GPS collars and others with only ear tags or non-GPS collars that have visually unique numbers or patterns that can be identified from photographs. For example, Whittington *et al.*³⁷ GPS-collared some individuals, only ear-tagged others, and used camera-traps and genSMR models to precisely estimate brown bear (*Ursus arctos*) population density.

Pumas occupy tens to hundreds of thousands of square kilometers within most jurisdictions across their extant range^{1,69,73}. In general, precision and accuracy of spatially explicit population density estimates for wide-ranging large carnivores improve with increasing study area size^{44,45,74}. By deploying camera-traps in a systematic cluster design with gaps between clusters where no cameras existed, we were able to use a small number of camera-traps to estimate puma density for a 15,317-km² area. This area was five-fold larger than the average spatial extent among all previous puma density studies that also used spatially explicit models (mean = 2,849 km²; range: 215–8,800 km²), and our density estimates were among the most precise estimates that have been produced for pumas to date ($CV_{[genSMR]} = 0.24–0.31$; Table 2). Therefore, clustered camera-trapping in an SMR framework can facilitate efficient and reliable estimation of puma population density at the broad regional scales that conservation and management typically occur. For example, endangered Florida panthers (*P. c. coryi*) reside within a ~16,000-km² area that encompasses multiple patches of suitable habitat⁷⁵, and a portion of panthers are annually captured and collared^{26,76}. Applying clustered camera-trapping across that entire area and using genSMR models to analyze detection data could result in the first range-wide spatially explicit estimates of Florida panther population density and abundance, with little additional effort compared to other available puma sampling approaches in the spatially explicit framework. Our sampling and analytical combination is likely also applicable to other terrestrial mammals that similarly lack individually unique natural markings. For instance, obtaining reliable population density and abundance estimates for imperiled Mexican gray wolves (*Canis lupus baileyi*) and red wolves (*C. rufus*) is important to their recovery, and individual wolves in those populations are routinely monitored via radiocollars that could serve as effective marks. Nevertheless, we agree with other studies that suggested researchers should use simulation to develop study area- and species-specific survey designs prior to deploying camera-traps^{43,45,74}. Having home range size data beforehand to inform camera-trap and cluster spacing would be ideal⁴⁵, but if such data are unavailable, our results support that marking a portion of animals with GPS collars and integrating their telemetry location data in spatially explicit models can serve as insurance if detector spacing turns out to be insufficient³⁶.

Our study provides the first spatially explicit population density estimates for pumas in the semi-arid to arid southwestern United States, where hot summer temperatures, high ultraviolet radiation, and generally limited winter snow cover may impede effectiveness of, or preclude, scat detection dog and biopsy dart sampling of pumas. Regardless of model specification, all of our puma density estimates were within the range of reported spatially explicit estimates for the species, but density estimated by our best model (0.84 puma/100 km²) was towards the lower bound of that range (Table 2). Estimates acquired using the biopsy dart and scat detection dog methods may not be directly comparable to our estimates, however, because estimates from those techniques might be inflated as a result of including dependent juveniles in the detection histories^{20,23}, whereas our estimates pertain solely to independent pumas. Nonetheless, the majority of our study area was characterized as high quality puma habitat relative to elsewhere in the Southwest⁷³; thus, our estimates suggest that the Southwest might commonly support pumas at lower densities than ecosystems in the Northwest and Northern Rockies regions^{20–24,51}. Additional research is needed to evaluate the influence that legal harvest of pumas and prey availability and distribution may have on seasonal and annual variation of puma population density in our study area and across the Southwest in general.

Study	Location	Methods	Models	Area	Densities	Widths	CVs
This study	New Mexico, USA	CC + TL	genSMR	15,314	0.84–1.65	0.8–1.8	0.24–0.31
Sollmann <i>et al.</i> ²⁶	Florida, USA	RC + TL	conSMR	1,719	1.46–1.51	1.9–2.2	0.33–0.38
Rich <i>et al.</i> ²⁵	Belize, Bolivia, Argentina	RC	conSMR	4,329*	0.30–6.50	0.5–8.1	0.26–0.38
Zanón-Martínez <i>et al.</i> ²⁷	Argentina	RC	conSMR	1,179*	1.38–4.90	3.3–5.9	0.31–0.66
Quiroga <i>et al.</i> ⁷⁷	Argentina	RC	SCR	1,882*	0.08–1.26	0.2–1.0	—
Noss <i>et al.</i> ⁷⁸	Bolivia	RC	SCR	215*	0.36–7.99	0.7–9.9	0.20–0.85
Alexander and Gese ²⁴	Wyoming, USA	RC	SCR	1,287	0.39–4.04†	0.6–9.9	—
Proffitt <i>et al.</i> ²¹	Montana, USA	BD + SB + DR	SCR	5,912	3.20–5.60	2.9–14.0	—
Russell <i>et al.</i> ²²	Montana, USA	BD + SB	SCR	8,800	3.70–6.70	1.5–7.9	0.24–0.46
Beausoleil <i>et al.</i> ²⁰	Washington, USA	BD	SCR	7,939	1.90–2.40	3.2–3.9	—
Davidson <i>et al.</i> ²³	Oregon, USA	SD	SCR	1,225	2.31–5.50	1.2–5.8	—

Table 2. Study locations, sampling methods, model types, and parameter estimation areas (km²) for studies that used spatial capture-recapture (SCR), conventional spatial mark-resight (conSMR), or generalized spatial mark-resight (genSMR) models to estimate puma population density (puma/100 km²), ordered by sampling methods and model types. Methods included biopsy darting (BD), snow-backtracking (SB), scat detection dogs (SD), regular camera-trapping (RC), clustered camera-trapping (CC), dead recoveries (DR), and telemetry locations from GPS collars (TL). Coefficient of variation (CV), standard errors, or standard deviations were not reported by multiple studies (—), so we also present 95% interval widths for comparing precision of density estimates. Densities are presented as the ranges of point estimates. *Average among multiple study areas; †excludes one density estimate for which variance of the corresponding spatial scale parameter (σ) was inestimable.

Data Availability

All data generated for analysis and all R code of MCMC algorithms for reproducing the analysis are available from the PANGAEA® digital repository, <https://doi.org/10.1594/PANGAEA.897113>. Data were made available under provisions of the State of New Mexico Inspection of Public Records Act (1978 NMSA 14.2).

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Author Contributions

S.M.M. conceived the idea and led manuscript writing; S.M.M. and D.T.W. designed the study; S.M.M., D.T.W., M.A.P. and G.C.H. collected the data; S.M.M. and B.C.A. analyzed the data. All authors contributed to writing, reviewed drafts, and gave final approval for publication.

Additional Information

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Research Summary 2018-2021

Estimating Cougar Density and Population Size in New Mexico using Spatial Mark-Resight Models

Background

In 2017, the Department implemented a study using a novel approach for estimating cougar population densities using GPS tracking collars, trail cameras, and advanced, Spatial Mark-Resight models. These models incorporated data from the capture process, recaptures via trail camera photos, and weekly GPS locations. The findings from that 2017 study were published by Murphy et al. (2019), and were incorporated into a harvest limit adjustment for Cougar Management Zone (CMZ) F, where the study was conducted.

We used that methodology for an expanded study in CMZs B and F in 2018, to estimate population size across both zones where localized population dynamics were expected to be occurring. Harvest limits were again adjusted in 2019 based on the findings of that 2018 study, and CMZs B and F were combined into one zone (CMZ B). In 2019, the Department began another study using the same methods in CMZ Q, which was concluded by August 2021. The results from this study were used to inform the proposed changes for the 2023 Bear and Cougar Rule development process. Recognizing the novelty of these field and analytical methods for a cryptic species like cougar, and their use across a large area, the Department worked with independent statisticians to review these models.

We present in this report a brief summary of the findings of those efforts. An in-depth description of the field methodology and analytical techniques can be found in the Murphy et al. (2017) publication, and will be described further in publications by the Department as we continue to implement, adjust and assess this approach across multiple years and study areas throughout the state.

Results and Analysis of the Study in CMZs B and F, 2018

The study in CMZs B and F occurred from May through November, 2018. We deployed 109 camera sites across 15 grids in GMUs 4, 5A/B, 6A/B/C, and 51A/B. During that time, there were 14 cougars fitted with GPS collars, 146 photo captures of cougars, and no mortalities.

We used a model that incorporated GPS data, flexibility for activity centers to shift, and sex-specific differences in detection parameters to estimate for the study area a population size of 124 (79 – 169) independent-aged cougars and population density of 0.70 (0.45 – 0.96) independent-aged cougars per 100 km².

In 2022, we then assessed the models from Murphy et al. (2017) under a simulation-based framework to understand how sampling effort affects model precision, and validate model accuracy and precision. This approach used a simulated population and simulated data generated with information from the models of our observed data for CMZs B and F to examine how the model performed estimating for a known population size with a dataset similar to ours. These results aligned well with the models from our observed dataset in generating estimates with similar accuracy and precision (Figure 1).

We then tested simulated capture data sets with low, normal, or high number of marked animals, or a low, normal or high number of recaptures. This allowed us to assess how the model performed under different scenarios with fewer or more marked animals on the landscape, or fewer or more detections of marked animals on cameras. In general, there was relatively little bias to abundance estimates with changes to marking and resighting, and increases in accuracy and precision that levelled off within range of mark and resight probabilities of our observed data (Figure 2). These simulations provided insight on general impacts that would occur over the entire estimation area if these conditions were homogenous across all individuals and cameras.

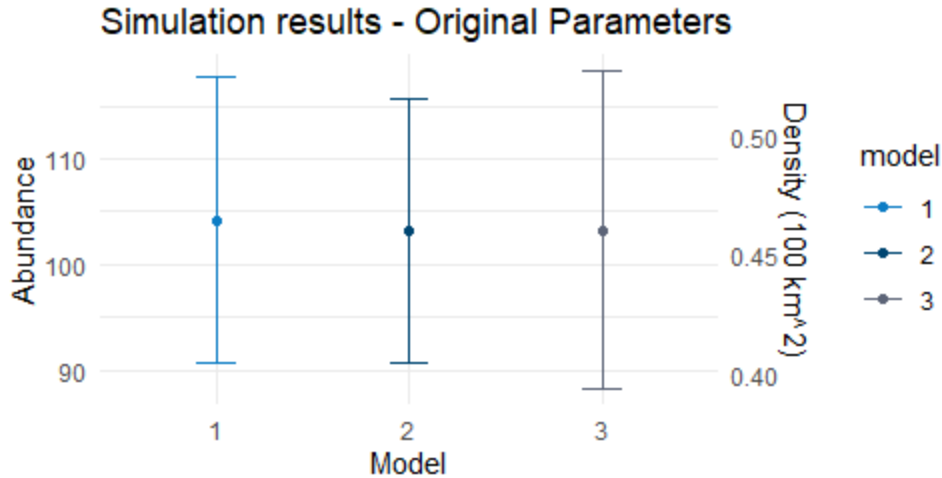


Figure 1. Abundance estimates for a simulated data set for a simulated population ($N=100$), from Spatial Mark Resight models using GPS collar data (Models 1 and 2), and without GPS collar data (Model 3).

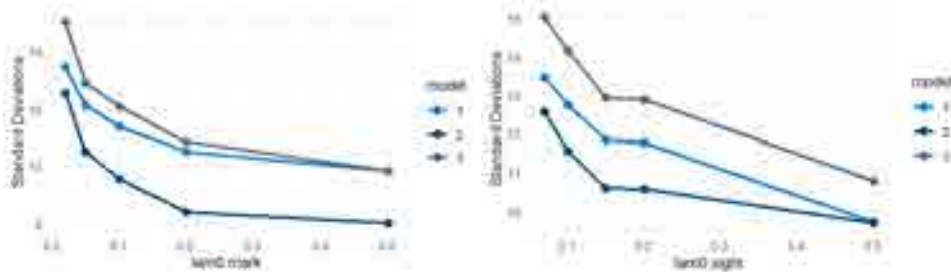


Figure 2. Changes in model precision with increasing probabilities of marking an individual (lam0.mark) and increasing probabilities for recapturing (lam0.sight) via trail cameras individuals for Spatial Mark Resight models using GPS collar data (Models 1 and 2) and without GPS collar data (Model 3).

We also took a closer look at the spatial distribution of the data, which suggested it could be impacting estimates. Generally for spatial capture recapture models, when there are no detections at a detector or an entire grid the model assumes a lower density than what may be observed at detectors where individuals are regularly detected, or assumes no individuals occur there, and assumes an averaged density as you move away from detectors in general (Royle et al. 2014). The implications of this are that site selection and camera placement may impact density estimates. If the reason for a lack of detections is poor site selection or camera placement, and as a result there are no detections of cougars where it is known that they occur, then the models will estimate lower densities in that area. We can see in our data there are grids that had few to no photo detections, but where we know cougars were present from GPS data for collared individuals (Figures 3 and 4).

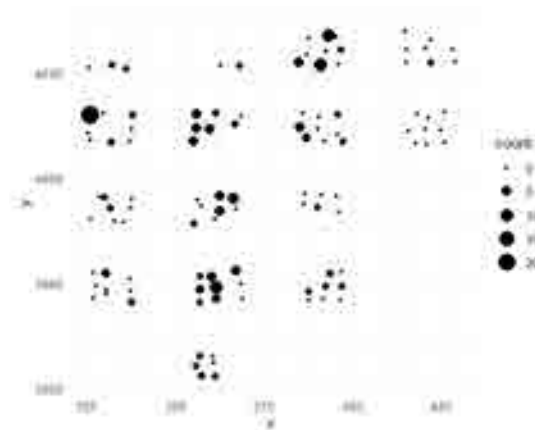


Figure 3. Distribution of trail camera photo 'recaptures' of cougars in Cougar Management Zones B and F, New Mexico, 2018.

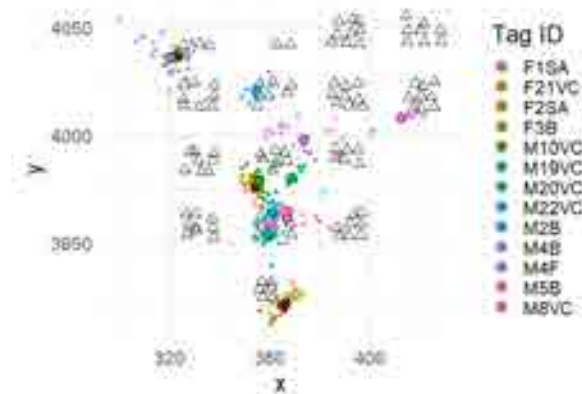


Figure 4. Distribution of GPS locations from cougars used in density estimation for Cougar Management Zones B and F, New Mexico, 2018.

Additionally, we have made some initial investigation into the impact of the spatial arrangement of GPS collared individuals through data augmentation of this data set. We removed GPS and marking data for individuals that had home ranges overlapping with another collared individual, and found that with no data showing home range overlap the model estimates of density were lower than when your data did include individual's whose home ranges overlap (Figure 5). Home range overlap is expected with our sampling because we captured both males and females which tend to have overlapping home ranges between the sexes. Home range overlap between individuals of the same sex is less common.

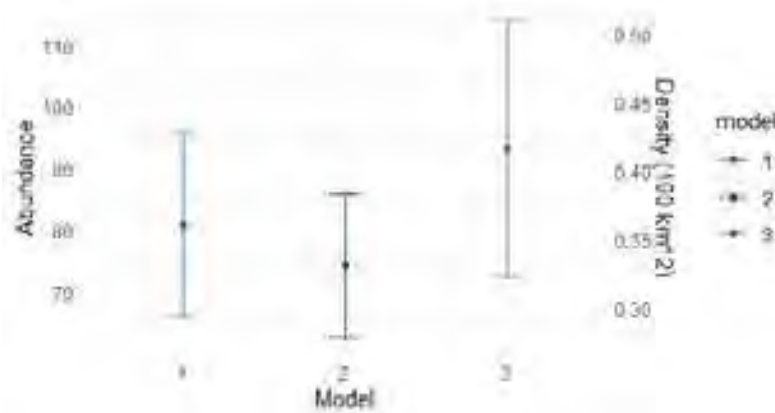


Figure 5. Abundance estimates for the data from Cougar Management Zones B and F, 2018, when the data is augmented to remove individual's whose spatial distribution overlapped another individual's.

Results of the Study in CMZ Q, 2019-2021

In 2019 we used the same methodology to estimate cougar population density in CMZ Q, across GMUs 28, 29, 30, and 34. Captures and camera deployment began in 2019, and we analyzed the data collected at 119 camera sites from April 2020 to December 2020 (weeks 67-101 of the study). During that time, there were 18 cougars that were GPS collared, 368 photo captures, and three mortalities which were accounted for by censoring those individuals.

We estimated density and population size for the study area using a model that incorporated GPS locations and sex differences in the detection parameters, but did not include flexibility for activity centers to shift because we did not include data on the capture process. We estimated a density of 0.56 (0.47-0.64) independent-age cougars per 100 km², and a population size for the study area of 116 (98-134) independent-age cougars.

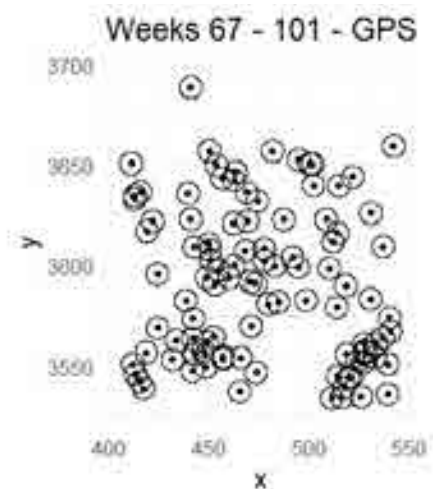


Figure 5. Distribution of estimated activity centers across the state space from Spatial Mark-Resight model estimation of cougar density in Cougar Management Zone Q, New Mexico, 2020.

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Research Article

Density of American Black Bears in New Mexico

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ABSTRACT Considering advances in noninvasive genetic sampling and spatially explicit capture–recapture (SECR) models, the New Mexico Department of Game and Fish sought to update their density estimates for American black bear (*Ursus americanus*) populations in New Mexico, USA, to aide in setting sustainable harvest limits. We estimated black bear density in the Sangre de Cristo, Sandia, and Sacramento Mountains, New Mexico, 2012–2014. We collected hair samples from black bears using hair traps and bear rubs and used a sex marker and a suite of microsatellite loci to individually genotype hair samples. We then estimated density in a SECR framework using sex, elevation, land cover type, and time to model heterogeneity in detection probability and the spatial scale over which detection probability declines. We sampled the populations using 554 hair traps and 117 bear rubs and collected 4,083 hair samples. We identified 725 (367 male, 358 female) individuals. Our density estimates varied from 16.5 bears/100 km² (95% CI = 11.6–23.5) in the southern Sacramento Mountains to 25.7 bears/100 km² (95% CI = 13.2–50.1) in the Sandia Mountains. Overall, detection probability at the activity center (g_0) was low across all study areas and ranged from 0.00001 to 0.02. The low values of g_0 were primarily a result of half of all hair samples for which genotypes were attempted failing to produce a complete genotype. We speculate that the low success we had genotyping hair samples was due to exceedingly high levels of ultraviolet (UV) radiation that degraded the DNA in the hair. Despite sampling difficulties, we were able to produce density estimates with levels of precision comparable to those estimated for black bears elsewhere in the United States. © 2018 The Wildlife Society.

KEY WORDS American black bear, capture–recapture, density estimation, DNA degradation, New Mexico, *Ursus americanus*.

State agencies spend a large portion of their annual budget estimating abundance and population trends of game animals, in part, so they can set sustainable harvest levels. Survey methods for large ungulates are well-developed and can provide relatively robust estimates of abundance for common game species such as deer (*Odocoileus* spp.) and elk (*Cervus canadensis*; Bleich et al. 2001, Zabransky et al. 2016). In contrast, estimating the abundance or density of large carnivores such as American black bears (*Ursus americanus*; hereafter, black bears) is more difficult because their cryptic behavior and low population densities make common survey methods used for large ungulates (e.g., aerial counts)

ineffective because of low detection rates (Miller 1990, Obbard et al. 2010). Historically, many state agencies set harvest limits for carnivores based on harvest data, including sex ratio and age structure of the harvested animals, which can be used to infer harvest effects on a population (Garshelis 1990, Hristienko and McDonald 2007). Yet, hunter selectivity and sex-specific vulnerability may influence harvest composition (Miller 1990, Beston and Mace 2012).

In New Mexico, USA, as in other parts of the American Southwest, black bears inhabit forested mountain ranges separated by desert and grassland valleys resulting in fragmented populations with varying degrees of connectivity (Atwood et al. 2011). Prior to their designation as a game species in 1927, the statewide black bear population was reduced to 660 owing to unlimited hunting and government sponsored anti-predator programs (New Mexico Department of Game and Fish [NMGFD] 1926). With legislative

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protection in place, the statewide population increased to 3,000 animals by the mid-1960s (Lee 1967). For nearly 20 years, this population estimate, paired with hunter harvest data, was the basis for setting harvest limits by the NMDGF. However, uncertainty in trends in black bear abundance during the late 1980s resulted in NMDGF initiating a decade-long study of black bear ecology in the 1990s (Costello et al. 2001).

New Mexico's most recent density estimates for black bear were derived from Costello et al. (2001) by dividing the minimum population size that was calculated using population reconstruction, which counts the number of individuals known to be alive during the study based on known age, by the effective trapping area (Dice 1938, Wilson and Anderson 1985, Eberhardt and Knight 1996). Their minimum density estimates were 17.0 bears/100 km² for the more mesic Sangre de Cristo Mountains in northern New Mexico and 9.4 bears/100 km² for the more xeric Mogollon Mountains of west-central New Mexico with intermediate habitat conditions being assigned a density equal to the mean of these 2 density estimates (i.e., 13.2 bears/100 km²). Using a habitat suitability model, the NMDGF extrapolated these density estimates to similar land cover types throughout New Mexico. This extrapolation served as the basis for statewide estimates of abundance for black bears that were then incorporated into a population projection model to monitor abundance and its trend in each Bear Management Zone (BMZ).

Innovations in non-invasive genetic sampling techniques (NGS; Woods et al. 1999), coupled with robust statistical analyses such as spatially explicit capture–recapture (SECR; Efford 2004), have provided researchers with improved tools to estimate the abundance and density of carnivore populations from which harvest limits can be established. These tools have facilitated monitoring efforts and produced density estimates for black bear populations across much of their range (Stetz et al. 2014, Hooker et al. 2015, Sun et al. 2017).

Considering advances in NGS and SECR models, the NMDGF sought to update their density estimates for New Mexico black bear populations. Our objectives were to estimate the density of black bears in primary bear habitat within 7 of the 14 BMZs in New Mexico.

STUDY AREA

The 7 BMZs were encompassed by 5 study areas located in the northern (NSC; 6,400 km²) and southern (SSC; 3,525 km²) Sangre de Cristo, Sandia (300 km²), and northern (NSacs; 925 km²) and southern (SSacs; 2,775 km²) Sacramento Mountains, New Mexico (Fig. 1). We sampled the Sandia Mountains in their entirety because of their smaller size. The 2 BMZs located in the NSC and the 2 in the SSacs are managed by NMDGF using the same estimate of density. Thus, we only report density for 5 study areas instead of 7 BMZs. Sampling within each study area was limited to primary bear habitat, which is defined as closed-canopy forest and woodland cover types (Fig. 1; Thompson et al. 1996, Costello et al. 2001). All 5 study areas



Figure 1. Primary American black bear habitat in New Mexico, USA highlighting the northern (NSC) and southern (SSC) Sangre de Cristo, Sandia, and northern (NSacs) and southern (SSacs) Sacramento Mountains study areas.

were managed as multiple-use forests by federal and state agencies and private landowners encompassing portions of 4 National Forests, 6 wilderness areas, and 25 parcels of private land. The topography was diverse for each mountain range and maximum elevation was 4,011 m, 3,254 m, and 3,649 m for the Sangre de Cristo, Sandia, and Sacramento Mountains and minimum elevation was approximately 1,900 m, 1,700 m, and 1,500 m, respectively. The Southern Rocky Mountains floristic district characterized the Sangre de Cristo Mountains, whereas the Mogollon floristic district characterized the Sandia and Sacramento Mountains. Dominant vegetation types in the study areas included oak-mountain mahogany (*Quercus* spp.–*Cercocarpus* spp.) scrublands, piñon pine-juniper (*Pinus edulis*–*Juniperus* spp.) woodlands, ponderosa pine (*P. ponderosa*), white pine (*P. monticola*), Douglas fir (*Pseudotsuga menziesii*), aspen (*Populus tremuloides*), Engleman spruce-subalpine fir (*Picea engelmannii*–*Abies lasiocarpa*) mixed-forest, and bristlecone (*P. aristata*) and limber (*P. flexilis*) pine forests (Costello et al. 2001). Important mast-producing species included oak, piñon pine, juniper, red barberry (*Mahonia haematocarpa*), chokecherry (*Prunus virginiana*), gooseberry (*Ribes* spp.), alpine cancer-root (*Conopholis alpina*), cactus (*Opuntia* spp.), and sumac (*Rhus* spp.; Kaufmann et al. 1998, Costello et al. 2001). The average monthly temperature was highest in July across the Sangres (24–29°C), Sacramentos (22–29°C) and Sandias (33°C), and lowest in January across the Sangres

(-15°C to -8°C), Sacramentos (-7°C to -5°C), and Sandias (-5°C ; Western Regional Climate Center 2017). The average monthly precipitation was highest during the monsoon season (Jul–Oct) with rainfall peaking in August across the Sangres (7.10–8.15 cm), Sacramentos (7.62–12.70 cm), and Sandias (5.3 cm; Western Regional Climate Center 2017). Other common predators in the study areas included mountain lion (*Puma concolor*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), and common ungulates included elk, mule-deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), Rocky Mountain bighorn sheep (*Ovis canadensis*), and exotic barbary sheep (*Ammotragus lervia*).

METHODS

Field Sampling and Genetic Analysis

We used hair traps (Woods et al. 1999) and bear rubs (Kendall et al. 2008) concurrently to sample each black bear population. We set hair traps and bear rubs across 4 sampling occasions in the NSC (22 Apr–5 Sep 2012) and SSC (29 Apr–9 Sep 2013) and across 6 sampling occasions in the Sandias, NSacs, and SSacs (5 May–6 Aug 2014). Because of logistical constraints, sampling occasions in the NSC and SSC lasted 4 weeks, whereas sampling occasions for the Sandias, NSacs, and SSacs were 2 weeks. We distributed a grid of 5-km \times 5-km cells across the landscape with a randomly determined origin. Within each cell, we set a single hair trap. We located trap sites based on suspected travel routes, occurrence of seasonal forage (e.g., newly emergent green grass and ripe soft and hard mast), and presence of bear sign (Fig. 2; Figs. S1 and S2, available online in Supporting Information). A hair trap consisted of a single strand of barbed wire wrapped around ≥ 3 trees at a height of 45 cm, with a lure pile constructed from woody debris at the center (Woods et al. 1999). During each sampling occasion in the NSC and SSC, we randomly selected and applied 1 of 4 non-consumable lures (cow blood and fish emulsion mixture, anise oil, fatty acid scent tablet, or skunk tincture and lanolin mixture) to the lure pile to attract bears. A chi-square test of independence showed that the 4 lures were not collecting similar proportions of hair samples ($\chi^2_3 = 616.29$, $P \leq 0.001$); thus, we discontinued the use of anise oil and fatty acid scent tablets in the Sandia and Sacramento Mountains. A sample consisted of all hair caught in one barb. Bears will also roll around in the lure pile depositing hair. We used our best judgement to define hair samples in the lure pile that we believed originated from a single individual. We deposited each hair sample in a separate paper coin envelope and incinerated any remaining hair with a propane torch to prevent false recaptures. We moved hair traps (100 m to 2.5 km) each occasion to increase novelty and recapture rates (Boulanger and McLellan 2001, Boulanger et al. 2004).

Bears rub on a myriad of objects including trees and power poles (Burst and Pelton 1983, Kendall et al. 2008). We opportunistically identified and collected hair from bear rubs along trails used en route to hair traps. We identified bear rubs using evidence of rubbing behavior such as a smoothed

surface with snagged hair. We attached 3 to 4 short, vertical strands of barbed wire to the rub object covering the area of rubbing to collect discrete hair samples (Kendall et al. 2008, 2009; Stetz et al. 2014). We identified rubs at varying time intervals across sampling occasions, but once established we monitored them concurrently with nearby hair traps. We collected hair samples only from the barbed wire to ensure that the samples collected were from individuals that visited the rub during the sampling occasion. Hair collection protocols for bear rubs were identical to hair traps, and we stored all hair samples in an airtight container on silica desiccant at room temperature.

We genotyped each hair sample using 8 polymorphic microsatellite loci (G1D, G10B, G10L, G10M, G10H, G10J, G10U, MU59; Paetkau et al. 1995, 1998; Taberlet et al. 1997). We also used the ZFX-ZFY marker to identify sex (Durnin et al. 2007). We selected specific markers for individual identification by ensuring that the mean expected heterozygosity for each marker was between 0.70 and 0.80 (Paetkau 2003, 2004). These markers were determined from an initial subsample from the NSC population in 2012. All hair samples were genotyped by Wildlife Genetics International in Nelson, British Columbia, Canada (WGI; Paetkau 2003, Kendall et al. 2009).

Technicians screened samples for suitability before analysis. First, they eliminated samples that contained insufficient genetic material for analysis (no root, < 1 guard hair, or < 5 underfur hairs) or appeared to be from heterospecifics. Next, they used the ZFX-ZFY marker as a prescreen to remove low-quality hair samples that were likely to fail during the multilocus genotyping phase. After the prescreen, technicians amplified the 9-candidate markers for each sample. They eliminated samples that amplified ≥ 3 alleles at 1 marker (indication of a mixed sample) or failed to amplify ≥ 3 loci. They reamplified the samples that failed at < 3 loci, resulting in either a full 9-locus genotype or a discarded sample. They examined pairs of samples that were mismatched at 1 or 2 markers for evidence of amplification or human error. Technicians reamplified any mismatched pair under the assumption that genotyping error may have created the similarity between the 2 samples (Paetkau 2003). If 1 or 2 mismatched pairs remained between samples, we concluded the 2 samples were from separate individuals. We assigned an individual identification number to each sample with a unique multilocus genotype based upon the unique catalogue code from the first sample to identify the individual's genotype. Given each study area is not an isolated population, we calculated the expected and observed heterozygosity for each mountain range using program GENPOP (Raymond and Rousset 1995, Rousset 2008; www.genepop.curtin.edu.au, accessed 15 Mar 2016).

Density Estimation

We used SECR models (Efford 2004, Borchers and Efford 2008) implemented in the R software package secr (v. 2.9.5 and 2.10.4; Efford 2015, 2016) to estimate 3 parameters in separate analyses for each study area: density (D), detection probability of an individual at its activity center (g_0), and the

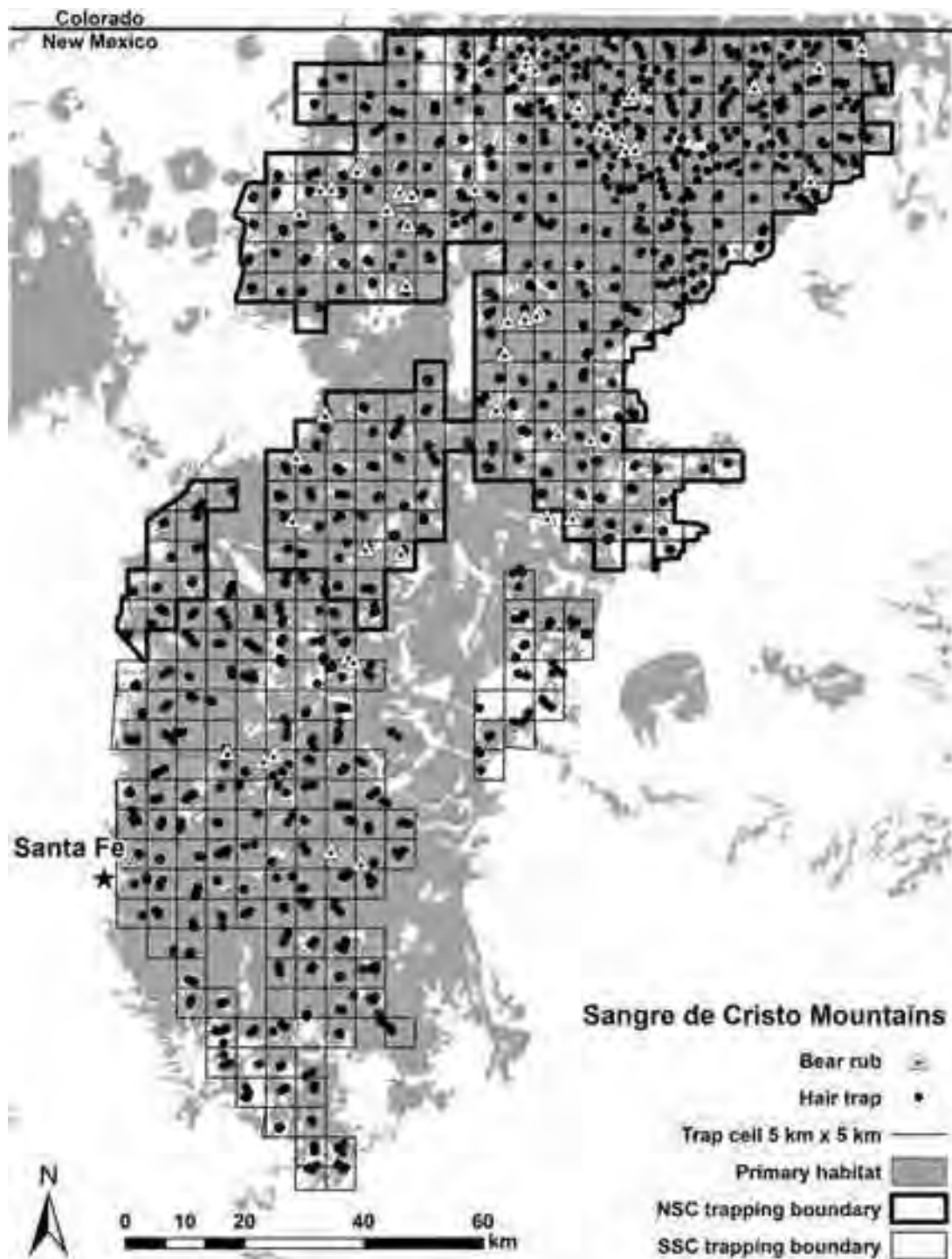


Figure 2. Primary American black bear habitat identified by Costello et al. (2001) overlaid with hair traps and bear rubs set for the northern (NSC) and southern (SSC) Sangre de Cristo Mountains, New Mexico, USA, 2012–2013.

spatial scale over which detection probability declines as the distance between an individual's activity center to the detection device increases (σ). We used a half-normal detection function for our observation model and a homogeneous Poisson distribution as our state model, which assumes latent activity centers are distributed evenly across the landscape (Efford et al. 2009). Spatially explicit capture–recapture also requires a habitat mask. The habitat

mask is the area of integration (i.e., area of interest that contains all possible latent activity center locations) and includes all animals with a non-zero probability of detection (Ivan et al. 2013). Individuals may reside beyond the habitat mask, but they have a negligible probability of detection (Borchers and Efford 2008, Royle et al. 2014). We generated the habitat mask by buffering the sampling detectors in the NSC, SSC, Sandias, NSacs, and SSacs by 18.75 km,

25.40 km, 13.23 km, 14.84 km, and 11.03 km, respectively, which we derived from the capture data using the suggest. buffer function (Efford 2016). Within our habitat mask, we limited our density estimates to primary habitat as identified by Costello et al. (2001) for black bears in New Mexico. Variability in sampling effort may negatively bias density estimates and reduce the ability to explain variation in detection probability, so we accounted for variable sampling effort by using the number of days each sampling detector was active (Efford et al. 2013).

Predictors of g_0 and σ included time (t ; 4 or 6 sampling occasions depending on the study area), sex, elevation (elev), detector type (type; hair trap vs. bear rub), and 5 land cover categories (cover). We chose time and sex as covariates because detection probability and movement patterns may fluctuate over the sampling period and differ between males and females (Sawaya et al. 2012, Stetz et al. 2014). We selected elevation and land cover to represent the spatial heterogeneity of black bear food resources because this heterogeneity could influence g_0 and σ depending on food availability and distribution (Rovang et al. 2015). We did not include land cover type and elevation in the same model because a box plot of elevation by land cover type revealed that these variables were not independent. We then conducted a 1-way analysis of variance that indicated within each study area elevation significantly differed among land cover types (NSC: $F_4 = 618.02$, $P \leq 0.001$; SSC: $F_4 = 367.14$, $P \leq 0.001$; Sandias: $F_1 = 7.39$, $P = 0.008$; NSacs: $F_2 = 278.06$, $P \leq 0.001$; SSacs: $F_2 = 582.95$, $P \leq 0.001$). Within each study area, *post hoc* pairwise comparisons of elevation across land cover types were also significant (Tukey-Kramer test, $P \leq 0.01$ for all comparisons). We extracted elevation for each detector using the National Elevation Dataset 30-m resolution digital elevation model (www.nationalmap.gov, accessed 10 May 2015). We standardized elevation by subtracting the mean from each observation and dividing by 1 standard deviation (Gelman and Hill 2007).

We extracted land cover using the Interagency Landfire Project (Rollins 2009; www.landfire.gov, accessed 10 May 2015) land cover classification at 30-m spatial resolution. We combined 6 land cover classifications into 5 categories: aspen-conifer, mixed conifer (combination of Douglas fir and white pine), piñon pine-juniper, ponderosa pine, and spruce-fir. Variation in the abundance and distribution of each land cover class across the study areas resulted in a different number of categories and, consequently, a different number of parameters modeled for each study area. Aspen-conifer and spruce-fir were included only in the NSC and SSC. Mixed-conifer was included in all study areas except the Sandia Mountains. Piñon pine-juniper and ponderosa pine were included in all study areas. We visually assessed and assigned the dominant land cover classification surrounding the location of each detector using ArcGIS 10.2.1 (Environmental Systems Research Institute [ESRI], Redlands, CA, USA).

We modeled g_0 and σ concurrently by fitting a model where both parameters varied by elevation, land cover, or

time. We also included models that varied by time for g_0 and land cover for σ ($g_0 \sim t$, $\sigma \sim \text{cover}$), time for g_0 and elevation for σ ($g_0 \sim t$, $\sigma \sim \text{elev}$), land cover for g_0 and time for σ ($g_0 \sim \text{cover}$, $\sigma \sim t$), and elevation for g_0 and time for σ ($g_0 \sim \text{elev}$, $\sigma \sim t$). We also constructed models for g_0 and σ with time in an additive relationship with each covariate ($g_0 \sim t + \text{covariate}$, $\sigma \sim t + \text{covariate}$). We included additive effects because g_0 and σ are likely to vary because the black bear mating season occurs during the late-spring and early summer, when male bears might be expected to move more than females; because hyperphagic foraging behavior occurs during early fall, when all bears move more to find food; and because the distribution of food varies across the period when bears are active (e.g., grasses green-up in the spring and mast ripens in the late summer and fall). We also ran each model with the addition of an animal by site learned response (bk) for g_0 ($g_0 \sim \text{covariate}(s) + \text{bk}$) because density estimates can be severely biased when a behavioral response occurs in the presence of missing data (e.g., hair samples that failed to amplify a complete genotype; Augustine et al. 2014). However, we believe we mitigated a behavioral response by moving hair traps and randomly applying lures between sampling occasions, and Murphy et al. (2016) reported negligible bias to SECR-based density estimates in such a scenario. Thus, our inclusion of the bk parameter was a precautionary measure.

We modeled density as a function of sex to investigate for an uneven sex ratio (Tredick and Vaughan 2009, Sun et al. 2017). We did so by selecting the top ranked model from each study area and comparing that model to another with the same detection submodel but with density as a function of sex. We did not use land cover type or elevation as predictors of density because black bears track the spatiotemporal variability of food resources resulting in a fluid use of the landscape (Costello and Sage 1994, Sun et al. 2017). Also, because the New Mexico black bear hunting season occurs from mid-August to November, the seasonal distribution of black bears may change from summer to fall. Consequently, fall harvest regulations based on the variation in density of black bears across land cover types during the summer would be inappropriate. This enabled us to estimate density in a way that would be most conducive to the current management system employed by the NMDGF, which was a single density estimate for each study area given the large extent and heterogeneous landscape encompassed by the BMZs.

We could not fit 4 models for the NSC because the computer we used for analysis was unable to allocate enough memory to initialize all models. The 4 models were when g_0 and σ were modeled concurrently with elevation (i.e., $g_0 \sim \text{elev}$, $\sigma \sim \text{elev}$), concurrently with time and elevation (i.e., $g_0 \sim t + \text{elev}$, $\sigma \sim t + \text{elev}$), and with time and elevation for different parameters (i.e., either $g_0 \sim t$, $\sigma \sim \text{elev}$ or $g_0 \sim \text{elev}$, $\sigma \sim t$). We also excluded detector type in our model set for the NSacs because only 1 bear rub was set in the study area. We used Akaike's Information Criterion corrected for small sample size (AIC_c) to rank our model sets (Akaike 1973, Hurvich and Tsai 1989). When the top model received

<0.90 of the model weight we model averaged the estimates of the model parameters across all models to account for model selection uncertainty (Burnham and Anderson 2002). We assessed the strength of evidence (SOE) for variables in the top model by calculating the likelihood that the beta coefficient was not 0 (i.e., evidence ratios for the beta coefficients):

$$\frac{\mathcal{L}(\widehat{\beta(i)})}{\mathcal{L}(0)} = \exp\left(\left\{\frac{\widehat{\beta(i)}}{SE(\widehat{\beta(i)})}\right\}^2\right),$$

where $\widehat{\beta(i)}$ is the beta coefficient for variable i and $SE(\widehat{\beta(i)})$ is the standard error of the beta coefficient for variable i (Burnham 2015).

We obtained permits under the Convention on International Trade in Endangered Species (Export Permits 12US86417A/9, 13US19950B/9, and 14US43944B/9) to export samples to Canada for analysis. Our research was authorized by the NMDGF (Taking Protected Wildlife for Scientific and or Education Purposes Permit 3504) and approved by the New Mexico State University Institutional Animal Care and Use Committee (Protocol number 2011-027).

RESULTS

Field Sampling and Genetic Analysis

We set 557 hair traps that were open for 57,010 trap days and we collected 3,825 hair samples. In addition, we identified and sampled 112 bear rubs, which yielded 258 hair samples over 7,007 trap days (Fig. 2; Figs. S1 and S2; Table S1). Sampling effort varied across study areas and was dependent on the number of detectors set, the length of a sampling occasion (4 weeks vs. 2 weeks), and accessibility due to weather and wildfire. The number of hair samples collected during an occasion increased over the course of the summer and decreased toward the conclusion of sampling with peak collection during June and July.

The mean observed heterozygosity was 0.73, 0.73, and 0.68 for the Sangre de Cristo, Sandia, and Sacramento

Mountains, respectively. Of the 4,083 total hair samples collected, we eliminated 26.08% because of insufficient genetic material, 1.49% because of heterospecific contamination, and 0.17% because the samples contained DNA from >1 individual. We generated a full 9-locus genotype from 49.56% of the 2,950 remaining hair samples from which we identified 726 (368 males: 358 females) individuals (Table S1). The number of individuals that were mismatched at 1 or 2 markers was low with only 3 observed 1-mismatched pairs and 8 observed 2-mismatched pairs across all samples. Genotyping success varied across study areas (44–61%), but overall, success rates were lower than the 75% success rate observed in similar studies (D. Paetkau, Wildlife Genetics International, personal communication). When we shortened the length of the sampling occasion from 4 weeks (NSC and SSC) to 2 weeks (Sandias, NSacs, and SSacs), the percentage of successful genotypes increased by only 4%.

Density Estimation

We detected the majority (61–85%) of individuals in each study area only once with a similar number of repeat detections for males and females (Table 1). The number of unique individuals detected during each occasion for the NSC, NSacs, and SSacs increased over the course of sampling, peaking mid-summer, and subsequently decreasing toward the end of summer; this pattern was similar to the number of hair samples collected per sampling occasion. The number of unique individuals detected increased each occasion for the Sandias and SSC. Mean maximum recapture distance for males in a single year of sampling ranged from 4.23 km to 12.46 km with a maximum distance of 52 km by 1 individual in the NSC. Mean maximum recapture distance for females in a single year of sampling ranged from 0.38 km to 4.59 km with a maximum distance of 47 km by 1 individual, also in the NSC (Table 1). Three individuals were detected in 2 study areas in successive years. We detected 2 males in the NSC in 2012 and then again in the SSC in 2013; we detected 1 female in the SSC in 2013 and 90 km away in the Sandia Mountains in 2014.

Table 1. A summary of the capture history data for American black bears identified by hair samples collected across the northern (NSC) and southern (SSC) Sangre de Cristo, Sandia, and northern (NSacs) and southern (SSacs) Sacramento Mountains, New Mexico, USA, 2012–2014.

	Males								Females							
	N ^a	Det ^b	Avg ^c	SD ^d	Max ^e	R ^f	MMR (km) ^g	MaxD (km) ^h	N ^a	Det ^b	Avg ^c	SD ^d	Max ^e	R ^f	MMR (km) ^g	MaxD (km) ^h
NSC	190	239	1.26	0.43	3	33	7.57	52.03	189	216	1.14	0.35	3	23	3.98	47.41
SSC	67	80	1.19	0.38	3	8	12.46	29.33	64	77	1.20	0.39	2	12	2.53	20.33
Sandias	9	15	1.67	0.46	2	3	8.27	9.84	9	14	1.56	0.73	3	4	0.38	0.69
NSacs	49	74	1.51	0.74	5	14	9.22	36.18	39	58	1.49	0.72	3	12	2.47	7.05
SSacs	53	69	1.30	0.41	3	10	4.23	8.02	57	73	1.28	0.54	3	11	4.59	14.88
Total	368	477	1.39	0.48	5	68	8.35	27.08	358	438	1.33	0.55	3	62	2.79	18.07

^a Number of animals detected.

^b Number of detections across all sampling occasions.

^c Average number of detections per individual detected across all sampling occasions.

^d Standard deviation for the average number of detections.

^e Maximum number of detections of a single individual across all sampling occasions.

^f Number of recaptured individuals across all sampling occasions.

^g Mean maximum recapture distance.

^h Maximum distance moved by an individual.

Table 2. The top *a priori* spatially explicit capture–recapture models that accounted for the total model weight (w_i) for American black bears in the northern (NSC) and southern (SSC) Sangre de Cristo, Sandia, and northern (NSacs) and southern (SSacs) Sacramento Mountains, New Mexico, USA, 2012–2014, derived using Akaike’s Information Criterion corrected for small sample size (AIC_c). Models were ranked by the difference in AIC_c score (ΔAIC_c) between the top-ranked model and competing models were evaluated using changes in model deviance.

Study area	$g0^a$	σ^a	K^b	AIC_c	ΔAIC_c	w_i	Deviance ^c
NSC	t + cover	t + cover	17	3,149.15	0.00	1.00	3,113.5
SSC	t + elev	t + elev	11	1,169.98	0.00	0.87	1,145.8
	t + cover	t + cover	17	1,173.85	3.87	0.13	1,134.4
Sandias	sex	sex	5	209.23	0.00	0.96	194.23
	constant	constant	3	216.23	6.99	0.03	208.51
	elev	elev	5	219.20	9.97	0.01	204.20
NSacs	t + cover	t + cover	17	868.31	0.00	0.96	825.57
	cover	t + cover	10	874.86	6.55	0.04	852.01
SSacs	cover	cover	7	1,168.68	0.00	0.50	1,153.58
	t + cover	t + cover	17	1,169.62	0.94	0.31	1,128.97
	t + elev	t + elev	15	1,170.58	1.90	0.19	1,135.47

^a Detection probability at the activity center ($g0$) and the spatial scale over which $g0$ declines (σ) a function of elevation (elev), sex, time variation (t), or land cover type (cover); + = additive effect; constant = no variation. Density was held constant for all models listed.

^b Number of model parameters.

^c Model deviance = $-2(\log\text{-likelihood})$.

None of the top models included an animal by site learned response; however, the parameter structure of the top model with the addition of bk was the second ranked model in each study area except for the SSacs, where the behavioral model was third (Tables S2–S6). Although models that included bk reduced the deviance and appeared competitive in the model set, the deviances were nearly identical to the top model, so the extra parameter failed to substantially improve model fit. As a result, the support for bk models was likely a result of an identical model structure to the well-supported top models (Arnold 2010). Therefore, we removed all models that included bk from our model sets, and we report only on the reduced model sets hereafter.

There was little model selection uncertainty in each study area except in the SSacs with the top model garnering 50% of the total model weight (Table 2; Tables S7–S11). Detection probability ($g0$) was highest for the Sandias ($g0 = 0.029$ and 0.0017 for females and males, respectively), but overall, $g0$ was low across all study areas (Table 3). The land cover type or elevation at which the detector was deployed were helpful covariates in explaining heterogeneity in both $g0$ and σ for all

study areas except for the Sandias, which included sex as the only important explanatory variable (Table 2; Tables S7–S11). Models allowing $g0$ to vary over time were supported because $g0$ was low in early summer, increased as the summer progressed, and then decreased in late summer except in the SSC where $g0$ increased in each occasion. Detection probability increased as elevation increased in the SSC with σ exhibiting an inverse relationship. The SOE that the effect of elevation was not 0 was high for both $g0$ and σ (Table A1). In the Sandias, males showed a lower detection probability ($g0$) and higher movement rate (σ) than female black bears, and the SOE that the effect of sex on both parameters was not 0 was high (Table A1). The influence of land cover on $g0$ and σ across the NSC, NSacs, and SSacs was variable. The most consistent relationship was that $g0$ was lower and σ was higher within the piñon pine-juniper land cover type with aspen-conifer (NSC) and mixed conifer (NSacs and SSacs) land cover types as reference categories, respectively (Table A1). The SOE that the effect of land cover type was not 0 was high for all parameter-study area combinations except for σ in the NSacs. The effect of the

Table 3. Estimated abundance (\hat{N}) and density (\hat{D} ; bears/100 km²), coefficient of variation of the density estimate ($CV[\hat{D}]$), detection probability at the activity center ($g0$), spatial scale over which detection probability declines (σ ; km), and their 95% confidence intervals for American black bears in the northern (NSC) and southern (SSC) Sangre de Cristo, Sandia, and northern (NSacs) and southern (SSacs) Sacramento Mountains, New Mexico, USA, 2012–2014. We model averaged \hat{N} and \hat{D} for the SSC and SSacs using models with model weights > 0.00 and for the NSacs using the top-ranked model with density held constant and varying by sex.

Study area ^a	\hat{N} (95% CI)	\hat{D} (95% CI)	$CV(\hat{D})$	$\hat{g0}$ (95% CI)	$\hat{\sigma}$ (95% CI)
NSC	1,249.5 (1,019–1,532.1)	21.9 (17.8–26.8)	0.10	0.00060 (0.00023–0.0015)	3.31 (2.09–5.25)
SSC	646.8 (444.3–941.6)	19.7 (13.8–28.3)	0.19	0.000018 (0.0000061–0.000052)	18.12 (12.38–26.53)
Sandias	43.3 (22.2–84.2)	25.7 (13.2–50.1)	0.35	0.029 ^b (0.015–0.078) 0.0016 ^c (0.00048–0.0055)	0.76 ^b (0.49–1.15) 4.99 ^c (2.47–10.10)
NSacs	77.5 ^b (56.2–107.1) 85.8 ^c (62.8–117.3)	10.0 ^b (7.2–13.9) 11.0 ^c (7.8–15.5)	0.17 0.18	0.0027 (0.00058–0.012)	5.42 (2.03–14.44)
SSacs	412.3 (293.2–579.8)	16.5 (11.6–23.5)	0.18	0.0032 (0.0011–0.0093)	2.67 (1.69–4.21)

^a Primary bear habitat: NSC = 5,716 km²; SSC = 2,944 km²; Sandias = 168 km²; NSacs = 776 km²; SSacs = 2,488 km².

^b Parameter estimate for female black bears.

^c Parameter estimate for male black bears.

ponderosa pine cover type on both g_0 and σ was negligible relative to aspen-conifer and mixed conifer (Table A1). In the NSC, spruce-fir and mixed conifer showed a negative relationship with g_0 and a positive relationship with σ relative to aspen-conifer (Table A1).

There was marginal support that density varied by sex in the NSacs ($\Delta AIC_c = 0.87$; $w_i = 0.61$ for the top model) and no support in all other study areas ($w_i \geq 0.75$ for the top models holding density constant; Table S12). Mean density estimates varied within and between mountain ranges (range = 16.6–25.3 bears/100 km²; Table 3) as did estimates of abundance given the different sizes of the study areas (range = 43.3–1,249.5 bears; Table 3).

DISCUSSION

By employing NGS with SECR models, we provided density estimates that will aid in setting harvest limits and serve as a benchmark for comparison with future research for multiple black bear populations in New Mexico. Our density estimates were similar to (SSacs) or higher (NSC, SSC, Sandias, and NSacs) than the previous estimates used by NMDGF to manage these populations (Costello et al. 2001). The differences in our estimates of density from those of Costello et al. (2001) are most likely due to differences in analytical techniques (the previous method did not account for imperfect detection) and we speculate due to potential changes in black bear population dynamics over the past decade. It should be noted, however, that the 95% confidence intervals surrounding our estimates typically encompassed those of Costello et al. (2001).

There is strong evidence that piñon pine-juniper land cover is associated with lower detection rates and increased movement rates, whereas an increase in elevation has the opposite association (Table A1). Like other ursid NGS studies, estimates of detection probability and movement rate varied over time and by sex in our study (Kendall et al. 2009, Sawaya et al. 2012, Stetz et al. 2014). For example, detection probabilities were lower and movement rates were higher during early and late summer, and males, in general, had higher movement rates than females. Detection probabilities also differed between the sexes in the Sandias (Table 3).

The importance of a temporal effect on g_0 and σ in the NSC, SSC, NSacs, and SSacs is likely a result of seasonal mating and foraging behaviors (Alt et al. 1980, Garshelis and Pelton 1981, Costello et al. 2003). During the breeding season, males increase movement rates as they traverse their home range searching for receptive females (Young and Ruff 1982, Costello 2008, Lewis and Rachlow 2011). In fall, bear home range size and distance between sequentially recorded movements increases as bears travel outside their core area to exploit the spatially and temporally variable oak mast (Ostfeld et al. 1996, Costello 2008), which is an important food source that was previously shown to be correlated with black bear reproductive output in New Mexico (Costello et al. 2003). These behavioral differences during mating season and hyperphagia would increase movement rates and enlarge home range size, thereby reducing g_0 while

increasing σ because of the compensatory relationship between the 2 parameters (Efford and Mowat 2014).

The influence of land cover and elevation on g_0 and σ is also likely a function of black bears responding to spatiotemporal changes in food abundance (Costello and Sage 1994, Mazur et al. 2013, McCall et al. 2013). During spring, or the pre-mast season, grasses, forbs, and ants dominate bear diets (den emergence to mid-Jul; Costello et al. 2001). Diets then shift toward soft mast species such as berries in the late summer and early fall (56% of scat volume, mid-Jul to mid-Sep), with fall (mid-Sep through Oct, den immergence) diets dominated by acorns (87% of scat volume) and supplemented with juniper berries (Costello et al. 2001, Guntley 2016). Mid-elevation land cover types (i.e., mixed conifer) are more likely to contain a higher abundance of grasses and forbs because of earlier snowmelt compared to higher elevations and higher levels of precipitation compared to lower elevations (Zlotin and Parmenter 2008). As snow melts, the availability of grasses and forbs increases with soft mast ripening with the arrival of summer rains. Once hard mast species begin to ripen in late August (Zlotin and Parmenter 2008), black bears shift their attention toward land cover types containing those species (Costello and Sage 1994, Onorato et al. 2003). Thus, the availability of grasses and soft mast at mid- to high- elevations and the scarcity of food in the low elevation piñon pine-juniper cover type during summer (Zlotin and Parmenter 2008) may explain the negative relationship with g_0 and the positive relationship with σ for piñon pine-juniper and low elevations for all study areas except the Sandias (Table A1). Black bears are also predators of elk calves in portions of New Mexico and they may move toward calving grounds in spring, which are commonly found at higher elevations (Quintana 2016).

Half of our samples that met our quality threshold failed to produce a reliable genotype, which reduced the number of unique individuals identified and the number of recaptures. The lack of data also likely contributed to the low detection probabilities and affected our ability to estimate σ precisely (Efford et al. 2004, Sollmann et al. 2012, Sun et al. 2014). However, simulation has shown that SECR models provide relatively robust estimates of density under data dilution scenarios (Mollet et al. 2015). The relatively more precise NSC density estimate, despite a low g_0 , may be a result of a greater number of unique individuals and recaptures, which provided sufficient data for the model to predict unobserved movement distances (Table 1; Sollmann et al. 2012, Sun et al. 2014). Whereas g_0 was the highest for the Sandias, the density estimate was the least precise. This relatively low level of precision was most likely caused by the few individuals detected ($n = 18$) and a low number of spatial recaptures, which may have contributed to poor estimates of σ and an inability to predict unobserved movement distances (Sollmann et al. 2012). The low sample size and few recaptures is further evident in the simple structure of the top models and the high coefficient of variation for the estimate of density (Tables 2 and 3).

We suspect that for all study areas, intense ultraviolet (UV) radiation coupled with extended sampling intervals were the

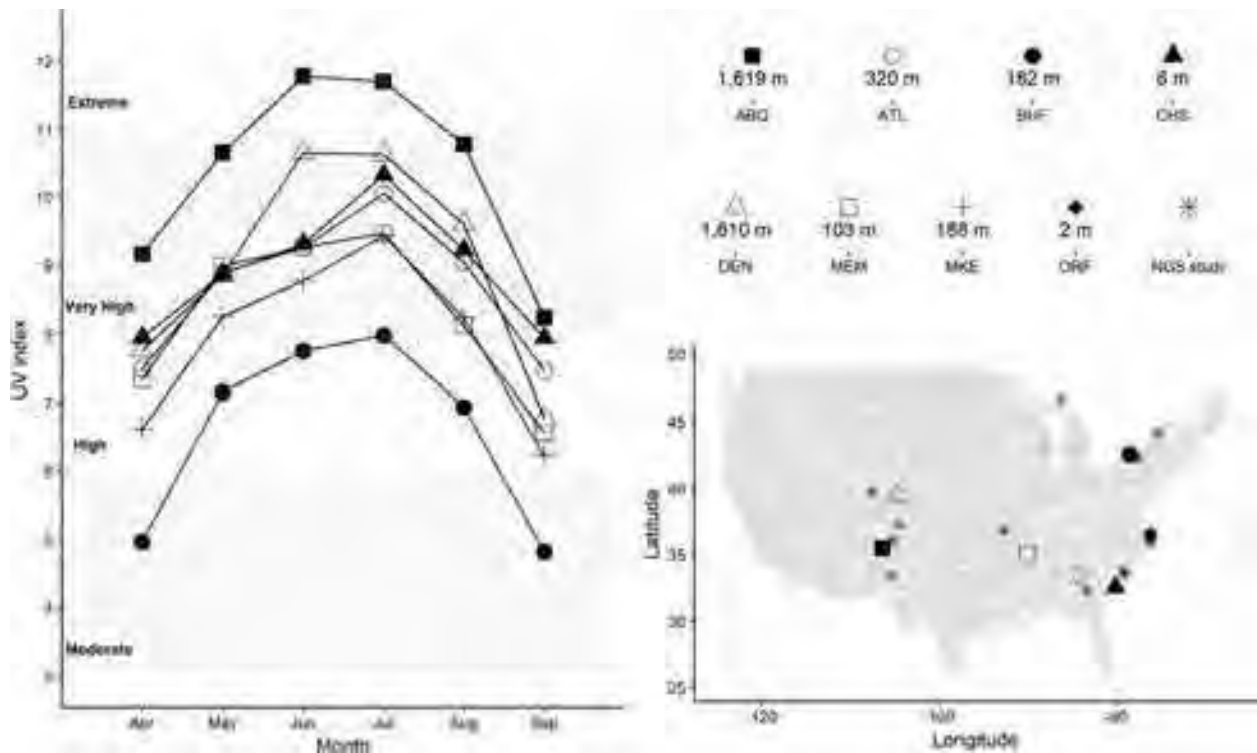


Figure 3. Mean monthly ultraviolet radiation (UV) index generated by the National Oceanic and Atmospheric Administration showing estimated noontime intensity of UV radiation coupled with the World Health Organization human health hazard UV index classification for Albuquerque, New Mexico (ABQ); Atlanta, Georgia (ATL); Buffalo, New York (BUF); Charleston, South Carolina (CHS); Denver, Colorado (DEN); Memphis, Tennessee (MEM); Milwaukee, Wisconsin (MKE); and Norfolk, Virginia (ORF), USA, 2012 (left) along with a map showing the aforementioned cities and the non-invasive genetic sampling studies conducted on American black bears in the United States that used a spatially explicit capture–recapture framework (bottom right) and their elevations (top right).

Table 4. Mean density estimates (\hat{D}) for American black bears (bears/100 km²), 95% confidence intervals, and the proportion of hair samples successfully genotyped for noninvasive genetic sampling studies conducted in the United States that used a spatially explicit capture–recapture framework.

Study area	State	\hat{D}	95% CI	Genotyping success	Reference
Ozark Highlands	MO	1.70	1.10–2.40	0.70	Wilton et al. 2014 ^a
Carver Bay	SC	4.60	2.40–6.70	0.90 ^b	Drewry et al. 2013
Picture Rocks National Lakeshore	MI	10.56	8.59–12.79	0.91	Sollmann et al. 2012 ^{c,d}
Glacier National Park	MT	12.00	10.00–14.40	0.72	Stetz et al. 2014 ^{d,e}
Southern Black Bear Range	NY	11.20 ^f	1.50–77.80 ^g	0.89	Sun et al. 2017 ^a
Southern Sacramento Mountains	NM	16.55	11.64–23.53	0.44	This study
Southern Sangre de Cristo Mountains	NM	19.74	13.77–28.30	0.48	This study
Fort Drum Military Installation	NY	20.00	15.00–26.00	0.89	Gardner et al. 2010 ^c
Northern Sacramento Mountains	NM	20.17	15.35–26.52	0.61	This study
Durango	CO	21.00–38.00	16.00–55.00	0.75 ^b	Apker et al. 2016
Spanish Peaks	CO	21.00–44.00	16.00–57.00	0.73 ^b	Apker et al. 2016
Northern Sangre de Cristo Mountains	NM	21.86	17.83–26.80	0.49	This study
Central Georgia Population	GA	23.20–24.00	15.95–30.45	0.87 ^b	Hooker et al. 2015 ^d
Sandia Mountains	NM	25.75	13.22–50.14	0.53	This study
Kentucky–Virginia Border	KY, VA	26.00	18.00–37.00	0.45 ^b	Murphy et al. 2016
Greenhorn Mountain	CO	26.00–33.00	19.00–43.00	0.74 ^b	Apker et al. 2016
Piedra	CO	32.00–60.00	25.00–82.00	0.72 ^b	Apker et al. 2016
Lewis Ocean Bay	SC	33.90	22.90–44.80	0.88 ^b	Drewry et al. 2013
Alligator River NWR	NC	37.00–46.00	30.70–66.00	0.82 ^b	Tredick and Vaughan 2009
Great Dismal Swamp NWR	NC, VA	46.00	34.60–57.30	0.84	Tredick and Vaughan 2009
Pocosin Lakes NWR	NC	58.00–77.00	49.10–88.50	0.85 ^b	Tredick and Vaughan 2009

^a Genetic analysis not conducted by Wildlife Genetics International.

^b Value averaged over multiple sampling years.

^c Bayesian-based analysis.

^d Analyzed hair samples were a subset of the total hair samples collected.

^e Black bear population sympatric with grizzly bears (*Ursus arctos*).

^f Baseline density estimate averaged across all top models.

^g 85% confidence interval.

main factors explaining the poor genotyping success we observed (Stetz et al. 2015). Ultraviolet radiation causes DNA degradation by forming dimers between adjacent pyrimidine bases, instead of those bases binding with their cross-strand partners, which prevents the DNA polymerase from progressing past the dimer and results in an incomplete genotype (Jagger 1985). Factors influencing UV levels include cloud cover, elevation, latitude, shade, length of exposure, season, ozone depletion, and atmospheric turbidity (Piazena 1996, Stetz et al. 2015). For example, UV radiation increases with decreasing cloud cover, increases with elevation (9–11% per 1,000 m), and increases with decreasing latitude (Blumthaler et al. 1997). The UV radiation levels across much of New Mexico are higher than across most of the United States and are higher than other regions where NGS methods have been used to estimate bear abundance and density (Fig. 3; National Oceanic and Atmospheric Administration [NOAA] 2012). Further, we would expect UV radiation levels to be 1–26% higher in our study areas compared to those for Albuquerque, New Mexico, where the NOAA (2012) UV measurement was taken, because our study areas were at equal or higher elevations. Reducing the sampling interval should have increased genotyping success; however, when we reduced our sampling interval from 4 to 2 weeks (which is a common period used by similar NGS studies in the western United States), we observed only marginal improvement in genotyping success (4%).

In the SSC, we also lost hair samples because of 2 forest fires, the Tres Lagunas (4,135 ha) and the Jaroso (4,511 ha). These fires affected 450 km² (12.7%) of the trapping grid and prevented us from accessing and checking hair traps located near the fire, primarily during the second and third sampling occasions (3–13% of total hair traps; Fig. S3). Moreover, many of the fire-affected traps were in an area where we expected higher bear abundance. Anecdotally, these hair traps consistently yielded more hair samples post-fire than hair traps located in some areas that were unaffected by the fires. The limited access also prevented us from identifying more bear rubs across the SSC, restricting our use of multiple sampling methods and hindering our ability to minimize the impacts of capture heterogeneity present with any one survey method (Boulanger et al. 2008).

Despite UV radiation and sampling difficulties, our density estimates had levels of precision comparable to those obtained in other black bear studies conducted across the United States that used NGS and a SECR estimator (Table 4). The level of precision we achieved may have been a consequence of the large extent of our study areas, which may have allowed us to detect a large proportion of the population within each mountain range even though we failed to amplify approximately half of our samples. Our density estimates fell within the middle range of NGS and SECR-based black bear density studies (Table 4). Black bear density was highest on the east coast in pocosin, which is characterized by high food production and cover, low human disturbance, and agricultural food resources mixed throughout (Tredick and Vaughan 2009, Drewry et al. 2013). Eastern populations inhabiting pine plantations were at densities comparable to

New Mexico populations likely because pine plantations had limited food, insufficient cover, and fewer agricultural food resources as compared to pocosin (Tredick and Vaughan 2009, Drewry et al. 2013, Hooker et al. 2015). Locally, our estimates are similar to or lower than those in southern Colorado, USA, and similar to or higher than those in northern Colorado (Table 4); however, estimates for southern Colorado fluctuated substantially within each study area and over multiple years. Populations with densities lower than ours were expanding their range (Sun et al. 2017), recolonizing (Wilton et al. 2014), residing in habitat with low food resources (Drewry et al. 2013), or were sympatric with grizzly bears (*Ursus arctos*; Stetz et al. 2014).

We provided updated density estimates for an important game species in New Mexico. Our estimates add to a growing number of studies that have used NGS coupled with SECR models to estimate the density of black bear populations across the United States. Our data suggest that the detection probability of black bears is likely influenced by the abundance and distribution of food resources on the landscape, which in turn, may be influenced by land cover type and elevation. Furthermore, UV radiation levels in New Mexico appear to be higher than elsewhere in the contiguous United States and are also most likely responsible for our low rate of genotyping success, a rate comparable to those in the high Arctic of North America (Dumond et al. 2015).

MANAGEMENT IMPLICATIONS

Our estimates of density will assist the New Mexico Department of Game and Fish in setting sustainable harvest limits for multiple populations of black bears in New Mexico. We suggest that researchers using hair samples to monitor wildlife populations incorporate a pilot study to evaluate the effects of UV degradation, among other factors, on genotyping success. To help reduce UV exposure, researchers could set detectors in more shaded areas (e.g., north facing slopes), set fewer detectors so that they can be checked more frequently, or increase the number of personnel used to check detectors. We believe more personnel is preferable to fewer detectors because it allows for a larger study area, a denser trapping array, or alternative trapping configurations to be sampled. A larger study area will help mitigate the effects that seasonal movement patterns can have on parameter estimates, particularly in areas with highly variable food resources, and provide density estimates at the spatial scale at which many agencies make management decisions.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at the publisher's website.

APPENDIX A. Relationship and effect of covariates on spatially explicit capture–recapture model parameters.

Table A1. The beta coefficient (Beta), standard error (SE), and lower (LCL) and upper (UCL) 95% confidence intervals for covariate variables from the top ranked spatially explicit capture–recapture model for American black bears in the northern (NSC) and southern (SSC) Sangre de Cristo, Sandia, and northern (NSacs) and southern (SSacs) Sacramento Mountains, New Mexico, USA, 2012–2014. Included is the strength of evidence (SOE) of the likelihood that the beta coefficient is not 0 where larger values indicate a greater SOE that the effect of the variable is not 0. The reference categories for land cover type were aspen-conifer (NSC) and mixed-conifer (NSacs and SSacs), and the reference category for sex (Sandias) was female. Model parameters include detection probability at the activity center (g_0) and the spatial scale over which g_0 declines (σ).

Variable	Parameter	Study area	Beta	SE	LCL	UCL	SOE
Elevation	g_0	SSC	1.57	0.25	1.08	2.07	273,870,708.14
Elevation	σ	SSC	−0.62	0.12	−0.84	−0.39	1,570,914.27
Sex	g_0	Sandias	−2.92	0.80	−4.49	−1.36	824.02
Sex	σ	Sandias	1.89	0.42	1.07	2.71	26,688.19
Piñon pine-juniper	g_0	NSC	−3.07	0.48	−4.02	−2.12	564,259,121.57
Piñon pine-juniper	g_0	NSacs	−2.55	0.71	−3.93	−1.16	669.32
Piñon pine-juniper	g_0	SSacs	−2.38	0.52	−3.40	−1.36	33,281.84
Piñon pine-juniper	σ	NSC	1.33	0.24	0.87	1.79	8,592,700.16
Piñon pine-juniper	σ	NSacs	−0.04	0.38	−0.80	0.71	1.01
Piñon pine-juniper	σ	SSacs	0.72	0.25	0.23	1.21	63.55
Ponderosa	g_0	NSC	−0.59	0.49	−1.56	0.37	2.06
Ponderosa	g_0	NSacs	0.15	0.33	−0.50	0.79	1.11
Ponderosa	g_0	SSacs	0.39	0.52	−0.63	1.41	1.32
Ponderosa	σ	NSC	0.05	0.23	−0.40	0.50	1.03
Ponderosa	σ	NSacs	−0.24	0.19	−0.62	0.14	2.19
Ponderosa	σ	SSacs	−0.39	0.24	−0.86	0.09	3.54
Mixed-conifer	g_0	NSC	−1.84	0.44	−2.71	−0.97	5,363.23
Mixed-conifer	σ	NSC	0.94	0.21	0.52	1.35	16,038.76
Spruce-fir	g_0	NSC	−2.09	0.53	−3.13	−1.04	2,140.41
Spruce-fir	σ	NSC	1.21	0.26	0.70	1.71	56,102.60

Research Summary 2019–2021

Estimating Black Bear Abundance Using Spatial Capture-Recapture in Bear Management Zones 1 and 10

Introduction:

Management of black bear hunting in New Mexico is predicated on regulation through a Bear Management Zone (BMZ) system, wherein a BMZ is a collection of Game Management Units (GMUs) across which there are similar habitat, landscape connectivity, and high likelihood of strong, local population dynamics occurring. These BMZs are not isolated populations, as ear-tag and GPS collar data over the years have shown bears moving large distances across the state and beyond. However, the sky-island effect that creates large stretches of non-preferred habitat between core areas of bear habitat in New Mexico (Atwood et al. 2011), as well as social considerations that drive hunting pressure and human-bear interactions, necessitate management at this local-population level, while recognizing the existence of metapopulation dynamics across the state.

Bear hunting is managed through this BMZ system by setting zone-specific harvest limits that restrict the number of bears that can be taken in a given zone. Currently, setting bear harvest limits relies on density estimates from two study areas and traditional capture-recapture methods using live capture and radio-telemetry tracking (Costello et al. 2001) and three mountain ranges where modern non-invasive genetic sampling (NGS) was used (Gould et al. 2018). Those density estimates were then applied across the amount of primary bear habitat in a zone as defined by a habitat suitability model developed in 2015. Although bears use secondary and edge habitat, these habitats were not included in density estimation resulting in conservative estimates. Population estimation through this extrapolation of density estimates to bear habitat is used for the zones where these studies occurred, as well as for other zones according to similarities in habitat and geography.

From that zone-specific population estimate, hunting is managed for a sustainable harvest by allocating only 8–12% of the population estimate as the total allowable harvest for that zone (Miller 1990). To further ensure sustainable populations, only 30% of that 8–12% total harvest limit can be female bears without cubs. A zone closes when the harvest reaches either the total harvest limit or the female sub-limit, or if neither limit is reached then zones close at the end date of the season. Hunters are required by law to have their harvested bear pelt-tagged with a Department employee or law enforcement officer within five days of harvest, allowing the Department to how many bears have been harvested and close the zone accordingly.

The study by Gould et al. (2018) was the first implementation of modern NGS (via ‘hair snares’) to monitor black bear populations in New Mexico. The use of hair snares (barbed wire corrals that pull hair from bears as they pass across the wires to access bait) allows for large geographic areas to be sampled and a high volume of captures with compared with traditional capture-recapture methods (Woods et al. 1999). Used in conjunction with spatial-recapture (SCR) models, which can accommodate large sampling areas and explicitly link estimation to the space in which animals occurred, we can generate estimates of population size at a scale meaningful to management with no need for extrapolation. Of those zones not covered by Gould et al. (2018) we chose BMZs 1 and 10 for implementation of this NGS and SCR modelling approach.

Bear Management Zones 1 and 10 consistently have had high harvest over the past 12 years, reaching the total or female harvest limit most years. Both zones have also had recent

landscape altering wildfires (2011's Las Conchas fire and preceding fires in BMZ1; 2012's Whitewater-Baldy fire in BMZ 10), which may have had both negative effects (short-term displacement during fires) and positive effects (eg. beneficial seral stage of vegetation communities with abundant mast and forage). Obtaining contemporary estimates in these zones, using updated analytical techniques, will provide the best available information for sustainable management of black bear populations in those zones.

Methods:

Study Area

The BMZ 1 study area (14,043 km²) included GMUs 4, 5A/B, 6A/B/C, 51A/B, and 52. These GMUs are a contiguous area of similar bear habitats in the Jemez Mountains and southern San Juan mountains, as well as surrounding foothill and lowland habitats, that are representative of various habitat types under the 'Southern Rockies' Ecoregion III level habitat classification (Griffith et al. 2006). This study area did not include GMU 7, which is also part of BMZ 1 and has contiguous, suitable bear habitat with the study area. However, habitat in GMU 7 transitions into San Juan/Chaco tablelands habitats that becomes more arid and sparsely forested as you head west from the study area. Given the difference in habitat type and logistical constraints for sampling that additional area, we did not include GMU 7 in the study area.

The BMZ 10 study area included GMUs 15, 16A/B/C/D/E, 17, 21A/B, 22, 23, and 24. These GMUs are a contiguous area of similar bear habitats in the Greater Gila region that are representative of various habitat types under the Arizona/New Mexico Mountains Ecoregion level III habitat classification (Griffith et al. 2006). This study area did not include GMUs 12 and 13, which have contiguous suitable bear habitat with the study area; nor did the study area include GMUs 18, 20, 26, or 27, which have sky-islands of suitable bear habitat separated from the study area by large expanses of non-preferred lowland habitat. These GMUs were not included because of the logistical constraints of sampling such a large area.

We established hair snare sites within all habitat types as identified in the Department's 2015 habitat model for black bear (Figures 1 and 2). This allows for area-wide estimation of population size, in recognition that bears utilize multiple habitat types, movement occurs between patches of primary habitat, habitat may change year to year, and to model the population with as direct an estimate as possible of the management area and minimize or eliminate the need to extrapolate to a habitat model.

Field Sampling

Simulations indicated that clusters of detectors with 1.6-km spacing between detectors, 11.2-km spacing between clusters, and sampling for 8 occasions would produce precise and unbiased density and abundance estimates from spatial capture-recapture models. We deployed hair snares in grids of 6–12 sites, with spacing of 1.2–2.4 km (2019 avg. = 1.63 km; 2020 and 2021 av. = 1.48 km) between sites to adjust for access and the effect of topography and landscape ruggedness. Grids were spaced roughly 11.2 km apart. We revisited sites every 7–10 days for a total of 8 occasions spanning early June to mid-August. Hair snares were set with two strands of barbed wire wrapped around ≥ 3 trees, with one strand at 35 cm high and another at 65 cm high (Woods et al. 1999). Bait (pastries) were placed at the center of the hair snare, and a scent lure (cherry and anise oil) was applied to the site and surrounding area.

Samples were collected from the barbed wire strands, off of trees which the barbed wire was attached to, and off the ground if the bear rubbed against objects on the ground within the hair snare. A sample consisted of all the hair at a single barb, or hair from up to three adjacent

barbs (along the same wire or vertically adjacent on each strand) if the hair was consistent in appearance. Hair was deposited in a paper coin envelope, and the barbs from which the hair was collected were sterilized with a lighter.

Genetic Analysis

We did not analyze samples if they contained zero guard hair roots and <5 underfur hairs, or if they were visually recognized as nontarget species. Following the initial screening, we purified DNA from the remaining samples using QIAGEN DNeasy Blood and Tissue kits, ran samples through a single-locus prescreening to identify samples that were degraded, unsuitable, or from nontarget species. Samples that passed the prescreen were analyzed at 9 microsatellite loci (including the ZFX/ZFY marker used for the pre-screen) used previously for black bear in New Mexico (G1D, G10B, G10H, G10J, G10L, G10M, G10U, MU59; Gould et al. 2018). For any sample with mismatch pairs at one or two loci, we amplified those samples at another three loci (CXX20, CXX110, and G10X) to determine whether the mismatches were due to genotyping error or if the samples were from different individuals (Kendall et al. 2009). We then assigned an individual identifier for each unique 9-locus genotype (or 12 locus genotypes for those that had one or two loci with mismatches between replications). Genotyping of all hair and tissue samples, error-checking, and PCA analysis of genotypes was conducted by Wildlife Genetics International in Nelson, British Columbia, Canada (WGI; Paetkau 2003).

Density Estimation

We used spatial capture recapture (SCR) models (Efford 2004, Borchers and Efford 2008) from the secr package (v. 4.5.3, Efford 2022) in program R to estimate population size (\hat{N}), baseline detection probability at an individual's activity center (g_0), and the movement coefficient for decay in detection as distance from an activity center increases (σ). We modeled density as uniform across space with a homogenous Poisson point process, and an observation model using the half normal detection function. We defined the 'state space' (a mathematical representation of the effective sampling area across which animals can be detected) by creating a polygon from the 2015 bear habitat model using primary, secondary and edge habitats for BMZ 1, and only primary and secondary habitats for BMZ 10. We then buffered those polygons (5 km for BMZ 1, and 4 km for BMZ 10) by distances suggested by the suggest.buffer function in the secr package, which allows for the models to account for bears that could occur at the edge of the state space (Royle et al. 2014).

We evaluated a set of models that included a trap-specific behavioral response (bk) on g_0 because the sites were baited, and evaluated for sex-specific predictors for estimates of g_0 and σ . Estimates were made for each study area separately. We pooled data for BMZ 10 across 2020 and 2021 to get a single population estimate because geographically distinct portions of the study area were sampled each year. We evaluated models using Akaike's Information Criterion corrected for small sample size (AIC_c), and used model averaging if AIC_c weight was less than 0.90 for the top model.

Results

Field Sampling and Genetic Analysis

In BMZ 1 during 2019, we collected 1,097 samples from 179 sites over eight 7–10 day sessions. Of those samples, 714 (65%) were visually identified as bear hair or had enough material for DNA analysis, and of those samples 482 (68%) were genotyped to an individual identification for a total of 94 bears (49F:45M) Those 482 successfully identified samples represented 191 unique detections of individuals across sites and occasions (Table 1).

In BMZ 10, we collected a total of 1,706 samples (1,012 in 2020; 694 in 2021) from 349 sites (249 in 2020; 110 in 2021) over eight 7–10 day sessions. Of the 1,012 samples from 2020, 895 (88%) were visually identified as bear hair or had enough material for DNA analysis, and of those samples 725 (81%) were genotyped to an individual identification for a total of 152 bears (74F:78M). Those 725 successfully identified samples represented 311 unique detections of individuals across sites and occasions (Table 1). Of the 694 samples from 2021, 657 (94%) were visually identified as bear hair or had enough material for DNA analysis, and of those samples 493 (75%) were genotyped to an individual identification for a total of 118 bears (63F:55M). Those 493 successfully identified samples represented 244 unique detections of individuals across sites and occasions (Table 1). One male bear was detected both years, once in 2020 and three times in 2021 approximately 16 and 35 km away.

Through our error-checking process that compared samples with mismatches, we found two samples in 2019 with a mismatch at two markers, and those were amplified at the additional three loci to distinguish that these samples came from different individuals. Mismatches at two loci were found for 30 samples in 2020, and amplification at the additional three loci revealed that these were not due to genotyping error and were due to the samples coming from different bears. In 2021, mismatches at two loci were found for 29 genotypes, and amplification at the three additional loci revealed differences at those loci as well confirming that the genotypes were from different bears. A genotype-based PCA analysis to assess potential outliers revealed slight overlap between BMZ 1 and BMZ 10, but a stronger pattern of genetic differentiation between the zones (Figure 3).

Density Estimation

The number of re-detections of individuals at a single site across different occasions, or at multiple sites, represented a significant portion of the detections at each study area (Table 1). The average distance moved between sites was 2,402 m in BMZ 1 and 2,964 in BMZ 10, with a maximum distance moved of 7,725 m in BMZ 1 and 21,904 in BMZ 10.

The top two models (>0.9 AIC_c weight) for BMZ 1 included both behavioral and sex effect on g_0 , and differed in including a sex effect on sigma (Table 2). Similarly, the top model for BMZ 10 (AIC_c weight = 1) included behavioral and sex effects on g_0 , and a sex effect on sigma (Table 2). Model estimates of population size (\hat{N}) for the given study area were 1,574 (95% CI = 1,050 – 2,358) in the BMZ 1 study area, and 2,192 (95% CI = 1,791 – 2,698) in the BMZ 10 study area (Table 3). Estimates of g_0 and sigma were similar across both study areas (Table 3).

Discussion

Our estimates of population size are similar to previous estimates for BMZ 1 (17 bears per 100 km² of primary habitat), and higher than previous estimates for BMZ 10 (9 bears per 100 km² of primary habitat, Costello et al. 2001). In BMZ 10, converting the population estimate to a density per 100km² of primary habitat to compare to the method previously used to estimate population size, returns a density of 15.9 bears per 100km² of primary habitat. That estimate is similar to densities found for other New Mexico mountain ranges (Gould et al 2018) and to a similar conversion of our results for BMZ 1 (16.9 bears/100 km² of primary habitat). This observed higher density is more reasonable given the understanding that the Gila region contains highly productive bear habitat, comparable to other mountain ranges in New Mexico. The previous estimate is much lower than densities that have been found in more contemporary studies conducted in similar New Mexico habitat using NGS and SCR.

The goal of this study was to estimate population size across the entire area of a BMZ, but even with the easing of logistical constraints when using NGS this broad coverage was still not entirely possible for these studies. These population estimates for the given study areas are for a significant portion of each zone, however there were still GMUs with bear habitat that were not covered and for which extrapolation will be necessary to get a zone-wide population estimate. The contemporary estimates from our studies will provide a robust baseline from which to make those extrapolations to these neighboring GMUs, which are contiguous with habitat in our study areas and in close proximity to them. The Department will make these extrapolations at the most conservative levels informed by the confidence intervals we observed.

These studies were conducted in years of unique environmental conditions, including an ongoing, historic drought. Both of these study areas share a similar post-fire dynamic (similar large burns in the early 2010s), and moderate wildfires burned in BMZ 10 while we conducted sampling (the Cub, Good, and Tadpole fires in 2020; the Johnson fire in 2021). The role of fire on landscapes in the Southwest is complex and changing, however it should be noted that low to moderate intensity fires are a natural stochastic event for these ecosystems and the species that live here have adapted to persist in the face of that change. The population estimates we found through these studies are encouraging in illustrating the ability for these black bear populations to persist through the immediate dangers of a wildfire, and thrive on the post-fire landscape.

We achieved higher success rates for genotyping than previous efforts in New Mexico (Gould et al. 2018), which we attribute to the decreased time between sampling occasions (7–10 in our study; 14–28 days in previous study) which subsequently decreased exposure time to environmental conditions. The higher genotyping success rates we observed resulted in a greater number of observations, and in combination with sampling across multiple habitat classifications we had a robust data set for modeling over such a large area.

The Department plans to continue implementing this methodology in BMZs throughout the state to provide contemporary estimates in zones not previously studied and in zones where significant habitat changes may occur. Future work will focus on evaluating models for the effect of habitat variation on density, analyzing data from trail cameras at hair snare sites to compare camera detections to NGS captures, looking at metapopulation dynamics and population genetics to investigate further geneflow between zones, and genotyping harvested bears from zones where we've conducted our studies to compare with animals detected through our research efforts. In conjunction with these point estimates of population size generated by these studies, the Department is also developing an Integrated Population Model (IPM) approach for monitoring population dynamics in each zone. These IPMs will incorporate data from a variety of sources, including: over 20 years of age, sex, and hunter effort harvest data, population estimates from our SCR studies, and survival and other population demographic information collected through the Department's or our collaborator's research efforts. All of these data sources will go into these IPMs to monitor abundance and other demographics annually.

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**Bear Management Zone 1
Hair Snares and Habitat**

BMZ1 Captures

- 0
- 1-2
- 3-8
- 9-12
- 13-17

Bear Habitat

- Edge
- Primary
- Secondary

Figure 2. Map of the Bear Management Zone 10 study area, hair snare sites with the captures observed, and black bear habitat map.

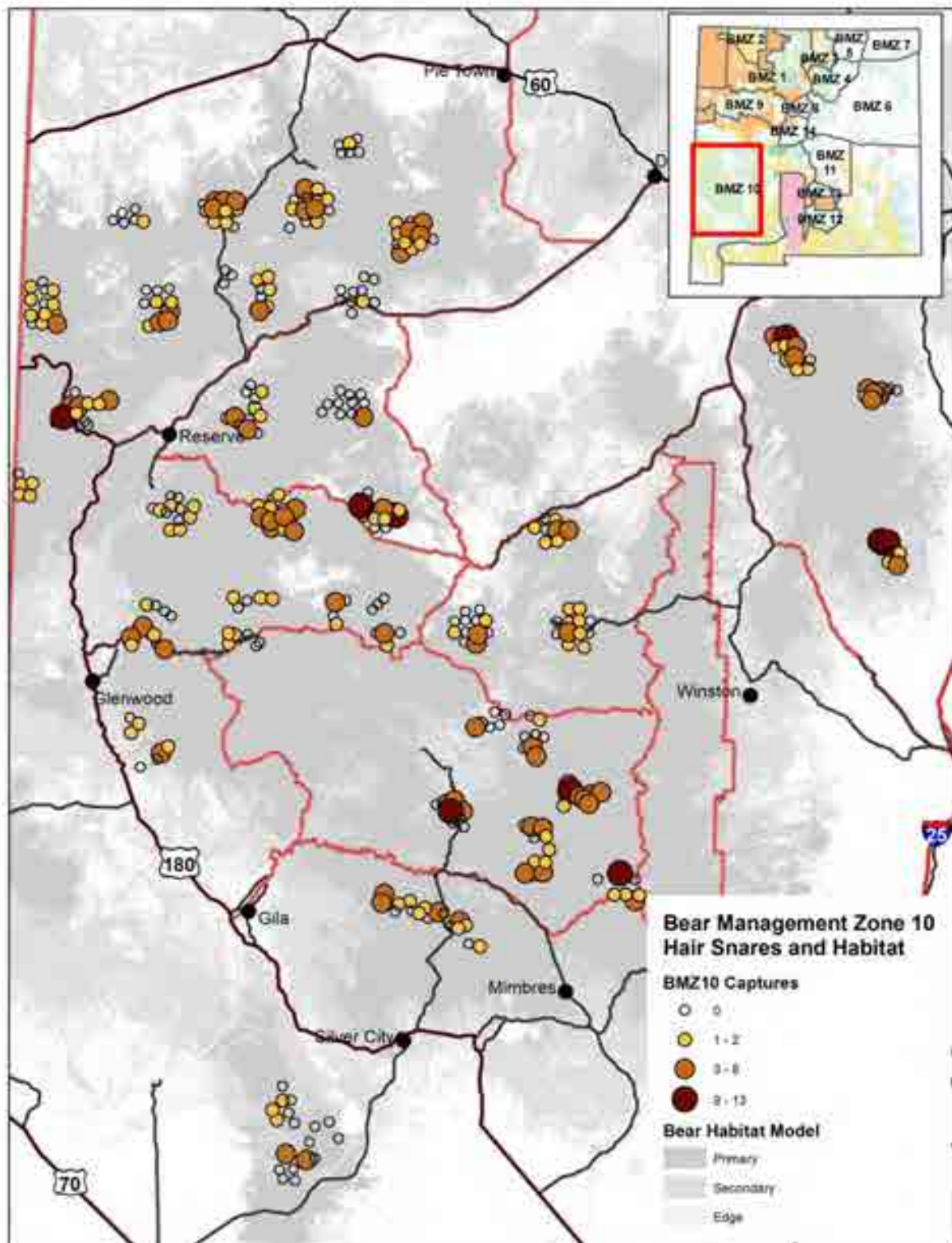


Figure 3. PCA based on 8-locus microsatellite genotypes from bears detected in BMZ 10 (blue) or BMZ 1 (yellow) showing substantial genetic differentiation between the zones.

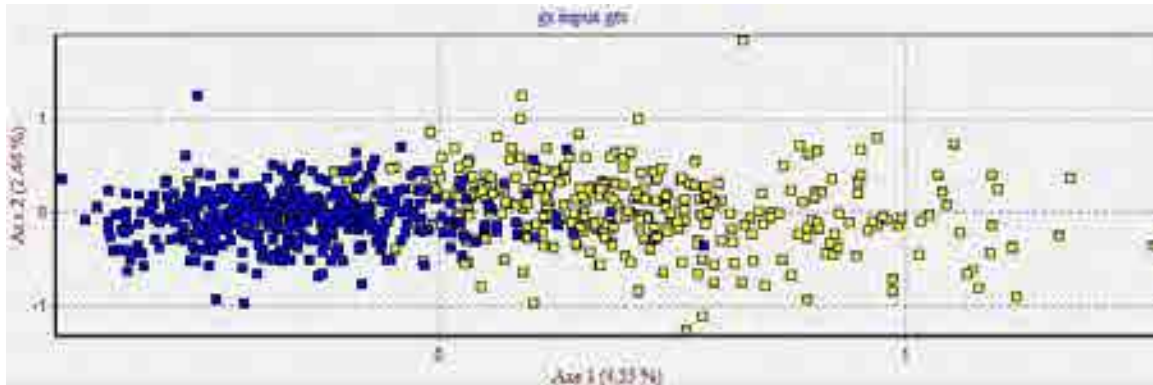


Table 1. Black bear capture summary via hair snares for Bear Management Zone 1 in 2019, and Bear Management Zone 10 in 2020 and 2021. Individuals is the total number of individuals detected at hair snares, detections is the total number of unique detections, N-once is the number of individuals caught only one time, N-multi is the number of individuals caught at multiple sites, D-mean is the average distance moved by individuals that were caught at multiple detectors, and D-max is the maximum distance an individual moved between two detectors.

	Individuals	Detections	N-once	N-multi	D-mean (km)	D-max (m)
BMZ 1	94	191	54	23	2.4	7.7
BMZ 10	270	554	155	69	2.9	21.9

Table 2. Model selection for estimating black bear population size in Bear Management Zones 1 and 10, New Mexico, 2019–2021, using Akaike’s Information Criterion corrected for small sample size (AICc). We included models with a behavioral effect (bk) on probability of detection at an activity center (g0), and an effect of sex on g0 and the movement coefficient for decay in detection over space (σ).

Model	K	Log-likelihood	AIC _c	Δ AIC _c	AIC _c Weight
BMZ 1					
D(~1) g0(~bk + sex) sigma(~1)	4	-669.486	1347.427	0	0.711
D(~1) g0(~bk + sex) sigma(~sex)	5	-669.404	1349.499	2.072	0.252
D(~1) g0(~bk) sigma(~1)	3	-674.034	1354.338	6.911	0.022
D(~1) g0(~bk) sigma(~sex)	4	-673.484	1355.423	7.996	0.013
BMZ 10					
D(~1) g0(~bk + sex) sigma(~sex)	5	-1941.435	3893.102	0	1
D(~1) g0(~bk + sex) sigma(~1)	4	-1966.703	3941.561	48.459	0
D(~1) g0(~bk) sigma(~sex)	4	-1974.224	3956.601	63.499	0
D(~1) g0(~bk) sigma(~1)	3	-1981.744	3969.58	76.478	0

Table 3. Estimated abundance (\hat{N}) and 95% confidence interval, detection probability at an activity center (g0), and movement coefficient for decay in detection over space (σ [km]) for the top ranked model. Density (\hat{D}) is reported here as the number of bears per 100 km² of primary habitat within the study area as identified in the Department’s 2015 habitat model for comparison to previous estimation technique.

	\hat{N} (95% CI)	g0	σ	\hat{D} (95% CI)
BMZ 1	1,574 (1,050 – 2,358)	0.08	1.80	16.9 (11.2 – 25.3)
BMZ 10	2,192 (1,791 – 2,698)	0.07	1.95	15.9 (12.4 – 18.6)

Update to Bear Habitat Model for the 2016-2020 Rule

Introduction

Black bears are cryptic, mainly solitary animals that prefer areas with dense cover, and therefore cannot be directly counted through aerial or ground surveys. Density estimates are derived through collecting field data on individually marked animals and applying population reconstruction or mark-recapture analyses to the data. Habitat models estimate quantity and location of bear habitat around the state, and bear density estimates generated for mountain ranges or specific habitat types can be extrapolated to similar areas to derive a statewide population estimate. In this paper, we describe the process used to update the original habitat model using the most current technology available.

The original habitat model for black bear population estimation in New Mexico was generated as part of the 9 year Black Bear Ecology Study (hereafter 2001 study, Costello et al. 2001) conducted 1992–2000 (Fig. 1). This habitat model utilized the New Mexico Gap Analysis Program (NM GAP) land cover classification which was designed to predict species distribution based on habitat type. The NM GAP model was used, in conjunction with information gathered from 316 radio-collared bears across 2 study areas and mast production potential by habitat type, to predict primary, secondary, and edge habitat classifications across New Mexico. NM GAP had several data limitations (Costello et al. 2001, p. 109), and the habitat model was intended to be updated as new information became available (Costello et al. 2001, p. 111). Advances in technology such as more detailed and accurate land cover classifications (the Landscape Fire and Resource Management Planning Tools (LANDFIRE) land cover classification), ability to identify individual animals through genetic techniques (Boerson et al. 2003, Lukacs and Burnham 2005), improved spatial data, and more accurate statistical methods provide an opportunity to develop more accurate population estimates.

Improved land cover classification and models are available through the Southwest Regional GAP and the more recently developed LANDFIRE datasets, which improve upon the shortcomings of the NM GAP. The habitat model from the 2001 study depended on the NM GAP dataset because it was the only comprehensive, statewide dataset available at the time. It posed substantial limitations (Costello et al. 2001, p. 109) due to poor classification accuracy (especially for habitat types important to bears) and inability to separate habitat type from cover density. As an example, the NM GAP model accurately predicted Rocky Mountain/Great Basin Open and Closed Conifer habitat types on average 28% and 15%, respectively (Thompson et al. 1996). In comparison, LANDFIRE separated these into multiple vegetation classifications, each with 10 canopy closure classifications, and the resulting model accurately predicted the analogous habitat types approximately 88% and 79% of the time, respectively (Stehman 2012).

Substantial improvements in habitat classification accuracy and the ability to separate habitat type from cover density were important developments in the new LANDFIRE datasets. The number of habitat classifications increased from 42 in NM GAP (Appendix A) to more than 150

in LANDFIRE allowing for fine-scale classification in areas where there were previously few classification options. This allows for greater discrimination across similar habitat types and improved classification accuracies. As an example, the single Rocky Mountain Upper Montane Conifer habitat type from the NM GAP can be compared to 9 habitat types within the LANDFIRE dataset including 6 mixed conifer classifications, 2 riparian classifications, and 1 aspen classification. Cover type classifications have become more standardized, allowing for consistent and repeatable land cover classifications, and a greater depth of information for comparison across years. The updated habitat model (Fig. 2) is based on LANDFIRE data for 2008, 2010, and 2012, which improved the robustness of the final model as it does not depend on a single year of data.

Separating canopy closure from vegetation classification data is another improvement in the LANDFIRE database. For example, NM GAP separates the Rocky Mountain/Great Basin Open and Closed Conifer Woodland classifications based on vegetation type and canopy density within a single dataset. By comparison, LANDFIRE separates vegetation classification and canopy closure into 2 datasets which provides improved discrimination in vegetation classification while maintaining the ability to differentiate by canopy closure. The aforementioned NM GAP classifications are separated in LANDFIRE into at least 4 vegetation classifications and canopy closure classifications in 10% increments.

Advances in genetic laboratory techniques have resulted in more sophisticated bear density estimation methods. The 2001 study captured as many animals as possible and used population reconstruction methods to estimate densities. It was assumed not all resident bears were captured; therefore, population estimates were considered minimum, not average, population sizes (Costello et al. 2001, p. 88). In contrast, hair-snare studies can employ spatial capture-recapture statistics which produce average population estimates and associated confidence intervals, as opposed to the point estimate produced by population reconstruction. Recent developments in statistical models have alleviated some of the uncertainties in classic capture-recapture population models and should provide more accurate estimates (Gardiner et al. 2010). Genetic hair snare studies are currently being employed around New Mexico to estimate bear densities across several mountain ranges, and the results are being used in conjunction with the updated habitat model to provide more accurate bear population estimates.

The advent and increased use of GPS radio-collars has provided insight into movement rates and capabilities of bears. Bears travel longer distances than previously believed, increasing the maximum distance between viable population centers (Liley and Walker 2015). Increased movement capacity, especially by breeding males, also provides more flexibility in the patch size and distance-based metrics of model assumptions because a population can remain sustainable with fewer individuals as long as sufficient breeding is maintained. In addition, larger patches separated by a long distance are often connected through linear patches of habitat (e.g., mesa edges and riparian canyons) that are not typically considered primary bear habitat. These linear

patches act as stepping stones for longer distance movements and subsequently improve connectivity across the landscape.

Methods

As a means of incorporating up-to-date and comprehensive landcover data, we employed LANDFIRE datasets to update the bear habitat model. These data result from the partnership between the U.S. Forest Service and Department of the Interior to provide consistent nationwide landcover mapping for fire management and general resource use, and are the most accurate and updated datasets available. These data are based on 30-m Landsat satellite imagery and have a reported accuracy of 0–100% depending on landcover type with forest and woodland landcover types having a user accuracy of 87.8% in the Southwest super zone (Bobbe et al. 2006). Datasets are updated every 2 years, and we acquired the 3 most recent vegetation type datasets (i.e., 2008, 2010, and 2012) from the LANDFIRE website (<http://www.landfire.gov/>) for this analysis.

We determined suitability of available cover types based on food availability and their use by bears. Cover types and their corresponding values as bear habitat were modified from the 2008 to the 2010 model because cover types were further refined (Appendix B and C). We omitted cover types with <10 cells throughout the original LANDFIRE image if they were of questionable importance to bears. Cover types were classified either as bear habitat or non-bear habitat, and did not specify primary and secondary classifications as in Costello et al. (2001); instead we depended on the selection criteria to determine the primary, secondary, and edge designations. We used the Extract by Attributes tool within the Spatial Analyst extension of ArcGIS to subset the LANDFIRE datasets based on the appropriate cover type value (Appendix B and C). Extracted values were reclassified into a single value and the 3 datasets were added together, keeping only the areas where all 3 datasets agreed.

We used the Aggregate tool in Spatial Analyst to sum across the final dataset by a factor of 7 to generate an output in 210-m-sided (0.0441 km^2) blocks. We selected 7 as the best aggregate factor from a test run across aggregate factors 2–10 based on knowledge of bear use across the state while balancing the smoothing effects of the aggregation. This also accommodated errors within the LANDFIRE dataset by eliminating small areas. We visually inspected the distribution of aggregated values and assigned a cutoff of 25% as an acceptable breakpoint between “edge” and “primary” designations. Areas that fell below the break point were considered edge habitat and were not included in the final model areal calculations. To allow for areal calculations and patch size selection, we converted the model raster to a polygon feature class without simplification.

We created a filter from LANDFIRE 2012 existing vegetation cover data by creating a raster with human-dominated cover types, barren areas, and cover classes <20%. We only used the 2012 dataset as there are concerns about the validity of canopy cover data in earlier LANDFIRE datasets (Scott 2008). We reclassified the appropriate cover classes to the same value (Appendix D), aggregated them to a 210-m cell, and kept the top 75% of cells (to match the habitat

classification aggregation). We converted this to a polygon and filtered the model. We converted multipart features to single-part features prior to the selection process, and updated the area calculation. The same filter was used to further discriminate bear habitat in GMU's 10, 12, and 13 except we included cover classes <30%. The GMU 10, 12, and 13 areas were replaced with the 30% model outputs in the final model area calculations.

The Select Layer by Location and Select Layer by Attributes tools were used to set distance-based search criteria and patch size requirements, as follows:

- All features $>200 \text{ km}^2$ were selected from the initial data set as main patches based on minimum habitat size needed to support a minimum viable population of 45–50 individuals. Use of a patch size smaller than the 300 km^2 used by Costello et al. (2001) is based on more accurate bear density estimates produced by the current bear density study, and documentation of larger distances moved as provided by GPS radio-collars. Inclusion of parcels $200\text{--}300 \text{ km}^2$ defined the Dry Cimarron area in GMU 58 and the Los Pinos Mountains in GMU 18 as bear habitat, both of which are known to sustain sizable bear populations. The Peloncillo Mountains, known to support a bear population, fell just below the 200 km^2 minimum, but were included due to proximity of large patches of bear habitat in Arizona.
- We varied both distance to and minimum patch size within biologically reasonable values, with minimal impact on the resulting habitat model. We selected all features within 30 km of main patches that were $>25 \text{ km}^2$ because they included key areas with known populations of bears including the Oscura Mountains in GMU 19, Sierra Grande in GMU 56, and the complex around Mesa Rica in GMU 42. These values are greater than those used in Costello et al. (2001; all features within 15 km of main patches that were $>20 \text{ km}^2$) because data showing that bears move larger distances means that they can move between patches spaced more widely apart, and higher bear densities on the landscape mean that smaller patches can support the 1-2 bears necessary to be considered bear habitat.
- All selected parcels included a 2 km buffer because black bears consistently use areas within 2 km of primary bear habitat.
- All holes smaller than 2 km^2 were closed with the Eliminate Polygon Part tool as a means of matching the 2 km “buffer” in the previous step and following a methodology similar to Costello et al. (2001).

We used the Intersect tool to combine the final selection output with the Game Management Unit shapefile. Total area (km^2) for each GMU was generated using the Summary Statistics tool. Areas that did not meet the selection criteria as secondary habitat and areas that fell below the 25% aggregation were classified as edge habitat. We did not include secondary or edge habitats in area calculations, but have included them in the map as areas of potential use by bears (Fig. 1, Table 1). The Python code for the classification and selection process is included in Appendix E.

We verified bear mortality locations from 1994–2014 through spatial location and agreement with the reported GMU. There were 9,852 mortalities in the database, of which 197 (2.0%) had

the UTM zone interpolated from the GMU and Easting, 91 (0.9%) were removed for falling outside the geographic bounds of NM, 1,039 (10.8%) were removed due to a disparity between the GMU and the UTM coordinate, and 643 (6.7%) were removed due to lacking or incorrect spatial information. We overlaid the 7,809 spatially-verified mortalities on the new habitat model as a check of model validity (Table 2). Hunter harvest locations (n = 6,863) occurred in primary habitat more often than depredation (n = 676), road kill (n = 239), and other (n = 31) locations. The new model contained 83% of sport-harvest mortalities within primary bear habitat.

We could not directly compare our model validity results with those of the 2001 study (p. 100) due to differences in methodologies. Specifically, our verified sport-harvest location data set was from 1994-2014, as opposed to the 1990-1999 data set used in the 2001 study. Next, although both studies verified mortality locations using some of the same standards, there was not enough detail in the 2001 study report to know if the standards were identical. Differences in standards for which records to include and how modifications were made could lead to very different results. Finally, Costello et al. (2001) did not verify the accuracy of the habitat model. Rather, she created a generalized distribution map identifying major regions of bear habitat (p. 95; e.g. Sangre de Cristo Complex in Fig. 1) which comprise larger land areas than primary habitat predicted by the habitat model. When we overlaid the 1994-2014 verified dataset on the major regions of bear habitat as defined in the 2001 study, 81% of harvest locations fell within those regions, compared with 95% reported for the 1990-1999 dataset. When we overlaid our verified sport-harvest locations on primary habitat produced by the 2015 habitat model, 83% of sport-harvest mortalities were within primary bear habitat, compared with the 2001 model that contained 71% of sport-harvest mortalities. We do not know why there is a discrepancy in the sport-harvest locations found in major regions of bear habitat between the 2 data sets, and reiterate our concern that they were not created using the same standards and therefore none of the model validity results should be compared.

Figure 1. Predicted black bear habitat in New Mexico from Costello et al. (2001).

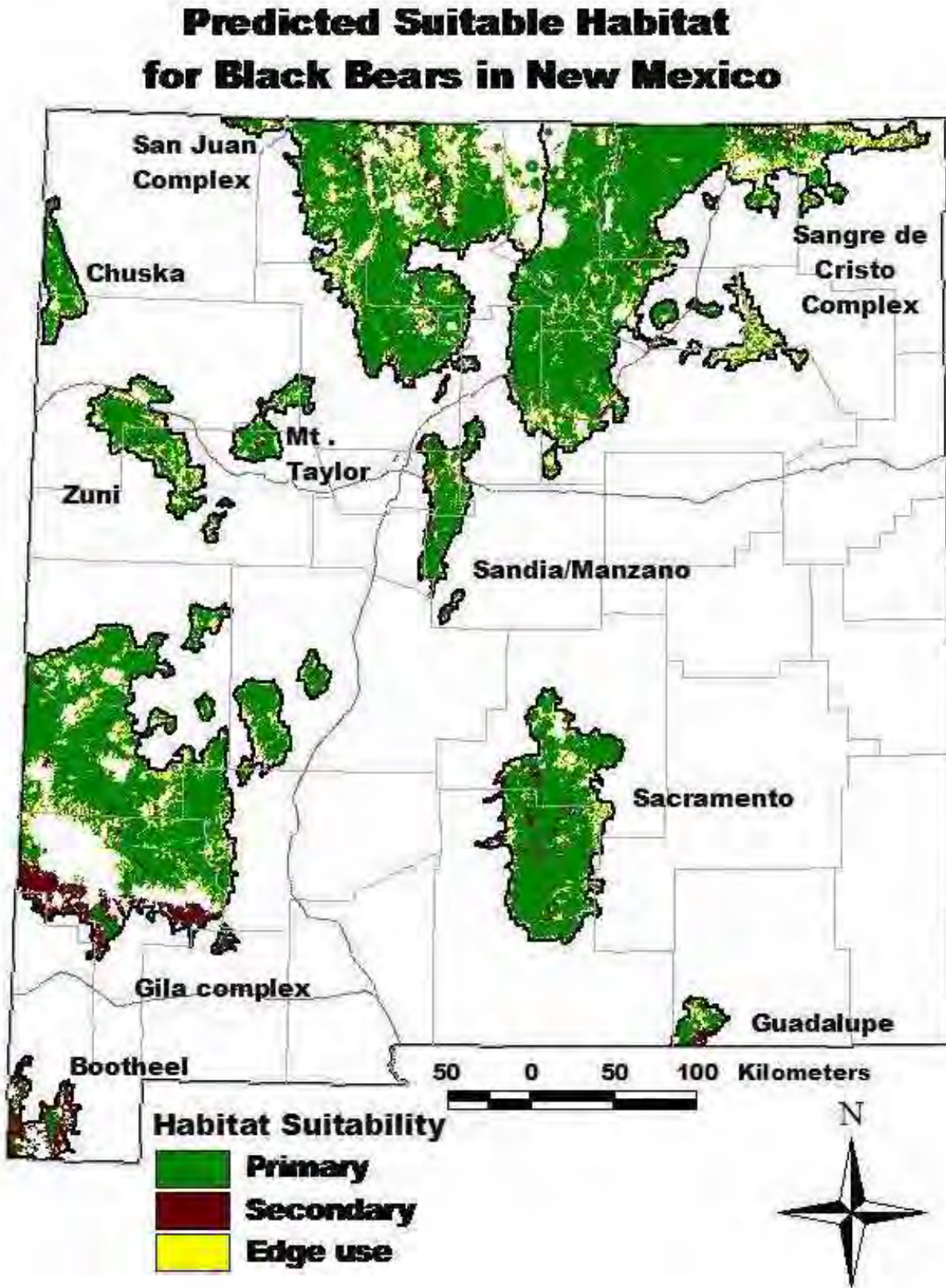


Figure 2. Predicted black bear habitat in New Mexico 2015.

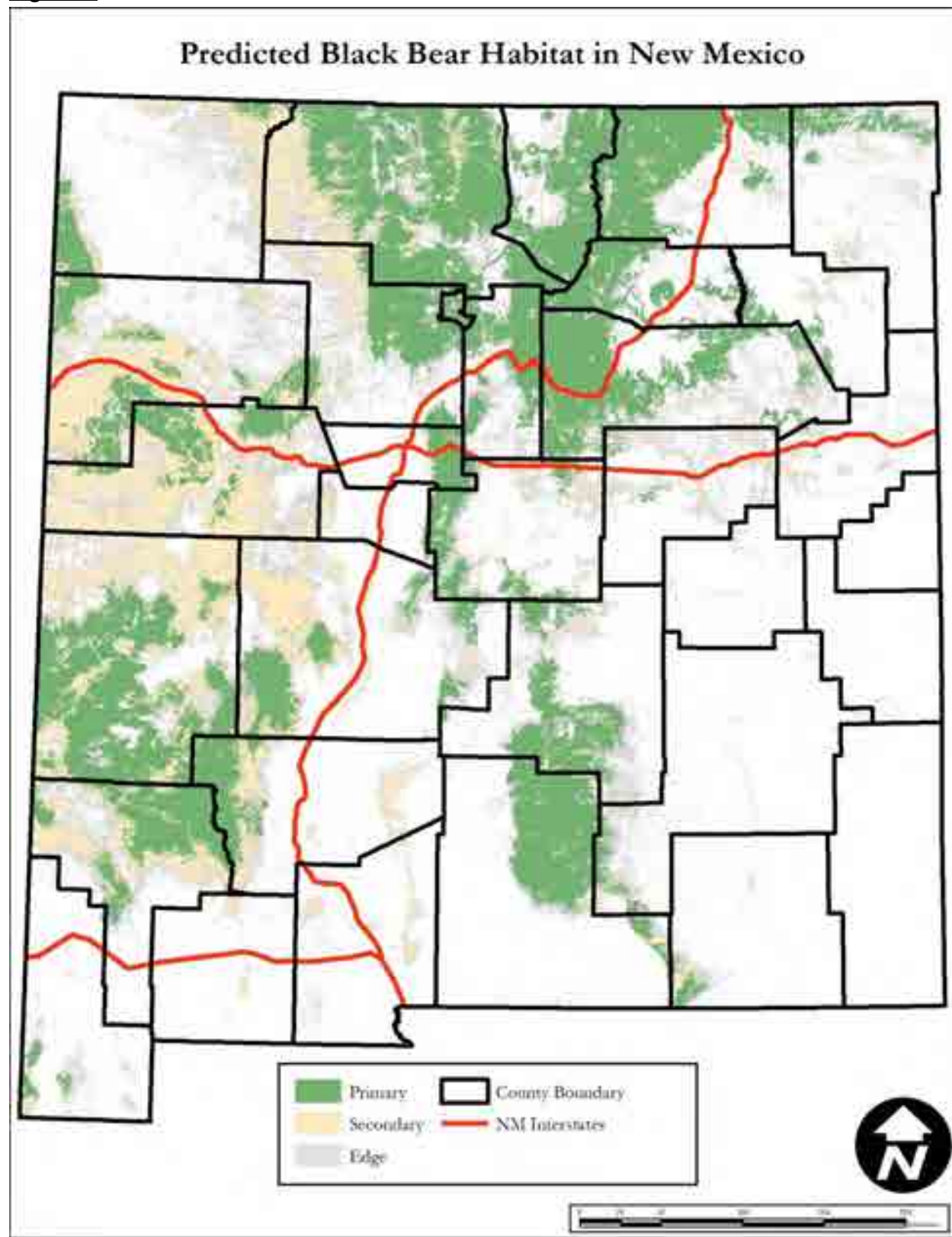


Table 1. Total primary bear habitat as predicted by the model by bear management zone and game management unit.

Zone	GMU	Primary Habitat
Tribal	1	1,505
	3	1,645
	11	706
	35	1,649
		5,505
1	4	1,212
	5	895
	6	4,408
	7	15
	51	2,043
	52	723
		9,296
2	2	880
3	49	1,029
	50	533
	53	1,081
		2,642
4	48	388
	45	3,497
	46	1,893
		5,778
5	54	653
	55	3,620
		4,273
6	39	151
	42	1,901
	43	1,954
	47	674
	59	10
		4689

Zone	GMU	Primary Habitat
7	56	192
	57	779
	58	674
		1,645
8	8	719
9	9	1,255
	10	1,438
		2,693
10	12	61
	13	520
	15	2,549
	16	5,334
	17	1,504
	18	763
	21	1,606
	22	484
	23	1,114
	24	1,310
	26	60
	27	182
		15,488
11	37	1,113
	38	698
		1,811
12	34	2,428
13	36	1,184
14	14	1,267
Total		60,298

Table 2. Spatially-verified bear mortality location agreement by type of mortality event and habitat type for our updated 2015 model and the 2001 study (Costello et al.).

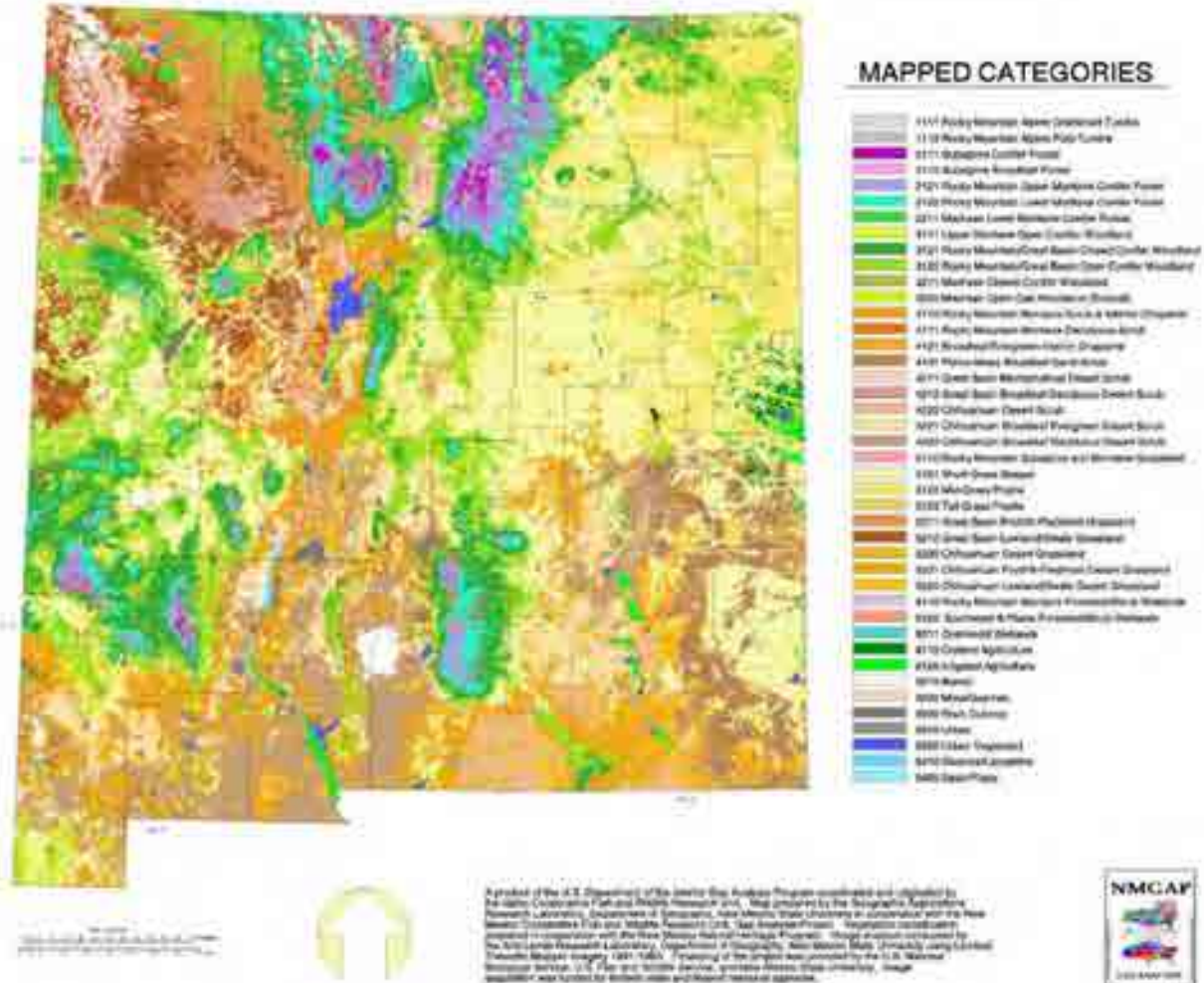
Walker et al. Model	Habitat Type					Model Test by Habitat Type			
	Primary	Secondary	Edge	None	Total	Primary	Secondary	Edge	None
Sport Harvest	5,675	501	382	305	6,863	83%	7%	6%	4%
Road Kill	100	33	47	59	239	42%	14%	20%	25%
Depredation	352	117	94	113	676	52%	17%	14%	17%
Other	19	3	1	8	31	3%	0%	0%	1%
Total	6,146	654	524	485	7,809	79%	8%	7%	6%
Costello et al. Model	Habitat Type					Model Test by Habitat Type			
	Primary	Secondary	Edge	None	Total	Primary	Secondary	Edge	None
Sport Harvest	4,848	410	574	1,031	6,863	71%	6%	8%	15%
Road Kill	94	20	20	105	239	39%	8%	8%	44%
Depredation	327	20	77	252	676	48%	3%	11%	37%
Other	17	0	3	11	31	3%	0%	0%	2%
Total	5,286	450	674	1,399	7,809	68%	6%	9%	18%

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Appendix A

New Mexico Land Cover



Appendix B

Value and Classnames from 2008 LANDFIRE dataset defined as black bear habitat.

VALUE	CLASSNAME
2011	Rocky Mountain Aspen Forest and Woodland
2012	Rocky Mountain Bigtooth Maple Ravine Woodland
2016	Colorado Plateau Pinyon-Juniper Woodland
2019	Great Basin Pinyon-Juniper Woodland
2023	Madrean Encinal
2024	Madrean Lower Montane Pine-Oak Forest and Woodland
2025	Madrean Pinyon-Juniper Woodland
2026	Madrean Upper Montane Conifer-Oak Forest and Woodland
2049	Rocky Mountain Foothill Limber Pine-Juniper Woodland
2050	Rocky Mountain Lodgepole Pine Forest
2051	Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland
2052	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland
2054	Southern Rocky Mountain Ponderosa Pine Woodland
2055	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland
2056	Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland
2057	Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland
2059	Southern Rocky Mountain Pinyon-Juniper Woodland
2061	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland
2070	Rocky Mountain Alpine Dwarf-Shrubland
2107	Rocky Mountain Gambel Oak-Mixed Montane Shrubland
2117	Southern Rocky Mountain Ponderosa Pine Savanna
2119	Southern Rocky Mountain Juniper Woodland and Savanna
2155	North American Warm Desert Riparian Forest and Woodland
2159	Rocky Mountain Montane Riparian Forest and Woodland
2160	Rocky Mountain Subalpine/Upper Montane Riparian Forest and Woodland
2208	Abies concolor Forest Alliance
2215	Quercus turbinella Shrubland Alliance
2217	Quercus gambelii Shrubland Alliance

Appendix C

Value and Classnames from 2010 and 2012 LANDFIRE datasets defined as black bear habitat.

VALUE	CLASSNAME
3011	Rocky Mountain Aspen Forest and Woodland
3012	Rocky Mountain Bigtooth Maple Ravine Woodland
3016	Colorado Plateau Pinyon-Juniper Woodland
3019	Great Basin Pinyon-Juniper Woodland
3023	Madrean Encinal
3024	Madrean Lower Montane Pine-Oak Forest and Woodland
3025	Madrean Pinyon-Juniper Woodland
3026	Madrean Upper Montane Conifer-Oak Forest and Woodland
3049	Rocky Mountain Foothill Limber Pine-Juniper Woodland
3050	Rocky Mountain Lodgepole Pine Forest
3051	Southern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest and Woodland
3052	Southern Rocky Mountain Mesic Montane Mixed Conifer Forest and Woodland
3054	Southern Rocky Mountain Ponderosa Pine Woodland
3055	Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland
3056	Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland
3057	Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland
3059	Southern Rocky Mountain Pinyon-Juniper Woodland
3061	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland
3070	Rocky Mountain Alpine Dwarf-Shrubland
3107	Rocky Mountain Gambel Oak-Mixed Montane Shrubland
3117	Southern Rocky Mountain Ponderosa Pine Savanna
3119	Southern Rocky Mountain Juniper Woodland and Savanna
3155	North American Warm Desert Riparian Forest and Woodland
3159	Rocky Mountain Montane Riparian Forest and Woodland
3160	Rocky Mountain Subalpine/Upper Montane Riparian Forest and Woodland
3208	Abies concolor Forest Alliance
3215	Quercus turbinella Shrubland Alliance
3217	Quercus gambelii Shrubland Alliance

Appendix D

Value and Classnames for cover classes used to create a filter for the habitat model. The ≥ 20 and $< 30\%$ classes were only included in GMU 12 and 13.

VALUE	CLASSNAMES
11	Open Water
12	Snow/Ice
13	Developed-Upland Deciduous Forest
14	Developed-Upland Evergreen Forest
15	Developed-Upland Mixed Forest
16	Developed-Upland Herbaceous
17	Developed-Upland Shrubland
22	Developed - Low Intensity
23	Developed - Medium Intensity
24	Developed - High Intensity
25	Developed-Roads
31	Barren
32	Quarries-Strip Mines-Gravel Pits
61	NASS-Vineyard
63	NASS-Row Crop-Close Grown Crop
64	NASS-Row Crop
65	NASS-Close Grown Crop
68	NASS-Wheat
100	Sparse Vegetation Canopy
101	Tree Cover ≥ 10 and $< 20\%$
102	Tree Cover ≥ 20 and $< 30\%$
111	Shrub Cover ≥ 10 and $< 20\%$
112	Shrub Cover ≥ 20 and $< 30\%$
121	Herb Cover ≥ 10 and $< 20\%$
122	Herb Cover ≥ 20 and $< 30\%$

Appendix E

Python script run to process multiple aggregate factors and select parcels as indicated.

```
# Author: Ryan Walker, CWB
# Regional Wildlife Biologist
# New Mexico Department of Game and Fish
# Date: 30 January 2015
# Tool Description: This tool uses the LANDFIRE datasets to build a black bear (Ursus
# americanus) habitat model.
#

import arcpy

# Specify input raster paths.
raster2012 = arcpy.Raster("Landfire_NM/US_130EVT/us_130evt")
raster2010 = arcpy.Raster("Landfire_NM/US_120EVT/US_120_EVT/us_120evt")
raster2008 = arcpy.Raster("Landfire_NM/US_110EVT/us_110evt")

# LANDFIRE landcover values for the 2010 and 2012 datasets.
newvaluelist = (3011, 3012, 3016, 3019, 3023, 3024, 3025, 3026, 3049, 3050, 3051, 3052, 3054,
3055, 3056, 3057, 3059, 3061, 3070, 3107, 3117, 3119, 3155, 3159, 3160, 3208, 3215, 3217)

# LANDFIRE landcover values for the 2008 datasets.
oldvaluelist = (2011, 2012, 2016, 2019, 2023, 2024, 2025, 2026, 2049, 2050, 2051, 2052, 2054,
2055, 2056, 2057, 2059, 2061, 2070, 2107, 2117, 2119, 2155, 2159, 2160, 2208, 2215, 2217)

# Check out the Spatial Analyst Extension.
arcpy.CheckOutExtension("Spatial")

# Extract attributes from the value lists.
bear2012 = arcpy.sa.ExtractByAttributes(raster2012, "VALUE IN(newvaluelist)")
bear2010 = arcpy.sa.ExtractByAttributes(raster2010, "VALUE IN(newvaluelist)")
bear2008 = arcpy.sa.ExtractByAttributes(raster2008, "VALUE IN(oldvaluelist)")

# Specify the range of values to be reclassified within the raster outputs.
newReclassRange = arcpy.sa.RemapRange([[3011, 3217, 1]])
oldReclassRange = arcpy.sa.RemapRange([[2011, 2217, 1]])

# Reclassify all values to 1.
reclass2012 = arcpy.sa.Reclassify(bear2012, "VALUE", newReclassRange)
reclass2010 = arcpy.sa.Reclassify(bear2010, "VALUE", newReclassRange)
reclass2008 = arcpy.sa.Reclassify(bear2008, "VALUE", oldReclassRange)

# Total the reclassified rasters together and save the output.
```

```

reclassSum = (reclass2012 + reclass2010 + reclass2008)

stateMask = "NMState_NAD83.shp"
raster = arcpy.sa.ExtractByMask(reclassSum, stateMask) # Clips the resulting raster to the NM
State boundary.

# Set the initial aggregate factor to 2. An aggregate factor of 1 is simply the summation raster,
and thus not needed.
aggregate_factor = 3

# Loop through and save aggregate factors 1 to 10 and reclassify the aggregates for all values >
0.25 of the maximum value.
while aggregate_factor <= 10:
    outAgg = arcpy.sa.Aggregate(reclassSum, aggregate_factor, "SUM")
    maxvalueResult = arcpy.GetRasterProperties_management(outAgg, "MAXIMUM") #
Retrieve the output result object for the maximum value within a raster.
    maxvalue = maxvalueResult.getOutput(0) # Retrieve the maximum value from the result
object.
    reclassmax = (int(maxvalue) / 4) # Convert the maximum value to an integer and divide by
4.
    reclassMaxRange = arcpy.sa.RemapRange([[0, reclassmax, "NoData"], [reclassmax,
maxvalue, 1]]) # Set RemapRange based on 25% breakpoint.
    reclass = arcpy.sa.Reclassify(outAgg, "VALUE", reclassMaxRange) # Reclassify raster with
all values > 25% of the maximum value being considered "primary".
    outputname = "Reclass_polygon_aggregate_" + str(aggregate_factor)
    arcpy.RasterToPolygon_conversion(reclass, outputname, "NO_SIMPLIFY") # Convert
raster to polygon.
    print "Raster conversion for " + str(aggregate_factor) + " completed."

    # Add a new column and populate it with the area in square kilometers.
    arcpy.AddField_management(outputname, "Area", "FLOAT", "", "", 20)
    arcpy.CalculateField_management(outputname, "Area",
"float(!SHAPE.AREA@SQUAREKILOMETERS!)", "PYTHON")

    # Turn polygon feature into layer to facilitate selection process.
    layername = "layer" + str(aggregate_factor)
    arcpy.MakeFeatureLayer_management(outputname, layername)

    # Selection process.
    # First selection of all parcels > 200 sq. km.
    arcpy.SelectLayerByAttribute_management(layername, "NEW_SELECTION", "Area" >=
200)
    layer200 = arcpy.CopyFeatures_management(layername, "Primary_bear_" +
str(aggregate_factor) + "_area_over_200")

    # Second selection of all parcels within 2 km. of 200 sq. km. parcels.

```

```

firstDist = "2 KILOMETERS"
secondDist = "10 KILOMETERS"
arcpy.SelectLayerByLocation_management(layername, "WITHIN_A_DISTANCE", layer200,
firstDist, "NEW_SELECTION")
layer2km = arcpy.CopyFeatures_management(layername, "Primary_bear_" +
str(aggregate_factor) + "_area_within_2_km")

# Third selection of all parcels > 25 sq. km. within 30 km. of 200 sq. km. parcels.
arcpy.SelectLayerByLocation_management(layername, "WITHIN_A_DISTANCE", layer200,
secondDist, "NEW_SELECTION")
arcpy.SelectLayerByAttribute_management(layername, "SUBSET_SELECTION", "'Area' >=
25')
layer25 = arcpy.CopyFeatures_management(layername, "Primary_bear_" +
str(aggregate_factor) + "_area_over_25_within_30_km")

arcpy.Merge_management([layer200, layer2km, layer25], "Primary_bear_" +
str(aggregate_factor) + "_selection_final")

print "Aggregate Factor " + str(aggregate_factor) + " processing completed."
aggregate_factor += 1

# Check in the Spatial Analyst Extension.
arcpy.CheckInExtension("Spatial")

```

Python script run to accommodate changing the selection process and altering the cover filter input (inputs were variable)

```

import arcpy

agnum = "7"
arearestriction = "25"
dist = "30"
covernumber = "20"
agFactor = "Reclass_polygon_aggregate_" + agnum
af_200 = "Primary_bear_" + agnum + "_area_over_200_test"
GMU = "E:/GIS/Boundaries/NM_GMU_no_subunits.shp"
output = "Final_selection_cover_filter_" + covernumber
intersectOut = output + "_GMU_Intersect"
statOut = "Final_selection_cover_filter_" + covernumber + "_summary"
filter = "Cover_filter_less_than_" + covernumber

arcpy.Erase_analysis(agFactor, filter, "Model_cover_filter_" + covernumber)

```

```

arcpy.MultipartToSinglepart_management("Model_cover_filter_" + covernumber, "Model_cover_filter_"
+ covernumber + "_single")
arcpy.CalculateField_management("Model_cover_filter_" + covernumber + "_single", "Area",
"float(!SHAPE.area@SQUAREKILOMETERS!)", "PYTHON")

arcpy.MakeFeatureLayer_management("Model_cover_filter_" + covernumber + "_single", "layer")

arcpy.SelectLayerByLocation_management("layer", "WITHIN_A_DISTANCE", af_200, dist + "
KILOMETERS", "NEW_SELECTION")
arcpy.SelectLayerByAttribute_management("layer", "REMOVE_FROM_SELECTION", "'Area' < ' +
arearestriction)
arcpy.SelectLayerByLocation_management("layer", "WITHIN_A_DISTANCE", "", "2 KILOMETERS",
"ADD_TO_SELECTION")
arcpy.EliminatePolygonPart_management("layer", output, "AREA", "2 SQUAREKILOMETERS")

arcpy.Intersect_analysis([output, GMU], intersectOut)

arcpy.CalculateField_management(intersectOut, "Area",
"float(!SHAPE.area@SQUAREKILOMETERS!)", "PYTHON")
arcpy.Statistics_analysis(intersectOut, statOut, [["Area", "SUM"]], "GMU")

```

Python script run to create “sparse cover” filter

```

import arcpy

arcpy.CheckOutExtension("Spatial")

boundary = "E:/Z_drive/boundaries/NMState_NAD83.shp"

cover = arcpy.sa.Raster("Landfire_NM/US_130EVC/us_130evc")

cover = arcpy.sa.ExtractByMask(cover, boundary)

cover = arcpy.sa.Reclassify(cover, "VALUE", arcpy.sa.RemapRange([[0, 0, "NoData"], [11, 101, 1],
[102, 109, "NoData"], [111, 111, 1], [112, 119, "NoData"], [121, 121, 1], [122, 129, "NoData"]]))

cover = arcpy.sa.Aggregate(cover, 7, "SUM")

cover = arcpy.sa.Reclassify(cover, "Value", arcpy.sa.RemapRange([[0, 12, "NoData"], [13, 49, 1]]))

arcpy.CheckInExtension("Spatial")

polygon = arcpy.RasterToPolygon_conversion(cover, "Cover_filter_less_than_20", "NO_SIMPLIFY")

```


Python script used to create “edge” habitat

```
reclassSum = arcpy.Raster("summation")

aggregate_factor = 7

outAgg = arcpy.sa.Aggregate(reclassSum, aggregate_factor, "SUM")
maxvalueResult = arcpy.GetRasterProperties_management(outAgg, "MAXIMUM")
maxvluue = maxvalueResult.getOutput(0)
reclassmax = (int(maxvalue) / 4)
reclassMaxRange = arcpy.sa.RemapRange([[0, reclassmax, 1], [reclassmax, maxvalue, "NoDate"]])
reclass = arcpy.sa.Reclassify(outAgg, "VALUE", reclassMaxRange)
outputname = "Edge_bear_habitat"
arcpy.RasterToPolygon_conversion(reclass, outputname, "NO_SIMPLIFY")
```

Bear Population Information

Zone	Game Management Units	Bear Population Estimate 2012	Bear Population Estimate 2016	Bear Population Estimate 2023	Harvest Limit (Female Harvest Limit)
					2024 – 2028
1	4, 5, 6, 7, 51, 52	1,240	1,580	1,681 ⁺	168 (67)
2	2	149	150	150	15 (6)
3	49, 50, 53	377	544	544	65 (26)
4	45, 46, 48	869	1,093	1,093	109 (43)
5	54, 55	703	919	1,085 [*]	92 (37)
6	39, 40, 41, 42, 43, 47, 59	182 [*]	328	513 [*]	33 (13)
7	56, 57, 58	234	354	---	---
8	8	46	132	132	11 (4)
9	9, 10	251	356	356	36 (14)
10	12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27	1,094	1,456	2,461 ⁺	197 (79)
11	37, 38	155	360	360	36 (14)
12	34	313	325	325	33 (13)
13	36	185	159	159	16 (6)
14	14	119	233	233	19 (7)
Totals		5,917	7,989	9,095	864 (342)

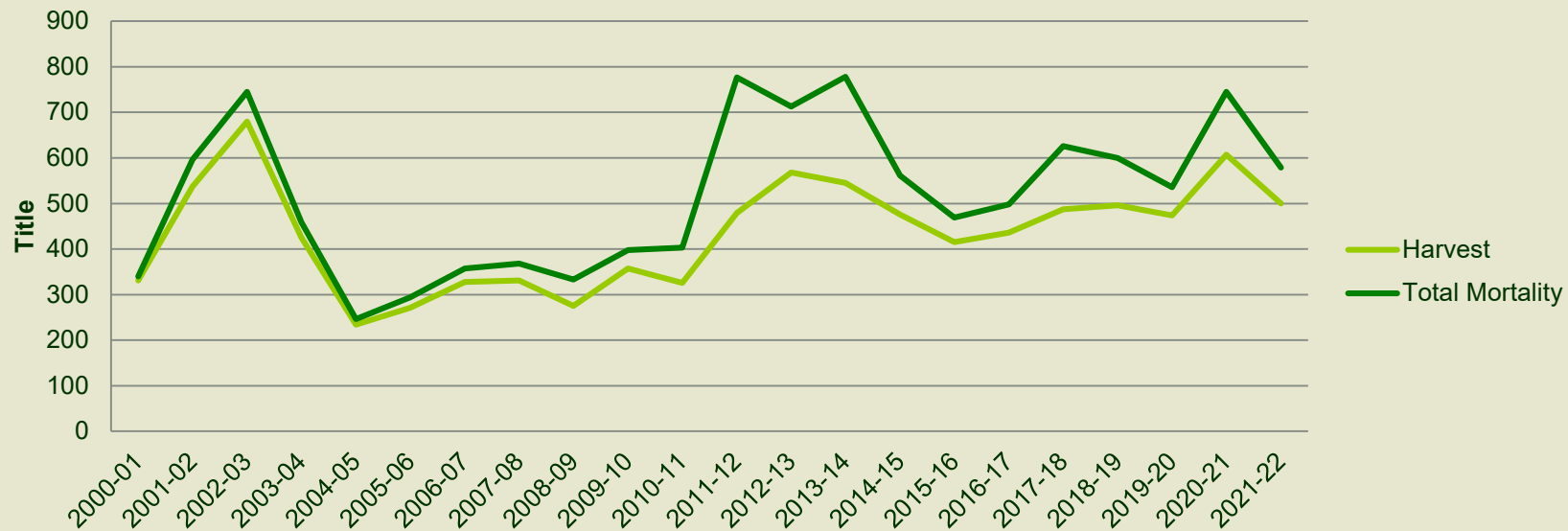
*Change reflects updated population estimate from NMDGF research

+Change reflects GMUs being added to zone

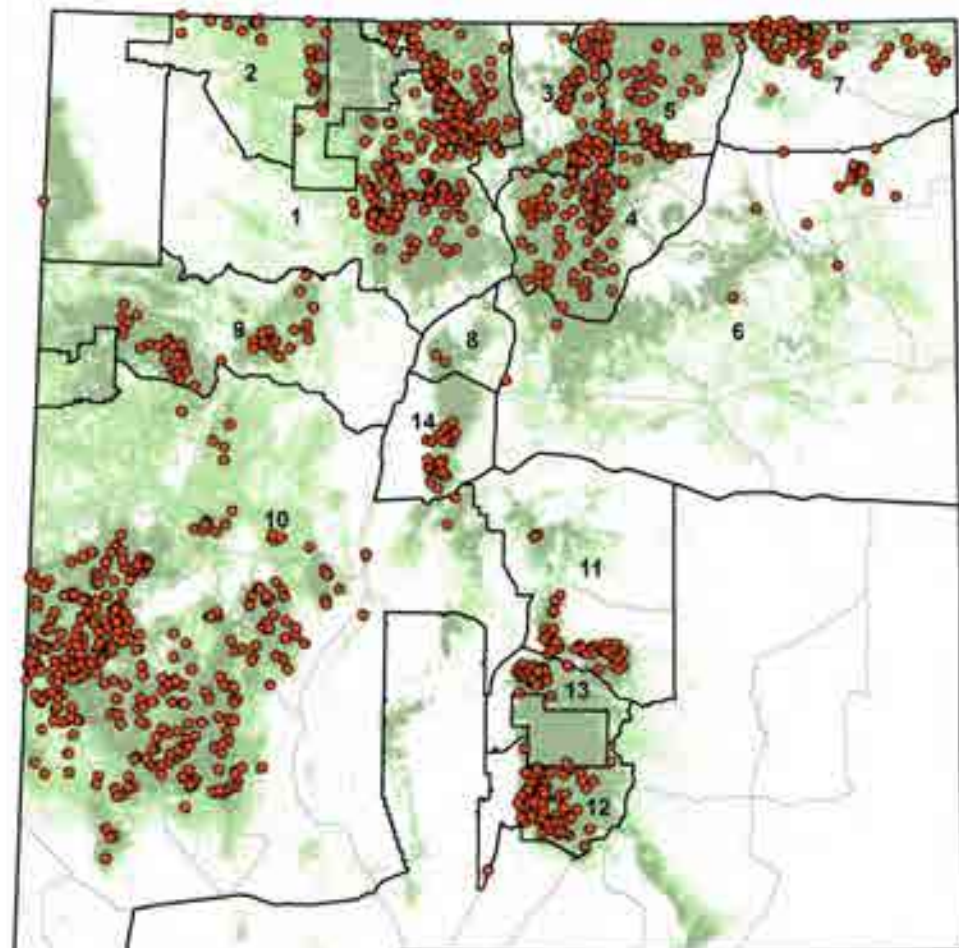


Bear Harvest

Statewide Black Bear Mortality 2000-2022



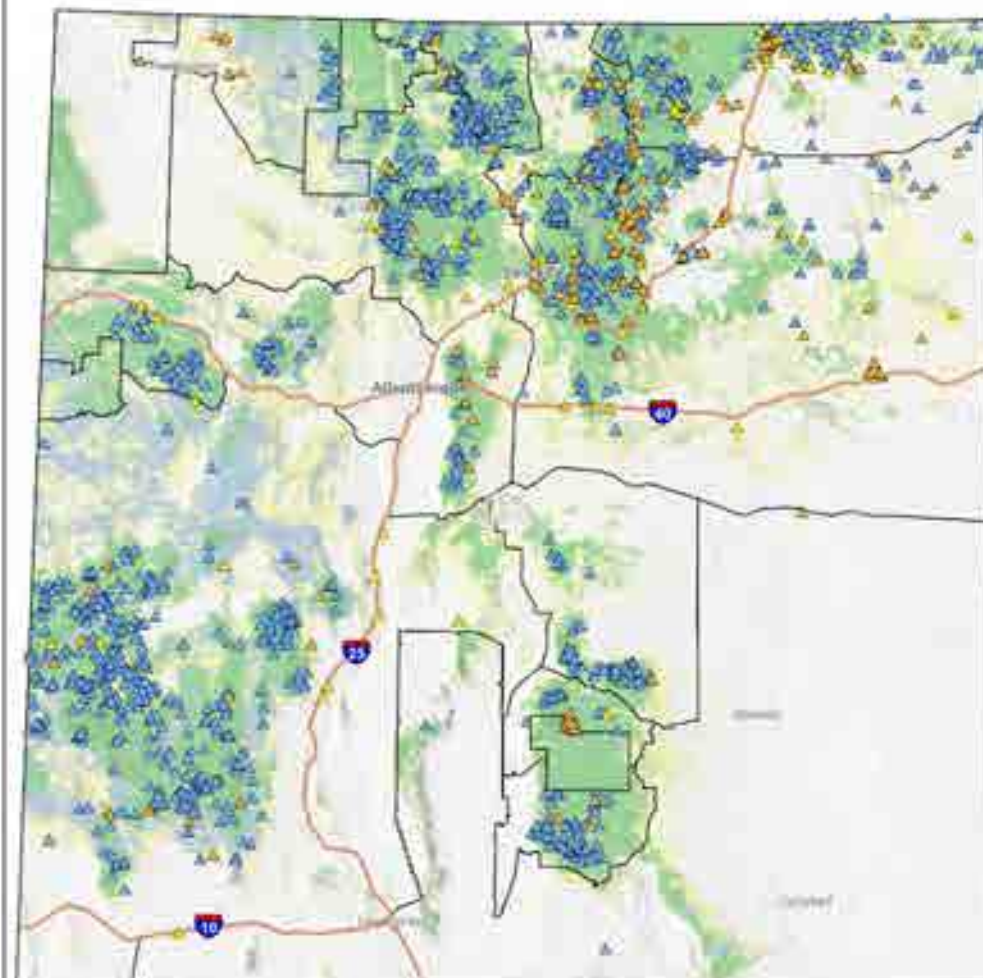
Bear Harvest 2016 - 2019



Bear Habitat Model Habitat Type

- Primary
- Secondary
- Edge

New Mexico Bear Mortality 2020 - 2022



Scale: 1:2,750,000

0 25 50 100 Miles

- Bear Management Zones
- Depredation
- Road
- Sport

- Bear Habitat Model
Primary
- Secondary
- Edge



February 2023

Bear Harvest Limits

BMZ	Max	2016 Actual	2017 Actual	2018 Actual
1	158	138	70	121
2	15	7	16	5
3	65	27	42	26
4	109	21	39	50
5	92	21	30	21
6	33	4	11	5
7	35	31*	31*	30*
8	11	0	0	2
9	36	18	16	20
10	146	98	154*	143*
11	36	17	22	21
12	33	30*	30+	32+
13	16	16	13	13
14	19	10+	12+	7

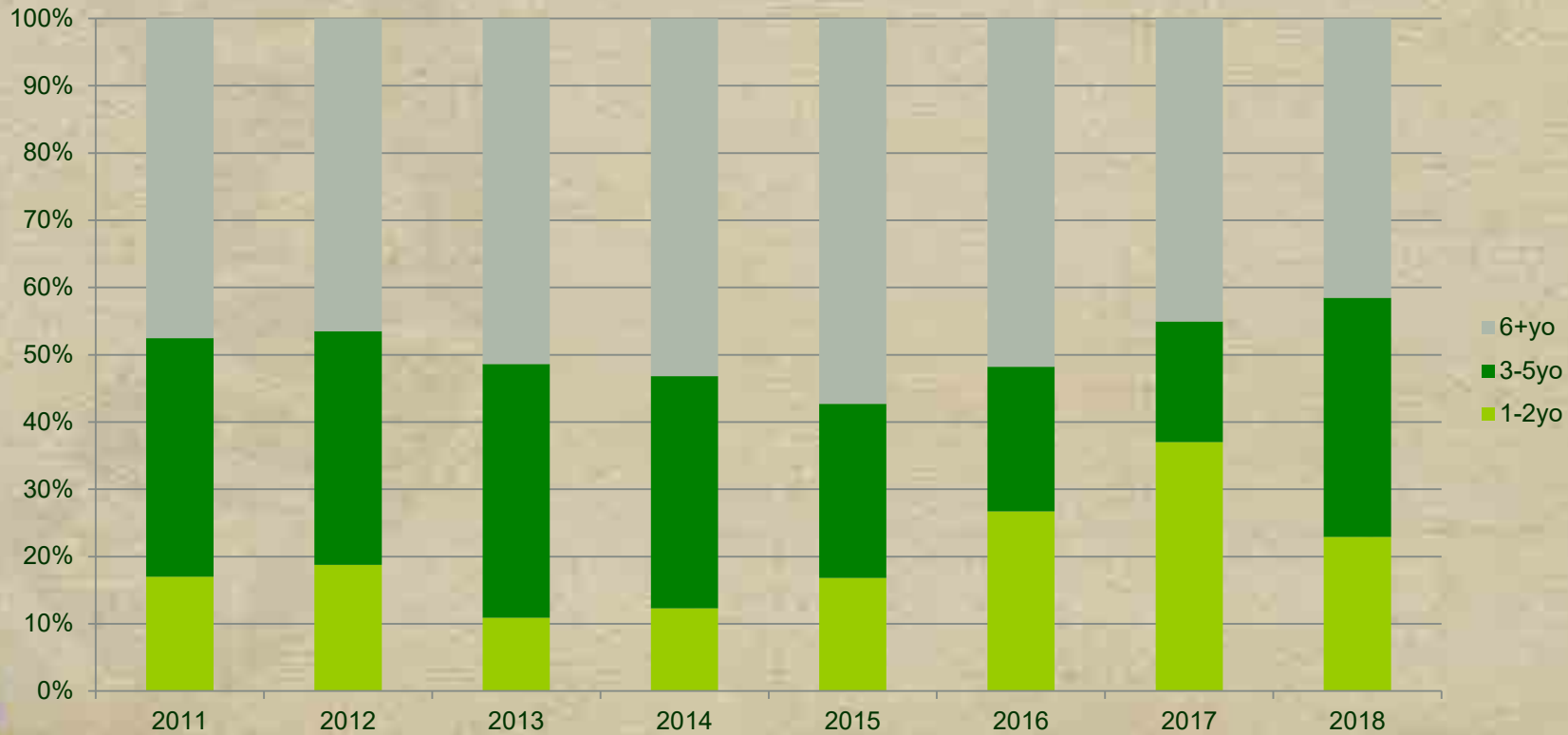
BMZ	Max	2019 Actual	2020 Actual	2021 Actual	2022 Actual
1	158	109	126	126	137+
2	15	5	13+	1	4
3	65	26	42	28	39
4	109	47	70	58	45
5	92	29	17	32	37
6	33	6	25	14	15
7	35	32*	40*	25+	31*
8	11	0	2	0	1
9	36	11	25	20+	33
10	146	143*	160*	137*	135*
11	36	19	35+	22	15
12	33	31*	32*	26	27*
13	16	9	9	5	4
14	19	7	12+	6	0

/+ denotes closure on the total () or female (+) harvest limits



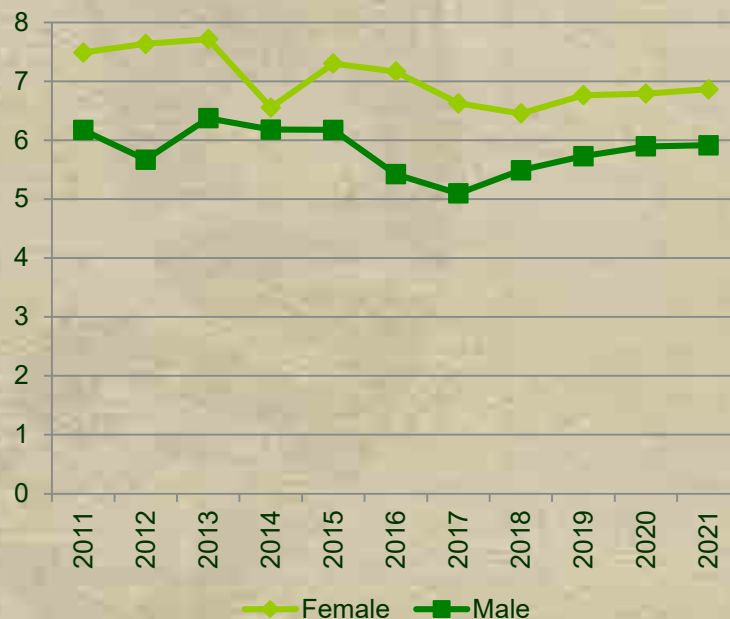
Bear Age at Mortality

Age Structure of Statewide Mortalities

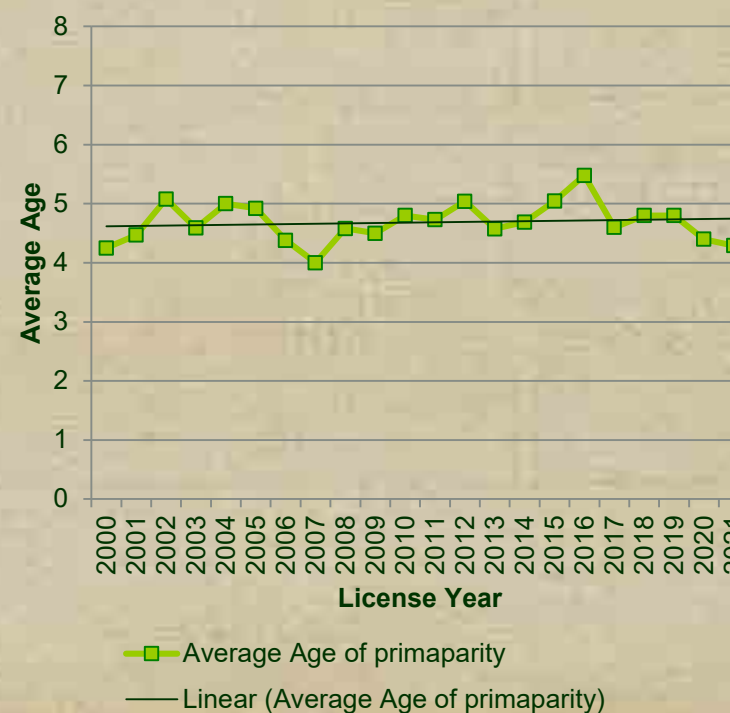


Bear Age at Mortality

Bear Average Age at Harvest Statewide 2011-2021

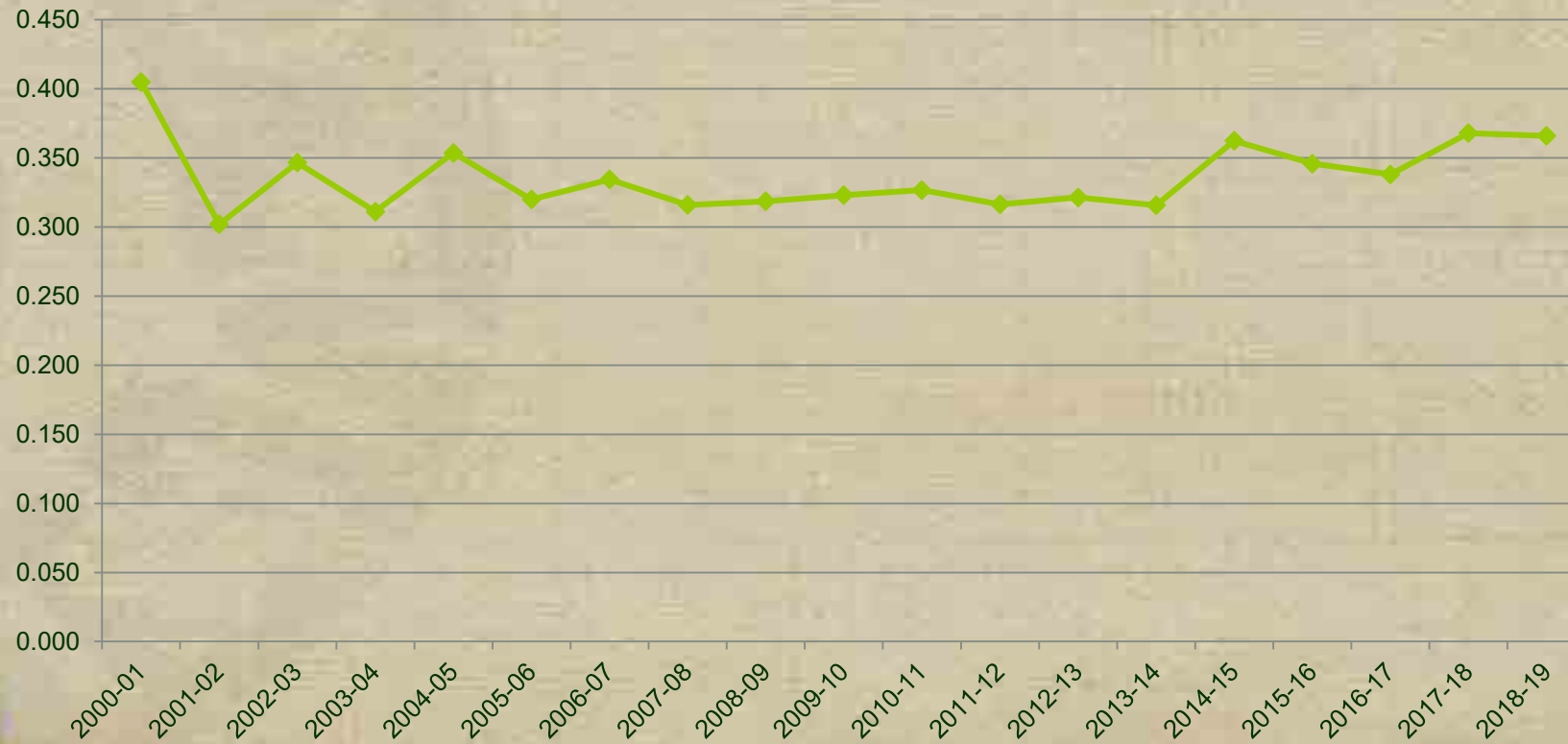


Average Age of first cub production in New Mexico



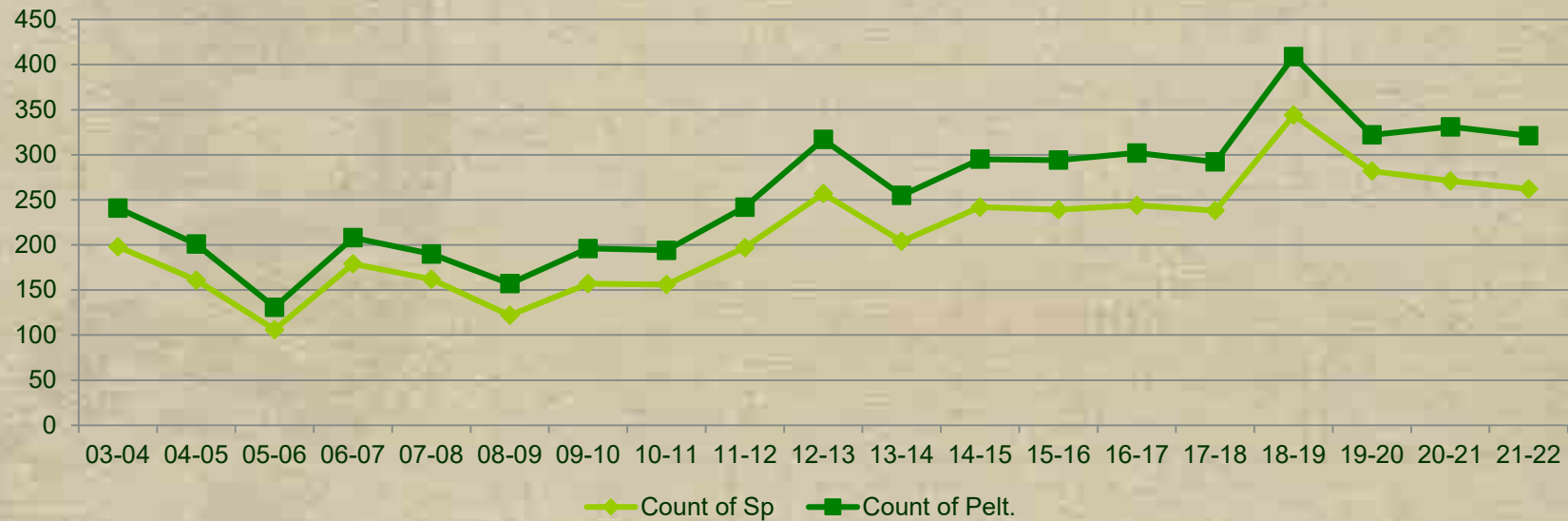
Bear – Catch Per Unit Effort

Catch Per Unit Effort for Black Bear Harvested 2000 - 2018

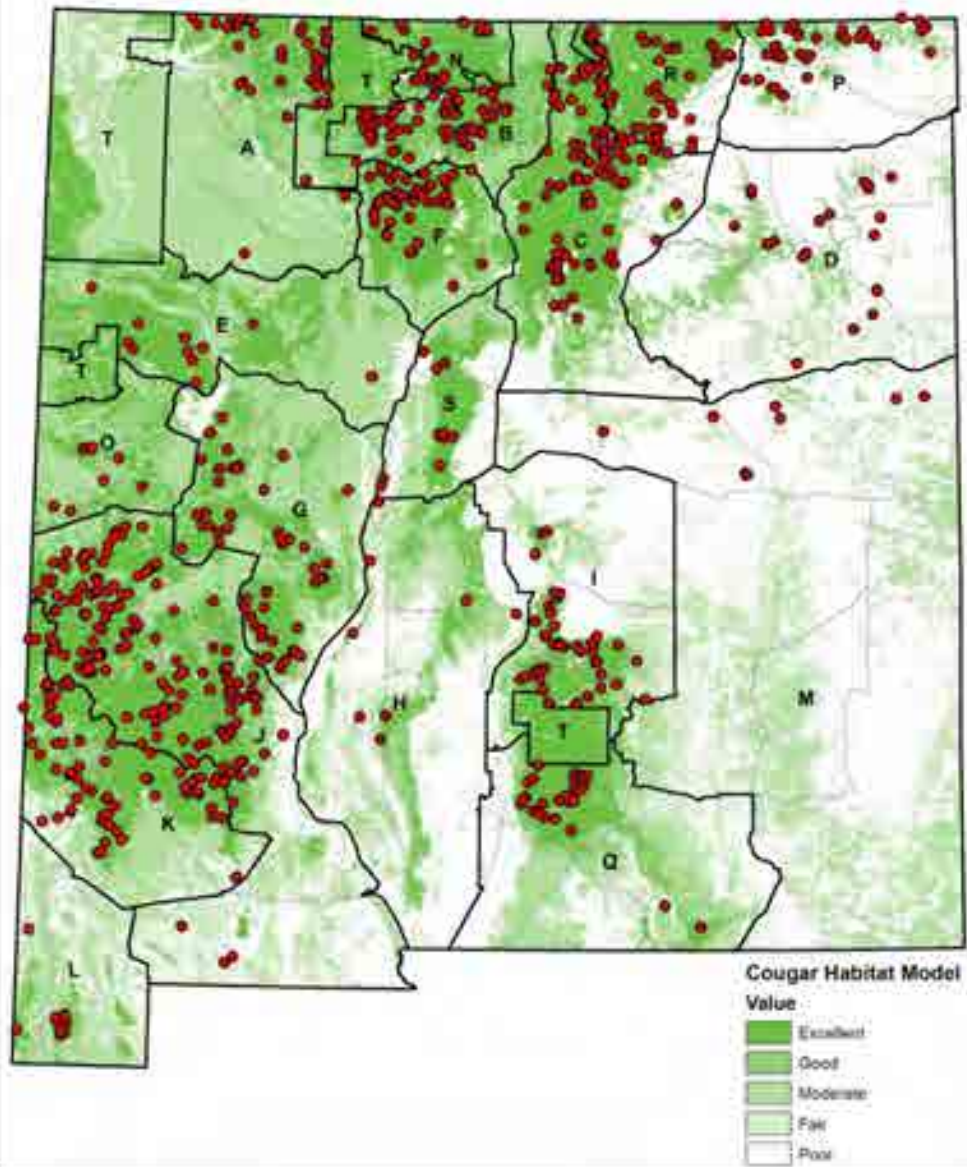


Cougar Harvest

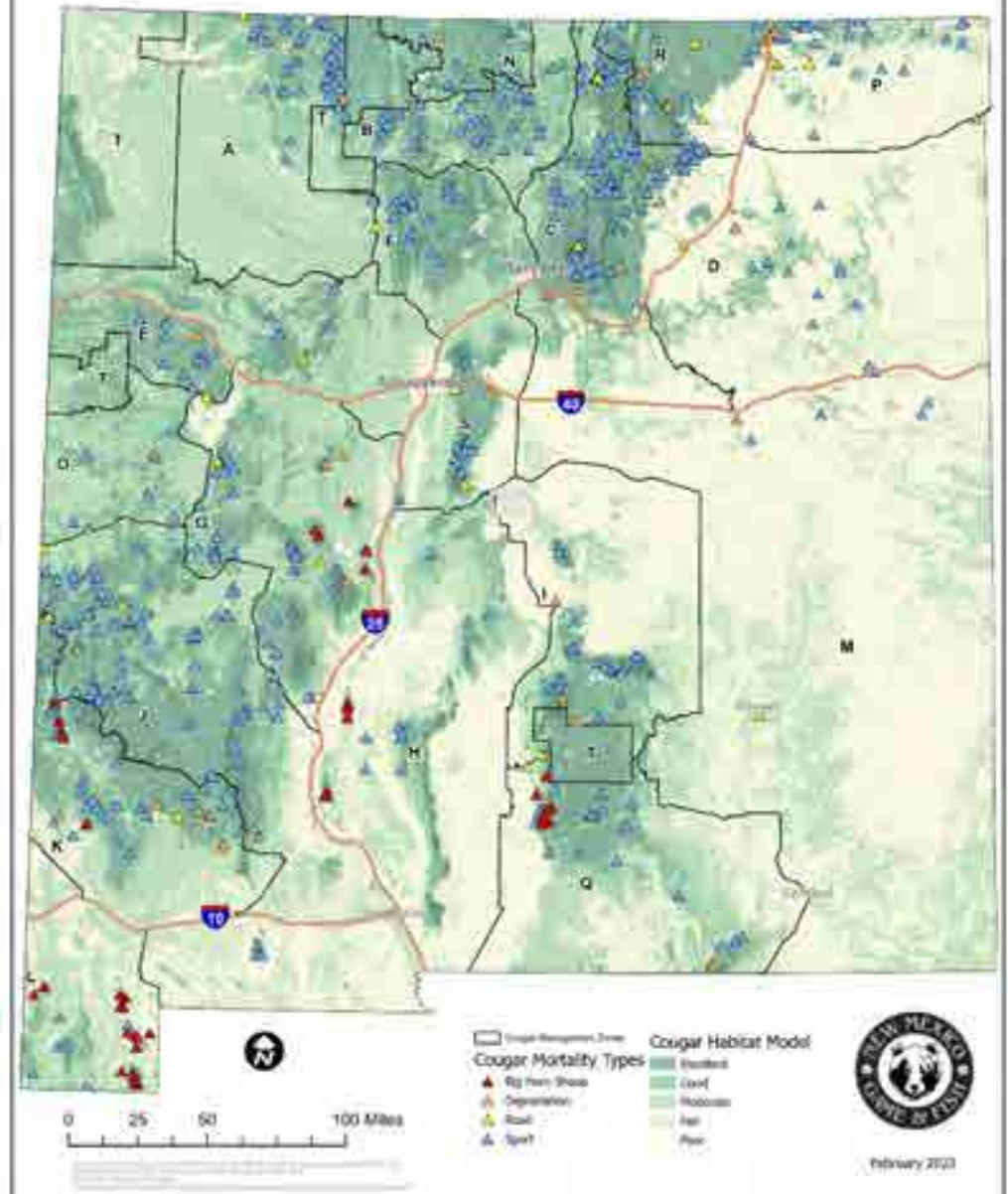
Cougar Harvest and Total Mortality 2003-2022



Cougar Harvest 2016 - 2019



New Mexico Cougar Mortality 2020 - 2022



Cougar Harvest

CMZ	Max	2016	2017	2018	2019
A	42	12	14	21	17
B	28	22	20 ⁺	27 [*]	22 ⁺
C	85	25	24	47	40
D	23	5	11	8	4
E	50	1	3	7	9
F	46	11	16	20 [*]	13
G	73	13	11	27	23
H	37	0	4	3	1
I	24	14	11 ⁺	19 ⁺	16 ⁺
J	89	49	39	74	52
K	66	24	25	25	18
L	19	5	3	4	1
M	31	2	4	4	2
N	15	10 ⁺	10 ⁺	10 ⁺	13 ⁺
O	21	5	1	5	4
P	14	13 [*]	15 [*]	13 [*]	13 [*]
Q	35	13	7	9	12
R	26	16	17 ⁺	17	20
S	25	4	3	4	2

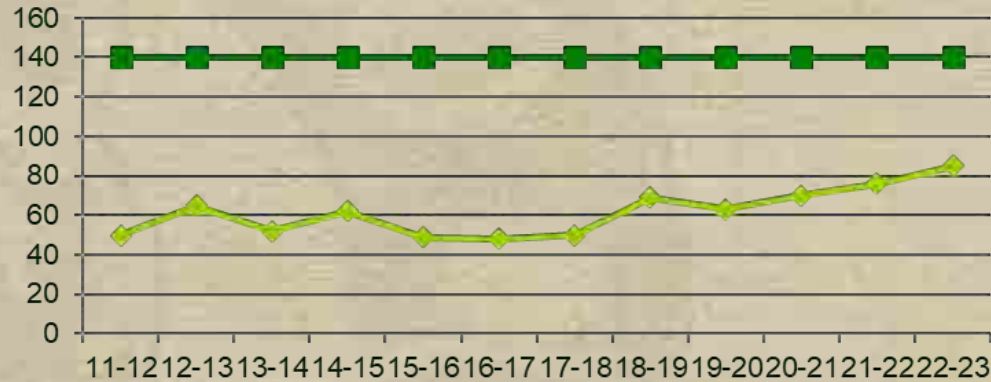
CMZ	Max	2020	2021	2022
A	42	26 ⁺	21	33
B	25	26 [*]	30 [*]	26 [*]
C	57	45 ⁺	46 ⁺	39 ⁺
D	15	7 ⁺	7 ⁺	8
E	43	8	11	12
G	50	18	18	21
H	29	10	0	1
I	24	10 ⁺	17 ⁺	19
J	84	44 ⁺	38	60 ⁺
K	45	13	16	21
L	19	7	3	10
M	25	4	0	6
N	13	6	4 ⁺	7 ⁺
O	17	2	6	5
P	14	14 [*]	14 [*]	13 [*]
Q	35	13	10	10
R	26	14 ⁺	11	6
S	17	4 ⁺	10 ⁺	7 ⁺

*closed on total limit; +closed on female sub-limit

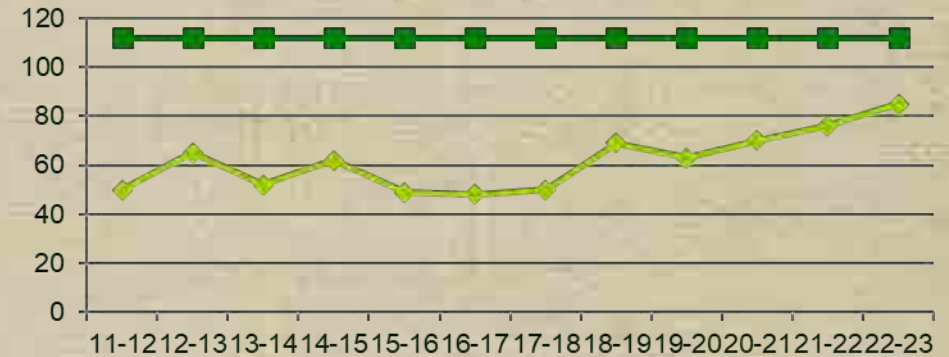


Cougar Harvest

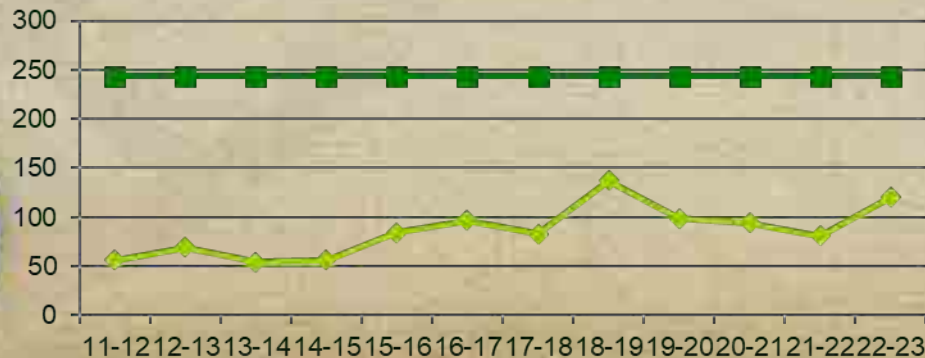
**Cougar Harvest and 2020-2024
Sustainable Harvest Limit
Northwest CMZs**



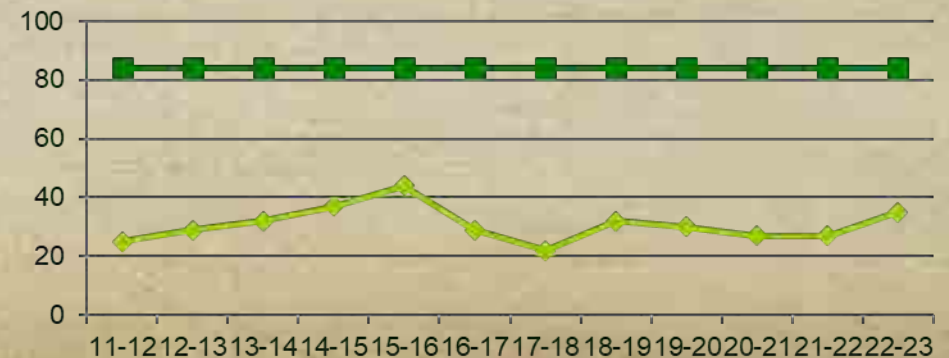
**Cougar Harvest and 2020-2024
Sustainable Harvest Limit
Northeast CMZs**



**Cougar Harvest and 2020-2024
Sustainable Harvest Limit
Southwest CMZs**

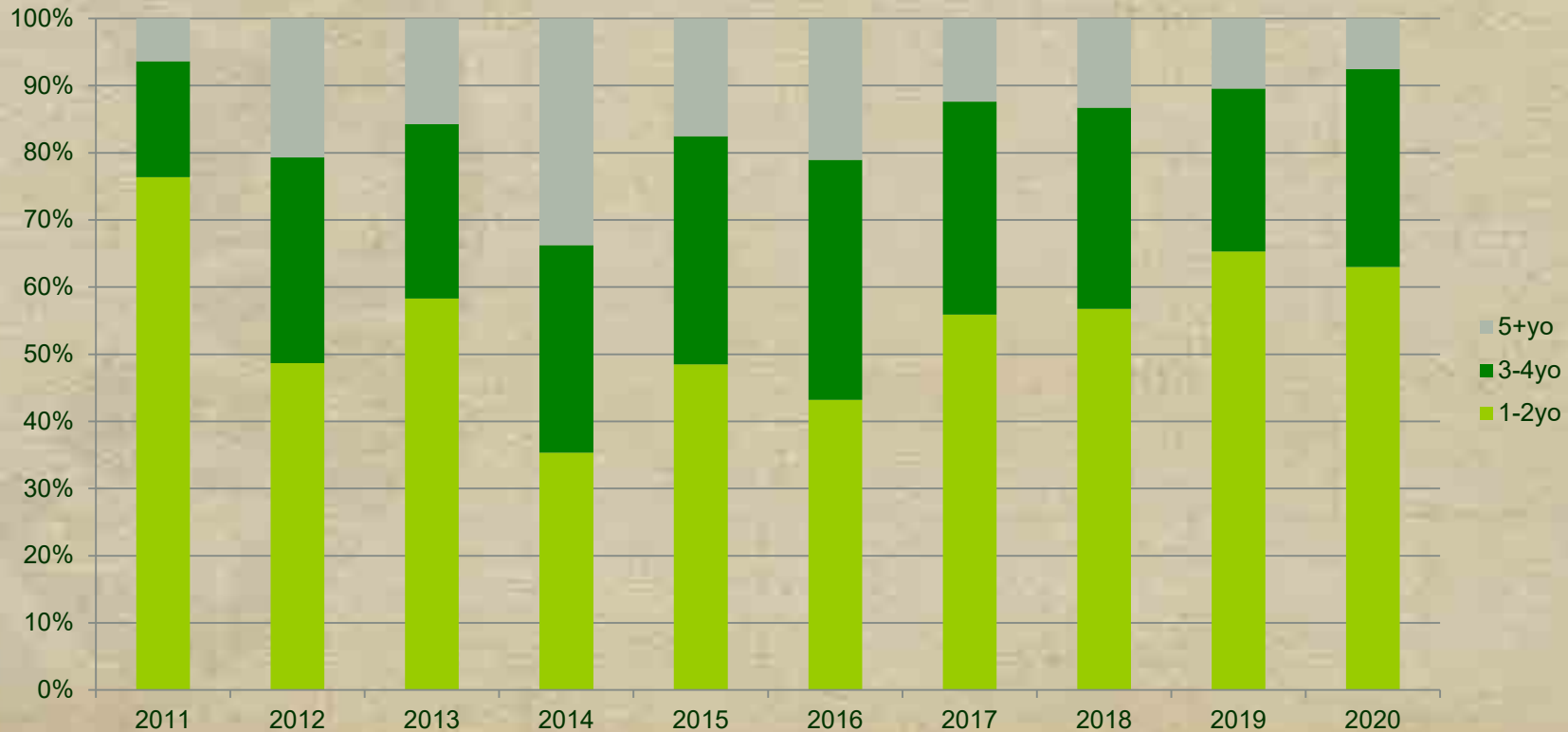


**Cougar Harvest and 2020-2024
Sustainable Harvest Limit
Southeast CMZs**



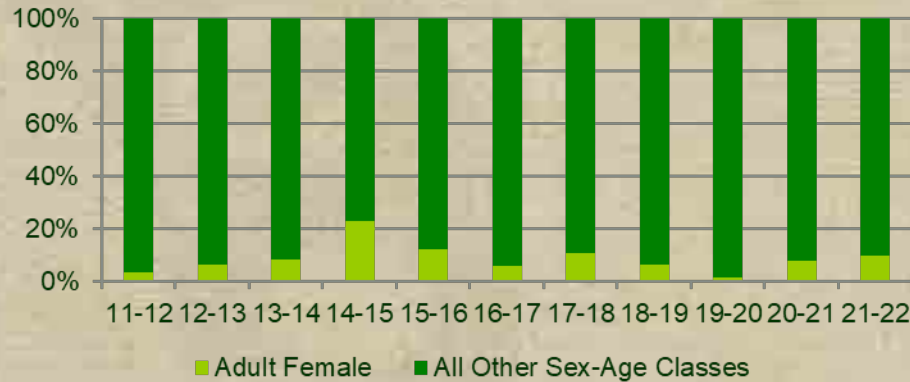
Cougar Population Age Structure

Statewide Age Structure of Harvest 2011-2020

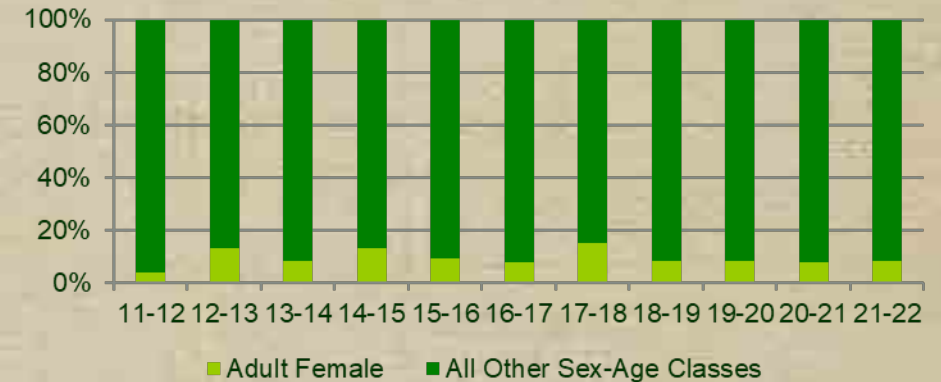


Cougar Population Age Structure

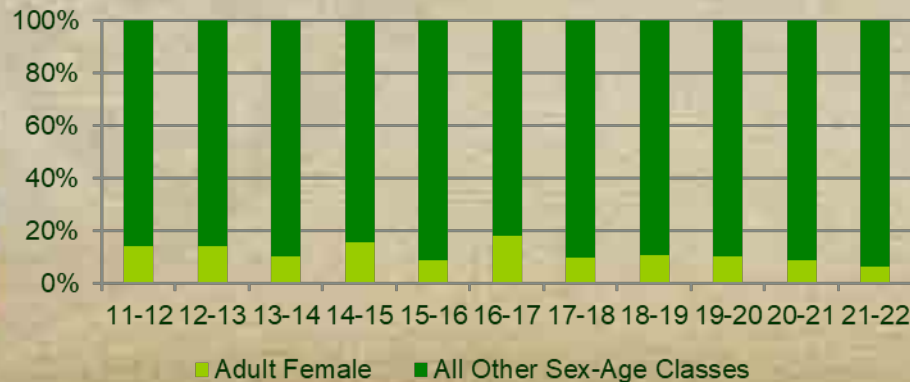
**Adult Female Proportion of Harvest
Northwest CMZs 2011-2022**



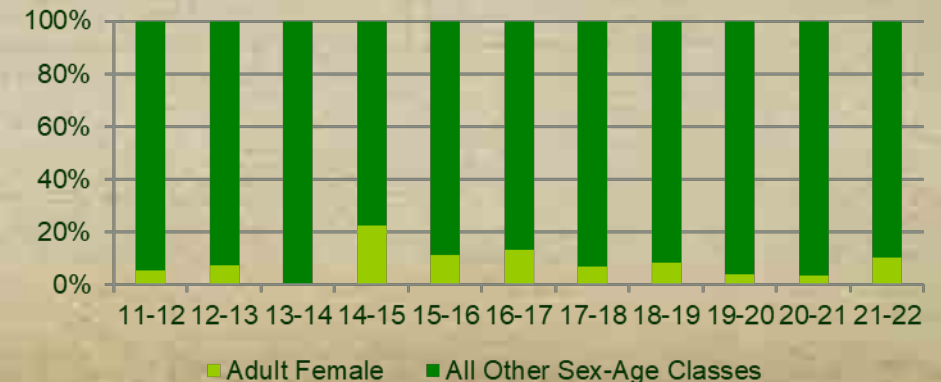
**Adult Female Proportion of Harvest
Northeast CMZs 2011-2022**



**Adult Female Proportion of Harvest
Southwest CMZs 2011-2022**

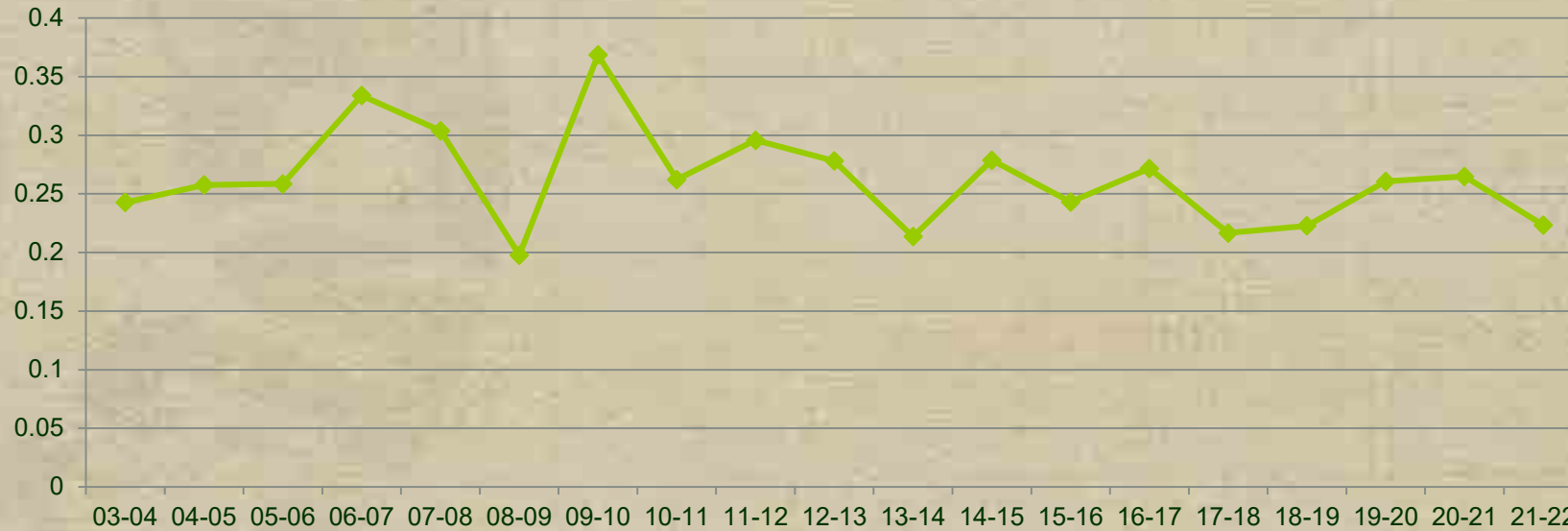


**Adult Female Proportion of Harvest
Southeast CMZs 2011-2022**



Cougar: Catch Per Unit Effort

Statewide Cougar Harvest CPUE 2003-2022



September 11, 2023

Cougar Population and Harvest Management Matrix (2024-25 through 2027-28).

Zone	Game Management Units	Estimated Cougar Habitat (km ²) ^a	Cougar Population Point Estimate ^{bc}	2024-28 Total Mortality Limit ^d	2024-28 Female Sub-Limit
A	2, 7	13,728	246	42	13
B	5, 6, 50, 51	NA ^e	167	25	9
C	43,45,46, 48, 49, 53	11,482	338	57	17
D	41, 42, 47, 59	6,468	91	15	5
E	9, 10	13,674	296	43	13
G	13, 17	14,422	292	50	15
H	18, 19, 20	11,878	168	29	9
I	36, 37, 38	7,138	143	24	7
J	15, 16, 21	19,048	492	84	25
K	22, 23, 24	11,299	265	45	14
L	25, 26, 27	10,122	109	19	6
M	31, 32, 33, 39, 40	21,394	181	25	7
N	4, 52	2,801	89	13	4
O	12	6,663	122	17	5
P	56, 57, 58	2,700	57	14	7
Q	28, 29, 30, 34	NA ^e	100	17	6
R	54, 55	4,557	153	26	8
S	8, 14	4,661	100	17	5
Totals:		173,787	3,409	562	175

^aThe quantity of habitat was derived from a model designed by G&F and T. Perry, PhD, and recent G&F research and population estimates. The habitat is classed as Excellent, Good, Moderate, and Fair; Excellent has a density of 3.0-4.0/100km², Good has a density of 1.2-1.7/100km², Moderate has a density of 0.6-0.9/100km² and Fair has a density of 0.4-0.5/100km² adult cougars. Densities derived from studies conducted in New Mexico. ~64% of the state is considered cougar habitat, 5% is tribal jurisdiction.

^bThe population estimated is that of independent cougars, ≥18 months of age.

^cCougar management aims for a stable population statewide with sustainable harvest levels into the future and is generally based on minimum population estimates. Stable = harvest ≤ 17% of total estimated population w/max of 30% female.

^d 90% of Total mortality limit and/or female sub-limit will close harvest in any zone, whichever occurs first.

^e Amount of cougar habitat was not used for the population point estimate; instead a density of 1.1 cougars/100 km² across the CMZ B and a density of 0.55 cougars/100 km² was used in CMZ Q based on G&F research using population models that account for spatial variation in cougar density.

September 11, 2023

Bear Population and Harvest Management Matrix (2024-25 through 2027-28)

Zone	Game Management Units	Estimated Primary black bear habitat (km ²) ^a	Bear population point estimate	Population Density (bears/100 km ²) ^b	% Harvest	Harvest Limit (Female Harvest Limit) ^c	Seasons
1	4, 5, 6, 7, 51, 52	9,296	1,681 ^d	18.1 ^d	10%	168 (67)	Sept 1-24, Sept. 25-Nov. 15
2	2	880	150	17	10%	15 (6)	Sept 1-24, Sept. 25-Nov. 15
3	49, 50, 53	2,642	544	17 + 21.5	12%	65 (26)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 15
4	45, 46, 48	5,778	1,093	18.6 + 23.4	10%	109 (43)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 30
5	54, 55, 57	5,052	1,085	21.5	10%	108 (43)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 15
6	39, 40, 41, 42, 43, 47, 56, 58 59	5,554	513	7 + 21.5	10%	51 (20)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 15
8	8	719	132	18.4	8%	11 (4)	Sept. 1-24, Oct. 15-Nov. 15
9	9, 10	2,693	356	13.2	10%	36 (14)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 15
10	12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27	15,488	2,461 ^d	15.9 ^d	8%	197 (79)	Sept 1-24, Sept. 25-Dec. 15
11	37, 38	1,811	360	19.9	10%	36 (14)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 30
12	34	2,428	325	13.4	10%	33 (13)	Aug. 16-31, Sept 1-24, Sept. 25-Dec. 15
13	36	1,184	159	13.4	10%	16 (6)	Aug. 16-31, Sept. 1-24, Sept. 25-Nov. 30
14	14	1,267	233	18.4	8%	19 (7)	Sept. 1-24, Oct. 15-Nov. 15
Totals		54,793	9,092			864 (342)	

a. Population estimates are based solely on primary habitat and do not include Secondary or Edge habitats.

b. The bear population estimate was derived from the NM Bear Study (Costello et al. 2001) and Gould et al. (2016) does not include populations on most tribal jurisdictions.

c. All BMZs will close when a number 10% below the harvest limit or female harvest limit is reached, whichever comes first. Only sport harvest is included in the harvest limit.

d. Population estimates for BMZs 1 and 10 were made across all habitat types given sampling distribution was not limited to primary habitat. Reported densities are conversions of those populations estimates for the zone to the number of bears per 100 km² of primary habitat for that zone for the sake of comparison to previous estimates for other zones.

SCIENTIFIC REPORTS

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A Bayesian state-space model using age-at-harvest data for estimating the population of black bears (*Ursus americanus*) in Wisconsin

Maximilian L. Allen^{1,2,3}, Andrew S. Norton⁴, Glenn Stauffer², Nathan M. Roberts², Yanshi Luo⁵, Qing Li^{5,6}, David MacFarland² & Timothy R. Van Deelen³

Population estimation is essential for the conservation and management of fish and wildlife, but accurate estimates are often difficult or expensive to obtain for cryptic species across large geographical scales. Accurate statistical models with manageable financial costs and field efforts are needed for hunted populations and using age-at-harvest data may be the most practical foundation for these models. Several rigorous statistical approaches that use age-at-harvest and other data to accurately estimate populations have recently been developed, but these are often dependent on (a) accurate prior knowledge about demographic parameters of the population, (b) auxiliary data, and (c) initial population size. We developed a two-stage state-space Bayesian model for a black bear (*Ursus americanus*) population with age-at-harvest data, but little demographic data and no auxiliary data available, to create a statewide population estimate and test the sensitivity of the model to bias in the prior distributions of parameters and initial population size. The posterior abundance estimate from our model was similar to an independent capture-recapture estimate from tetracycline sampling and the population trend was similar to the catch-per-unit-effort for the state. Our model was also robust to bias in the prior distributions for all parameters, including initial population size, except for reporting rate. Our state-space model created a precise estimate of the black bear population in Wisconsin based on age-at-harvest data and potentially improves on previous models by using little demographic data, no auxiliary data, and not being sensitive to initial population size.

Population estimates are essential for making decisions about management and conservation of many species^{1,2}, but often are difficult or expensive to obtain across large geographical scales^{2,3}. This is particularly true of mammalian carnivores^{4,5}, which are cryptic and difficult to count directly^{6–8}. Consequently, carnivore managers often base their population estimates on extrapolations from small data sets and adjust harvest quotas based on subjective opinion from the public and experts⁹. The importance and challenges of estimating wildlife populations has led to many different estimation methods^{2,10}, and more are developed each decade (e.g.,^{11–13}). For hunted populations, models using age-at-harvest data are often most practical, especially when working with a population across large scales when other methods of collecting data are difficult^{2,13}. Several rigorous statistical approaches, including both frequentist and Bayesian statistics, have recently been developed that use age-at-harvest and integrate auxiliary data (usually other harvest or demographic data) to accurately estimate populations^{3,11–13}. To date there has not been a model developed that creates accurate estimates without integrating auxiliary data, which makes it necessary for large field projects to collect demographic data. Bayesian state-space models may be able to accomplish this, as one of their main strengths is that they appropriately use regularization to share information

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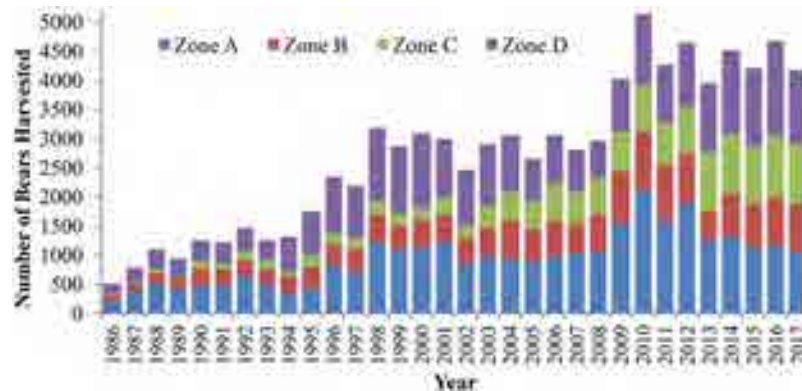


Figure 1. The number of harvested black bears in Wisconsin from 1971–2015, with no bear harvest in 1985. The number of harvested bears in each county is noted by a different color.

across space and time in the model¹¹, and may efficiently use all available data compared to other modeling approaches¹³.

Bayesian models can improve upon deterministic methods by being less reliant on prior information and allowing variation in parameters over time. Deterministic methods can sometimes be limited in accuracy^{11,14}, because they rely on assumptions that demographic parameters are stable over time (e.g.,^{13–15}), and can be biased when erroneous or subjective demographic parameter values are used^{2,13–16}. The Bayesian state-space modelling approach allows the modeler to transparently provide biologically supported information and constraints on parameters as priors, but the models use these as a starting point and the posterior values are not dependent on the prior values provided. Bayesian state-space models are also similar to stochastic population models, in that they reduce potential bias by allowing the demographic parameters to vary over time^{3,13}. Bayesian state-space models also allow for a range of information in parameters, from completely informative parameters similar to a deterministic accounting model to uninformative parameters similar to frequentist approaches, formalizing a process to transparently accommodate expert opinion when estimating wildlife populations. Drawbacks of Bayesian models is that they can be more complex and difficult to comprehend and more computationally intensive to implement than simpler models. Their implementation, however, could result in better decision-making about populations and harvest quotas, and lead to more effective monitoring and management, particularly for cryptic species.

Black bears (*Ursus americanus*) are a K-selected (e.g., Pianka 1970), spatially dispersed solitary carnivore^{17–20}. Black bears are a widely distributed species across North America, with many populations expanding in recent years²¹. In Wisconsin, black bears are a widespread game animal whose population and harvest have increased over the last few decades^{22,23} (Fig. 1). Most black bears in Wisconsin are found in the northern half of the state, but the population has been expanding southward in recent years. Since 1985 the Wisconsin Department of Natural Resources (WDNR) has estimated bear populations using a deterministic accounting model²². However, an independent capture-recapture estimate generated from tetracycline marking found that the current model underestimated the population size by nearly 2/3²². This is mainly due to the inability of the deterministic model to account for variation in harvest and population demographics over time and because the model incorrectly assumes a linear relationship between independent bear abundance estimates from bait stations and population abundance²⁴. Independent population estimates have allowed the WDNR to more accurately assess the black bear population in the state²², but these are expensive and often conducted years apart. Consequently, there is a need to update the population models in Wisconsin, as well as in many other states and jurisdictions.

K-selected species, including black bears, are susceptible to over-harvest²⁵, and management agencies need to carefully track populations when setting harvest quotas and goals. Bayesian state-space models may be ideal for estimating wildlife populations¹³, but have been used less frequently by wildlife managers to date (but see^{11,13}). Our goal was to create and evaluate a Bayesian state-space model using age-at-harvest data to estimate the statewide abundance of black bears in Wisconsin. Our objectives were to (1) determine reasonable prior distributions using literature review and harvest data; (2) compare abundance estimates to estimates from the capture-recapture estimates using tetracycline marking from 2011²⁶ and the population trend to the trend from catch-per-unit-effort for the state; and (3) analyze the sensitivity of the state-space model's population estimate to different specifications of the prior distributions for each demographic parameter and initial population size.

Materials and Methods

Study Area. Our study focused on the black bear population for the entire state of Wisconsin (Fig. 2), where the WDNR manages bears in 4 hunting zones (Supplementary Material 1). Most of the bear population is in the northern half of Wisconsin (hunting zones A, B, and D), and each zone has unique quotas and hunting regulations²². Over the course of our study the bear season began on the first Wednesday after Labor Day and was open for 35 days. Our methods were carried out in accordance with approved guidelines from the WDNR and University of Wisconsin, because we only performed analyses of harvest data did not include any experimental protocols or handling of animals. All data collected by the WDNR is archived by WDNR data scientists and is



Figure 2. Study area of Wisconsin in gray, and quasi-study area of the northern mixed forest ecotone. We used the quasi-study area to restrict the scope of the literature review of black bear studies to develop appropriate prior distributions for demographic parameters. The figure was created with ArcGIS 10.3 (www.arcgis.com) with the National Geographic open data layer base map (<http://www.esri.com/news/arcuser/0312/files/ng-basemap.pdf>).

fully available to the public. The data used for analyses in this manuscript are available within the manuscript and associated supplementary material.

We used reasonably informative prior distributions for the model parameters. Because information from Wisconsin for such prior distributions was sparse, we relied on studies from surrounding areas. To limit potential bias due to variation between Wisconsin and other study areas (e.g.,²⁷), we defined a quasi-study area based on habitat. We used areas in the northern temperate mixed forest ecotone (Fig. 2), in an attempt to match the habitat of the three northern Wisconsin bear zones. We included all mixed deciduous, coniferous and broad-leaved forest types delineated by Bailey²⁸ in ArcGIS 10.4 (ESRI, Redlands, CA) to create the quasi study area (Fig. 2). We reviewed estimates (or data when available) from all available peer-reviewed literature from within the quasi-study area to set relevant prior distributions for model parameters.

Population Size Parameters. Our goal was to estimate the total abundance (N) of the black bear population in Wisconsin immediately preceding the hunting season. We denote this population size as $N_{a,s,y}$, where a , s , and y , respectively, denote age, sex, and year for the indicated population size. We initialized the model with $N_{total} = 21,450$ in 2009, based on estimates from the WDNR (Supplementary Material 2a). Proportions of N_{total} in each age class were approximations based on the mean proportions observed in each age class in the bear harvest over the previous 30 years. As with most other population models, we assumed that harvest was proportional to the population for each age class. We therefore visually assessed the harvest proportion by age class over 30 years and found similar proportions despite increases in harvest, and therefore considered the proportions accurate enough for use in a Bayesian modelling framework, which uses the priors to inform the posteriors of the model.

Harvest Data. Our harvest data included:

O = observed total harvest by year (y), which we assumed to be a complete count of legal harvest.

C = number of harvested bears with known age (a) and sex (s). In the model, a is written as 10 age classes (1.5-year-olds, 2.5-year-olds, ..., 9.5-year-olds, >10.5-year-olds), excluding cubs (0.5-year-olds) that cannot be legally harvested.

We used 8 years (2009–2016) of black bear harvest data from Wisconsin. Since 1973, the WDNR has required bear hunters to register all harvested bears. We used these data to account for the total annual observed harvest. Sex of animals was recorded, and a tooth was extracted from each animal and submitted to Matson's Lab

Source	State/Province	All Litters			First Litter			Later Litters		
		n	LS	Range	n	LS	Range	n	LS	Range
⁴⁶	Virginia	n/a	n/a	1–4	n/a	n/a	n/a	n/a	n/a	n/a
⁴⁷	Maine	259	2.4	1–4	69	2.0	1–4	190	2.5	1–4
¹⁹	Minnesota	101	2.5	1–5	29	2.0	n/a	72	2.7	n/a
⁴⁸	Massachusetts	86	2.3	1–4	20	1.6	1–3	66	2.6	1–4
¹⁷	Minnesota ^a	52	2.4	1–3	17	2.1	1–3	35	2.5	1–3
⁴⁰	Tennessee	45	2.6	1–4	n/a	n/a	n/a	n/a	n/a	n/a
⁴⁹	Massachusetts	27	2.4	1–4	n/a	n/a	n/a	n/a	n/a	n/a
⁵⁰	Virginia	26	2.3	1–4	n/a	n/a	n/a	n/a	n/a	n/a
⁴¹	Ontario	18	2.5	1–4	n/a	n/a	n/a	n/a	n/a	n/a
¹⁷	Minnesota ^b	18	3.0	1–4	8	2.5	1–3	10	3.4	3–4
⁴²	all litter sizes, and those for first litters and later	15	2.5	2–4	n/a	n/a	n/a	n/a	n/a	n/a
⁵¹	Virginia and North Carolina	7	2.3	1–3	n/a	n/a	n/a	n/a	n/a	n/a

Table 1. Review of mean litter sizes from studies in the northern hardwood ecotone, listed in order of sample size. Litter sizes are split into all litter sizes, and those for first litters and later litters. ^aIn a natural system. ^bIn a system with access to garbage. We provide the sample size (n), mean litter size (LS), and the range of litter sizes. Cases where data is not available are marked as not available (n/a).

(Milltown, MT, USA) for aging through analysis of cementum annuli²⁹. In a small proportion of bears, accurate aging was not possible. Thus

$$O_y > \sum C_{a,s,y}.$$

Recruitment Parameters. Our recruitment variables included:

LS_a = age-specific mean litter size of black bears,

PR_a = age-specific pregnancy rate (annual probability of giving birth), based on the proportion of bears that have first litters at given ages, then the interbirth interval for subsequent litters,

SP_s = proportions of newborn cubs that are female and male.

We reviewed the literature on cub survival to specify prior distributions for:

$CubSa$ = Cub survival from birth to the beginning of the first harvest season,

$CubSb$ = Cub survival from the beginning of the first harvest season to the beginning of the second harvest season.

Because it is illegal to harvest black bear cubs, bears do not enter the harvest model until they reach 1.5 years of age (immediately preceding the harvest season). Age-specific fecundity values (as number of 1.5-year-olds entering the model, per female) were calculated as:

$$Fec_a = LS_a \times PR_a \times CubSa \times CubSb$$

and multiplied by the number of females in each age class of the previous year to determine the number of 1.5-year-olds entering the population and by SP_s to determine the proportion by sex. We back-calculated the number of 0.5-year-olds in the population model as:

$$N_{0.5,s,y-1} = N_{1.5,s,y} / CubSb$$

Based on our literature review, we assumed that 0.5- and 1.5-year-old bears did not produce any cubs, but that a small proportion of the 2.5-year-old bears would have given birth at 2 years of age, and we therefore defined 4 fecundity age groups (2.5, 3.5, 4.5, and 5.5+ year-olds). These age groups are aggregated differently from the groups defined for abundance, but the subscript a denotes actual age (except for the absorbing terminal age of the 10.5+ -year-old age class), so its use is consistent.

To specify prior distributions for LS_a we reviewed literature from our quasi-study area (Table 1). Because of substantial differences in litter sizes between first and subsequent litters we used data only from studies from which we could determine values for first and/or subsequent litters, and then used these studies to parameterize the prior distributions (Table 2).

To specify prior distributions for PR_a we used birth data from Wisconsin black bears determined through cementum annuli techniques³⁰. To determine the age-specific probability of having a first litter, we used data from 1989 to 2008, and calculated the annual mean proportion of bears giving birth for the first time for each age class. We also used the interbirth interval values provided by the authors³⁰, used these hyperparameter values for the prior distributions (Table 2).

To specify prior distributions for SP_s we reviewed literature from our quasi-study area, but found only one study¹⁹ with robust sample sizes (e.g., $n > 20$) and therefore used the values from that study as our hyperparameters for the prior distributions (Table 2).

For cub survival data ($CubSa$ and $CubSb$; Table 3) we reviewed literature from our quasi-study area to determine the prior distribution and hyperparameters (Table 2).

Recruitment Parameters				
Variable	Parameter	Mean	Distribution	
LS-a	Litter Size 2.5-year-olds	2.00	Gamma (20,10)	
LS-b	Litter Size 3.5-year-olds	2.00	Gamma (20,10)	
LS-c	Litter Size 4.5-year-olds	2.00	Gamma (20,10)	
LS-d	Litter Size 5.5+ year-olds	2.74	Gamma (16.4,6)	
PR-a	Pregnancy Rate 2.5-year-olds	0.003	Beta (2.61,1000)	
PR-b	Pregnancy Rate 3.5-year-olds	0.25	Beta (34,100)	
PR-c	Pregnancy Rate 4.5-year-olds	0.53	Beta (54,48)	
PR-d	Pregnancy Rate 5.5+ year-olds	0.48	Beta (47,50)	
SP	Sex Proportion (female)	0.46	Beta (426, 500)	
Survival Parameters				
Variable	Parameter	Mean	Long-Term Precision	Annual Precision
HSm	Male Harvest Survival	0.77	3	Gamma (20,0.5)
HSf	Female Harvest Survival	0.85	3	Gamma (20,0.5)
NS	Non-harvest Survival	0.95	4	Gamma (20,0.5)
CubSa	Cub Survival years 0.0–0.5	0.84	4	n/a
CubSb	Cub Survival years 0.5–1.5	0.71	4	n/a
Rep	Recovery Rate	0.98	2	n/a

Table 2. Prior distributions and hyperparameters in our statewide Bayesian state-space model using age-at-harvest data, split into recruitment and survival parameters. We include the variable, parameter description (for gamma distributions these are the shape and rate), mean and distribution used. For survival prior distributions the means are given at the real parameter scale and long-term and annuals precisions (1/variance) are at the link scale (loglog).

Source	State/Province	Annual			Harvest Season			Non-Harvest Season		
		Survival	n	Range	Survival	n	Range	Survival	n	Range
Male										
³⁸	North Carolina	n/a	n/a	n/a	0.69	16	0.27–0.89	1.00	16	1.00–1.00
⁵²	Pennsylvania	n/a	n/a	n/a	0.78	4324	n/a	n/a	n/a	n/a
⁵¹	North Carolina and Virginia	0.59	n/a ⁺	n/a	0.71	n/a ⁺	n/a	0.84	n/a ⁺	n/a
⁵⁰	Virginia	0.59	22	0.38–0.76	n/a	n/a	n/a	n/a	n/a	n/a
³¹	Ontario	0.83	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
³⁹	Virginia	0.49	65	0.15–0.88	0.53	65	0.16–0.88	1.00	31	1.00–1.00
⁵³	Minnesota	n/a	n/a	n/a	0.80	n/a	0.75–0.83	n/a	n/a	n/a
⁵⁴	North Carolina ⁺	0.69	72	0.60–0.75	n/a	n/a	n/a	n/a	n/a	n/a
Female										
³⁸	North Carolina	n/a	n/a	n/a	0.71	35	0.53–0.82	1.00	35	1.00–1.00
⁵⁵	North Carolina	0.70	101	0.59–0.83	n/a	n/a	n/a	n/a	n/a	n/a
⁵²	Pennsylvania	n/a	n/a	n/a	0.84	2685	n/a	n/a	n/a	n/a
⁵¹	North Carolina and Virginia	0.87	n/a ⁺	n/a	0.90	n/a ⁺	n/a	0.96	n/a ⁺	n/a
⁵⁰	Virginia	0.93	24	0.77–0.99	n/a	n/a	n/a	n/a	n/a	n/a
³¹	Ontario	n/a	n/a	n/a	n/a	n/a	n/a	0.84	n/a	0.82–0.85
³⁹	Virginia	0.90	76	0.52–0.99	0.91	76	0.51–0.99	1.00	56	1.00–1.00
⁵³	Minnesota	n/a	n/a	n/a	0.87	n/a	0.86–0.90	n/a	n/a	n/a
⁵⁴	North Carolina ⁺	0.69	72	0.60–0.75	n/a	n/a	n/a	n/a	n/a	n/a

Table 3. Review of black bear survival from studies in the northern hardwood ecotone, listed in order of sample size. Survival values are split by sex with values for annual survival, harvest season survival, and for non-harvest season survival, when available. We list the sample size (n), the mean survival estimate, and the range of survival values provided. Cases where data were not available are marked as not available (n/a). *Reported for males and females combined. ⁺51 bears in total.

Survival Parameters. Our survival variables included:

$HS_{a,s,y}$ = age-, sex-, and year-specific survival during harvest season,

NS_y = age- and sex-specific survival outside of harvest season,

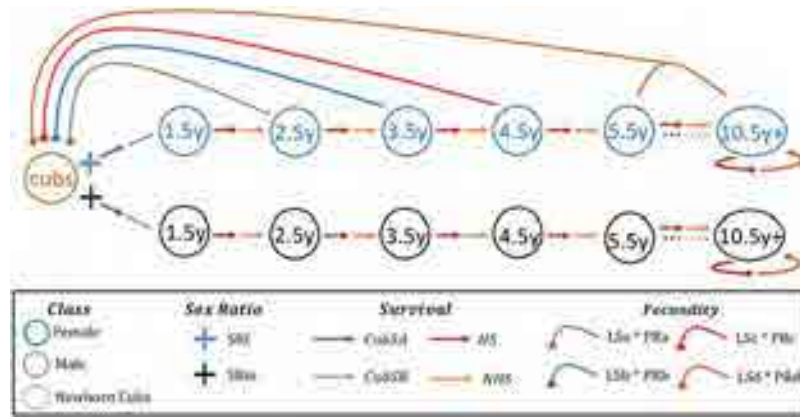


Figure 3. Life cycle diagram of black bears used to construct the stage-structured population matrix.

$Rep_{s,a}$ = sex- and age-specific recovery rate of bears during hunting season (percentage of hunting season mortality related to legal, reported harvest),

LHR_a = age-specific offset term for complementary log-log survival during the hunting season.

Harvest rate, noted as:

$HR_{a,s,y}$ = age-, sex-, and year-specific harvest rate,

was then a latent variable calculated annually as

$$HR_{a,s,y} = (1 - HS_{a,s,y}) \times Rep_{a,s}$$

Age- and sex-specific survival was then calculated annually as:

$$S_{a,s,y} = HS_{a,s,y} \times NS_y$$

For adult survival parameters (HS_s , NS , and $Rep_{a,s}$) we reviewed literature from our quasi-study area (Table 3), to determine the prior distributions and hyperparameter values (Table 2). We based the distribution and mean for reporting rates on a pair of studies from Ontario³¹ and Minnesota¹⁹. Because Wisconsin requires registration for every animal harvested, the reporting rate in Wisconsin is thought to be nearly universal and noticeably higher than reporting rates in Minnesota where registration is voluntary, and consequently we based the mean on the study from Ontario (Table 2), where every hunter was sought out³¹.

Parameter Summary. In summary, our modeled population parameters are: N_y , LS_a , PR_a , SR_s , $HS_{a,s,y}$, NS_y , $CubSa$, $CubSb$, and $Rep_{a,s}$, and the harvest data are $O_{s,y}$ and $C_{a,s,y}$. All other parameters (latent parameters) were derived from the basic parameters (e.g., $HR_{a,s,y}$). Regularization of parameter estimates was achieved by construction of informative prior distributions for each modeled parameter, based on information about black bear ecology.

Modeling Framework. Our state-space model consisted of two process models whose likelihoods were jointly modeled^{13,32}. The population process model (Fig. 3) was based on the unobserved/latent population state process (that progresses from the initial state density to sub-state transitional densities [hunting season, non-hunting season, recruitment]), and the observation state process was based on observed harvest data^{13,33}. We used Markov Chain Monte Carlo (MCMC) methods to approximate posterior distributions¹³ and based our inference on posterior summaries of the MCMC samples.

Our population process model was constructed as a two-sex, ten-stage population projection matrix¹⁰. The age distribution for the starting population in year 1 was specified by our prior distribution. In subsequent years, abundances for age classes ≤ 2 were derived as

$$N_{a,s,y} = N_{a-1,s,y-1} \times S_{a-1,s,y-1}$$

The abundance of the terminal age class in years 2 – Y was

$$N_{A,s,y} = N_{A-1,s,y-1} \times S_{A-1,s,y-1} + N_{A,s,y-1} \times S_{A,s,y-1}$$

because this was an absorbing age class. Abundance in the first age class in year $y = 2$ to Y was dependent on survival of cubs produced in year $y - 2$, and was derived as:

$$N_{1,s,y} = SP_s \times CubSa \times CubSb \times \sum_{a=1}^A N_{a,1,y-2} \times Fec_a$$

Variable	Description	PRC	CV
LS – 10%	10% Underestimate of litter size	–0.68	0.68
LS + 10%	10% Overestimate of litter size	1.09	1.09
PR – 10%	10% Underestimate of pregnancy rate	–0.98	0.98
PR + 10%	10% Overestimate of pregnancy rate	1.25	1.25
HSm – 10%	10% Underestimate of male harvest season survival	–0.04	0.04
HSm + 10%	10% Overestimate of male harvest season survival	0.02	0.02
HSf – 10%	10% Underestimate of female harvest season survival	–0.43	0.43
HSf + 10%	10% Overestimate of female harvest season survival	0.93	0.92
NHS – 10%	10% Underestimate of non-harvest season survival	1.64	1.85
NHS + 10%	10% Overestimate of non-harvest season survival	N/A	N/A
Rep – 10%	10% Underestimate of reporting rate	7.33	7.26
Rep + 10%	10% Overestimate of reporting rate	N/A	N/A
CubSa – 10%	10% Underestimate of cub season a survival	–0.44	0.43
CubSa + 10%	10% Overestimate of cub season a survival	1.30	1.30
CubSb – 10%	10% Underestimate of cub season b survival	1.46	1.48
CubSb + 10%	10% Overestimate of cub season b survival	–1.49	1.49
N – 10%	10% Underestimate of starting population	–1.81	1.84
N + 10%	10% Overestimate of starting population	1.98	2.02

Table 4. Parameters tested for sensitivity to prior distributions, with resulting percent relative change (PRC) and error measurements as coefficient of variation (CV) in the Bayesian state-space model.

Because N_{y-2} was not defined when $y=2$, we made the necessary simplifying assumption that $N_{a,1,y-2} = N_{a,1,y-1}$ when $y=2$.

Our observed-harvest data model consisted of two parts: total observed harvest (**O**) and harvested bears that have been aged and sexed (**C**). This is necessary because only a subset of the legal harvest is aged and sexed, due to broken teeth, lost samples, or other problems. Because the harvest likelihood was constructed across all age groups each year, variation will only include sampling variation¹³.

Statewide State-Space Model. We created a ‘statewide’ state-space population model, to estimate the black bear population in the entire state of Wisconsin using actual harvest data from 2009–2016 and our prior distributions (Table 2). We fit our models in Program R³⁴ using JAGS³⁵ and the R package *rjags*³⁶ (full code available in Supplementary Material 3). We ran 220,000 iterations with 3 chains, a burn-in of 20,000, and a thinning rate of 4. We visually assessed the convergence and mixing of the chains, and used Gelman-Rubin statistics to determine convergence³⁷. We visually compared the posterior abundance prediction for 2011 with WDNR capture-recapture estimates based on tetracycline marking from 2011²⁶. We also compared the posterior abundance trend, and the WDNR abundance trend from the 2017 model (Supplementary Material 2b), to the trend of catch-per-unit-effort (CPUE, calculated as annual harvest divided by annual hunting permits issued) for Wisconsin using linear regressions.

Assessing Sensitivity of State-Space Model Parameters. We essentially used only harvest data from Wisconsin, although independent auxiliary data can be used to increase the precision of parameters in state-space models when needed¹³. To understand how the hyperparameter values of our prior distributions affected the accuracy of state-space model performance, we compared the results of our statewide state-space model to models run with bias in individual parameters. We considered 10% positive and negative biases for the mean and variation of the prior distributions for 9 parameters, totaling 18 different scenarios (Table 4). In each of the 18 models for the sensitivity analyses, the hyperparameter values for each parameter were exactly the same as our statewide model except for the parameter being tested.

As with the statewide population model, we ran the models from the sensitivity analyses using 220,000 iterations in 3 chains, with a burn-in of 20,000 and a thinning rate of 4. We used Gelman-Rubin statistics to determine convergence³⁷, where we considered any values < 1.1 to indicate convergence.

To evaluate the sensitivity of the state-space model to each scenario we calculated percent relative change (PRC) in population as:

$$PRC = \frac{\sum_{y=1}^Y \left(\frac{\hat{N}_y - N_y}{N_y} \right)}{Y} \times 100,$$

and the coefficient of variation (CV) as:

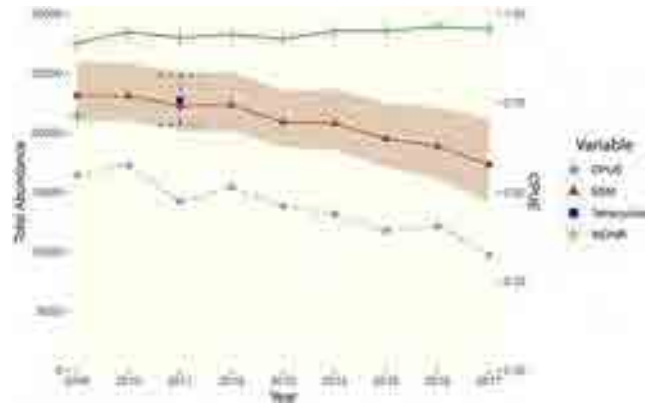


Figure 4. A comparison of our statewide population estimates and 95% credible intervals from the Bayesian state-space model (SSM, in brown) for Wisconsin (2009 to 2017) and the 2017 WDNr population estimate trend (in green). Also shown for comparison are the WDNr population estimate from 2009 (the initial population size for our SSM), the statewide trend in catch-per-unit-effort (CPUE, on the secondary y-axis in light blue), and the independent capture-recapture population estimate (for bears 1.5+) from tetracycline marking in 2011 with 95% confidence intervals (in dark blue).

$$CV_{pop} = \frac{\sqrt{\frac{\sum_{y=1}^Y (\hat{N}_y - N_y)^2}{Y}}}{\bar{N}} \times 100$$

for comparison between models, where \hat{N} is an abundance estimate from the sensitivity model and N is an abundance estimates from our statewide population model.

Results

Statewide Population Model. We used a Bayesian state-space model to estimate the statewide black bear population in Wisconsin using harvest data from 2009–2016. The observed mean harvest (O) was 4425 (± 140 SE) bears and ranged from 3952 to 5133 bears (Supplementary Material 4). Bears with known age and sex (C) comprised, on average, 85.9% of the harvest (Supplementary Material 4).

The statewide population estimates indicated a decreasing trend in the black bear population from 2009 to 2017 (Fig. 4). The annual variation and 95% credible intervals were similar, but increased slightly in the final two years of estimation (Fig. 4). The population abundance estimate for 2011 was visually similar to the independent tetracycline estimate for 2011 (Fig. 4). The population trend estimate had a significant and strong correlation with CPUE ($df = 8$, $R^2 = 0.93$, $p < 0.0001$), while the 2017 population trend from WDNr model had a non-significant correlation with CPUE ($df = 8$, $R^2 = 0.36$, $p = 0.09$).

The posterior distributions and means did not differ greatly from the prior distributions and means for litter sizes (Supplementary Material 5a), pregnancy rates (Supplementary Material 5b), and sex proportion of cubs (Supplementary Material 5c). Conversely, posterior distributions for harvest season survival for each sex and year (Supplementary Material 5d) were considerably more informative than the prior distributions. Compared to the prior distributions the means of the posterior distributions for harvest survival were generally slightly lower for females and were lower in all cases for males (Supplementary Material 5d). Harvest survival for younger age classes (1.5, 2.5, and 3.5 year-olds) was lower than for older age classes, and varied among years with 2011 and 2016 having the lowest survival estimates (Supplementary Material 5). The means of the posterior distributions for non-harvest season survival for each year was higher than the means of our prior distributions, but precision did not greatly improve (Supplementary Material 5e). Similarly, the means of the posterior distribution for cub survival for both periods were slightly greater than the means of the prior distribution, and precision improved only slightly (Supplementary Material 5f). The posterior distribution for the reporting rate were more informative than the prior distribution for females, but for males the posterior distribution had slightly greater variance than the prior distribution (Supplementary Material 5g). The means of the posterior distribution for the initial population size were generally slightly lower than the means of the prior distribution for males, and generally slightly higher for females (Supplementary Material 5h).

Sensitivity of Statewide Population Model. Based on the PRC values, our population model estimates were most sensitive to potential bias in the reporting rates, with a 10% underestimate of the reporting rate led to a PRC of 7.33 ($CV = 7.26$). The model was robust to potential bias in all other parameters, which had PRCs of < 2.00 (Table 4). A posthoc test of 50% bias in the initial population resulted in PRCs of -7.60 ($CV = 7.66$) for an underestimate and 11.88 ($CV = 12.03$) for an overestimate.

In each sensitivity test the models closely tracked the slightly decreasing trend and abundance estimates of our statewide state-space model. The potential bias of each variable also resulted in the expected population effects (increase or decrease of estimate), except in the cases of non-harvest season survival and cub survival for period

B. In these cases, the underestimate of non-harvest season survival led to an increase in the population estimate, and an underestimate of cub survival led to an increase in the population estimate while an overestimate led to decrease in the population estimate (Table 4).

Since the current model used by the WDNR is sensitive to the initial population estimate, we also performed two post hoc tests that assessed the sensitivity to extreme bias (50% increase and decrease) in the initial population estimate. The 50% underestimate had a PRC = -7.60% (CV = 7.67) for the population estimate, and the 50% overestimate had a PRC = 11.88% (CV = 12.03).

Discussion

We fit age-at-harvest data from 2009 to 2016 to a Bayesian state-space model to create an accurate and precise estimate of black bear population abundance in Wisconsin. To assess the relative accuracy of our model we compared the 2011 abundance estimate to an independent capture-recapture population estimate from 2011²⁶ (Fig. 4), and compared the abundance trend of our model to the trend of catch-per-unit-effort for the state. We found a strong correlation in trend with the catch-per-unit-effort from the state, with both estimating a decreasing trend, and similar abundance estimates to the independent abundance estimate from 2011. Our model for black bears appears to be a marked improvement on the population estimation model currently used by the WDNR (e.g.,²²), by increasing the precision of the population estimate, providing estimates of variance in the estimate, and being independent of the initial population size values. By using Bayesian analyses, we allowed our model to use our prior information to create accurate posterior estimates, which can vary among years and age classes. Our population estimates were also generally robust to bias in the prior distributions for all parameters, except for reporting rate. These results support previous conclusions about the usefulness and applicability of Bayesian state-space models using age-at-harvest data for population estimation (e.g.,^{11,13}), but now extend to situations lacking auxiliary demographic or other data from the population. Our state-space model appears to be a valid proof of concept for modeling wildlife populations; and Bayesian state-space models are a valuable tool to be added to the available analytical techniques for populations.

A strength of our state-space model was its robustness to biased prior distributions, including initial population size. The PRC values for all parameters were <2%, except for reporting rate (Table 4), and even a 50% biased estimate of initial population size led to PRC values of <12%. This is encouraging, because we derived many of our prior distributions from literature values and lack of information about parameter values can cause problems in many population estimation models (e.g.,²), especially when models are sensitive to parameters that are determined by expert opinion that can itself be biased⁹. We primarily used parameters that were derived from literature review from black bear studies in the northern mixed forest ecotone. These are informed values that help the model perform better than completely uninformed parameters and similar data are generally available for most harvested species across North America. Many population models, especially deterministic models, are sensitive to initial population size¹⁶, but being robust to bias in these estimates is a key strength of this model, especially when considered for use by management agencies. Considering how robust the state-space model is to biased prior distributions, and the applicability of using prior distributions informed by the literature review, the priority for future work should focus on accurately determining the reporting rates, potentially in the form of surveys.

Age-at-harvest models are clearly dependent on the quality of age-at-harvest data available to fit to the model. Our model was robust to bias in prior distributions partly because the quality of age-at-harvest data collected for bears in Wisconsin is excellent and broken down into specific age classes rather than general age stages (juvenile, yearling, adult). Consequently, survival probability was well-estimated in our model. Population models, especially for long-lived species such as black bears, often are most sensitive to adult, particularly female, survival probability (e.g.,^{2,16}). Non-harvest mortality for black bears is typically low^{38,39}, and therefore the focus of most research is on harvest survival. Our model inference supports this focus, in that estimates for non-harvest survival were considerably greater than for harvest-season survival, even though the harvest season is much shorter than the non-harvest season²². We did not account for the potential of additive versus compensatory mortality, but this should be considered in future analyses. Our state-space model, however, shows that harvest season survival can be precisely estimated using only age-at-harvest data, assuming quality data are available, and informative prior distributions on other parameters can be reasonably constructed. In cases where less age-at-harvest data is available, auxiliary data can be integrated into the model to potentially improve the precision of the estimates. Examples of data that can be incorporated include annual independent population estimates or observation surveys, survival estimates or other demographic parameters, or other covariates that affect demographic parameters such as winter severity or snow depth¹³. These results underscore the usefulness of sex and age data that are collected by many management agencies for harvested animals, and agencies interested in using state-space models to estimate populations should continue to collect this information.

The posterior distributions for recruitment variables were similar to the prior distributions, indicating that our prior beliefs were not updated by the model. The lone parameter that used data from Wisconsin (other than initial population size) was interbirth interval and proportion of age at first litter data (from³⁰), therefore, the litter size values from the literature could potentially have underestimated litter sizes in Wisconsin. Black bear fecundity is strongly linked to food^{17,19}, with heavier and older females producing more cubs^{40–43}, particularly those with access to human foods¹⁷. There are few restrictions on the amount or frequency of bait that can be placed for black bears in Wisconsin⁴⁴, which differs from some other jurisdictions, and as a result >40% of food consumed by the bear population is from intentional bait⁴⁴. Access to this extra nutrition may lead to relatively larger litter sizes in Wisconsin compared to other areas, and therefore may lead to higher fecundity rates than currently reported in the literature. Given the robustness of the model to bias in fecundity parameters, however, this may not greatly affect the abundance estimates.

We based the initial proportions of bears in each sex and age class on the proportion of the harvest for each class. The prior distributions we used were reasonable, but were improved by the estimated posterior distribution.

The posteriors were generally slightly lower than the prior distributions for males and generally slightly higher for females (Supplementary Material 5h). This is likely due to male bears being more frequently harvested⁴⁵, and these proportions in the prior distributions can be adjusted to account for the potential bias we introduced, which would likely allow the model to converge more quickly. By using a Bayesian modeling framework, the model was able to account for potential bias in the prior values, which is important when assuming that the harvest among age classes is proportional to their abundance in the population. When implementing the model for management and conservation, instead of using the independent population estimates to proof the model abundance estimate, we suggest using the independent population estimates as the starting population values. It is also important to perform independent population estimates every 3–5 years to improve the model precision over time, and ensure the abundance estimates are realistic (e.g.,²²).

Although our model is a valid proof of concept for updating population estimation in Wisconsin and other states, management agencies should adjust and fine-tune the model to match regionally and management zone specific conditions before using for management and setting quotas. This model is based on a statewide data, and produces only statewide estimates, but most states (including Wisconsin) are split into management zones. Management models should be split into an estimate for each zone, and managers can consider setting zone-specific prior distributions based on the unique ecology and hunting culture of each zone. The state-space model allows for precise estimates of wildlife populations, including for K-selected species which are vulnerable to over-harvest, making it valuable in both management and conservation settings. Due to budgetary constraints, many agencies are considering ways to reduce spending, but our model has shown the value of long-term age-at-harvest datasets.

Our harvest model was for black bears, but a similar model can be built for other harvested species, and, if needed, other data can be integrated into the model to increase the accuracy of the population estimate. Bayesian state-space models have now been successfully used for black bears and white-tailed deer (*Odocoileus virginianus*¹³), and similar models could be used for other harvested species that have a reasonable number of individuals in the harvest with known sex and age. Our model worked well partly because the WDNR has attempted to age and sex every harvested bear, but the state-space models also perform well when only a small proportion (e.g., 5%) of animals are aged¹³. Most management agencies have collected sex and age data for harvested animals over the course of decades, and our model should be widely applicable to agencies. In addition, we were able to create reasonable population estimates without using auxiliary data, which is a step forward for population models. Importantly, Bayesian state-space models are flexible, and can be adjusted to any harvest system, including those with unique data or parameters.

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Author Contributions

M.L.A., A.S.N. and T.R.V. conceptualized the model, M.L.A., A.S.N., G.S., L.Y. and Q.L. wrote and edited code of the model, M.L.A., A.S.N., L.Y. created the figures, M.L.A. performed the literature reviews and statistical analyses, N.M.R., D.M. and T.R.V. acquired funding for the project, M.L.A. wrote the manuscript, all authors revised the manuscript.

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Experimental Evaluation of Population Trend and Harvest Composition in a Wyoming Cougar Population

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(Garshelis 1990). Barnhurst (1986) investigated the vulnerability of cougars to sport hunting as a step toward understanding how to interpret harvest data. He proposed that vulnerability to harvest would be related to the frequency at which differing sex- and age-class cougars cross roads because cougars are generally hunted using trailing hounds, typically from roads or trails. The vulnerability index he developed from road-crossing frequencies suggested that transient males were most vulnerable, followed by resident males, transient females, resident females both without young and with young >6 months old, and finally resident females with young ≤6 months old.

Conceptually, the likelihood of a specific sex or age class of cougar being harvested would reflect its relative abundance in the population multiplied by its relative vulnerability. The least-vulnerable individuals should become prominent in the harvest only after the population had been reduced in size by removal of more vulnerable cougars. Our objective was to test the hypothesis that sex and age composition of the harvest would vary predictably with population size in a cougar population primarily hunted using hounds.

Study areas

Experimental population

The Snowy Range, located in southeast Wyoming about 30 km west of Laramie, was a 2,760-km² timbered region including a 2,170-km² portion of the Medicine Bow National Forest surrounded by private, Bureau of Land Management, and state-owned lands. This terminal mountain range was surrounded by sagebrush (*Artemisia tridentata*) grasslands except on the southern end, where it was connected to contiguous habitat by a 14-km-wide segment of the Medicine Bow Mountains. Cougars occupied about 1,700 km² of this area during winter. Wyoming State Highway 230 on the west, United States Interstate 80 on the north, the Laramie River and Sand Creek drainages on the east, and Colorado highways 125 and 127 on the south bounded the Snowy Range. The area was topographically diverse, ranging in elevation from about 2,100 m in the valleys to 3,652 m at Medicine Bow Peak. Vegetation communities were dominated by sagebrush grasslands in the peripheral valleys; lodgepole pine (*Pinus contorta*) stands with interspersed quaking aspen (*Populus tremuloides*), Rocky Mountain juniper (*Juniperus scopulorum*),

and limber pine (*Pinus flexilis*) at mid-elevations; and Engelmann spruce (*Picea engelmannii*)-subalpine fir (*Abies lasiocarpa*) forests with occasional limber pine at higher elevations (Alexander et al. 1986). Understory dominants in the mid- and high-elevation communities included huckleberry (*Vaccinium scoparium*), buffalo berry (*Shepherdia canadensis*), serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos* spp.), and common juniper (*J. communis*). Riparian areas were composed primarily of willow (*Salix* spp.) with interspersed narrowleaf cottonwood (*P. angustifolia*) at low elevations.

Abundant roads provided good access to most cougar habitat in the Snowy Range. Annual harvest was relatively constant during the 5 years before our study, ranging from 9–12 cougars.

Comparison population

The northern portion of the Laramie Range included an isolated mountain range near the cities of Casper and Wheatland in southeast Wyoming and encompassed 2,960 km² of timbered habitat. Elevation ranged from 1,620 m in the eastern valleys to 3,132 m at Laramie Peak. Ponderosa pine (*P. ponderosa*) stands dominated low to mid elevations, with lodgepole pine common at mid to high elevations. Low-elevation, nonforested regions and interspersed meadows were vegetated by grasses, forbs, and shrubs. Riparian areas consisted primarily of willow with occasional aspen pockets. Other forest species occurring at low levels included limber pine, subalpine fir, Douglas-fir (*Pseudotsuga menziesii*), and Engelmann spruce.

Annual harvest in Laramie Peak averaged 11 cougars during the 5-year period before harvest treatment, ranging from 7–16 cougars per year. The Wyoming Game and Fish Department changed its management objective from sustained harvest of a stable to increasing population to reducing the population through increased harvest in 1996 and increased harvest quotas from 10 to 34 for the next 7 seasons. Regional Wyoming Game and Fish Department personnel believed the Laramie Peak cougar population was at a relatively high density prior to 1996 based on increased cougar sightings, depredation incidents, and hunter interviews.

Methods

We trailed cougars using hounds and immobilized them upon capture with a mixture of 5 mg/kg

Telazol® (Aveco Co., Inc., Cherry Hill, N.J.) and 1 mg/kg xylazine hydrochloride delivered in a hypodermic dart fired from a CO₂ pistol; we reversed the effects of xylazine hydrochloride using yohimbine hydrochloride (0.15 mg/kg). We tagged independent cougars (>1 year old and solitary) with standard VHF radiocollars (Model 9D, warranty battery life=3 years) and dependent young with 22-g ear-tag transmitters (Model 7PN, warranty battery life=295 days; Advanced Telemetry Systems, Inc., Isanti, Minn.); we equipped transmitters with mortality-sensing options. We also attached a uniquely numbered ear tag to all captured cougars. We recorded sex, age, weight, and morphometric measurements at capture. We estimated age (juvenile <1 year, subadult 1–2.5 years, adult ≥3 years) from tooth wear, canine ridge eruption, spotting progression, and evidence of previous lactation for females (Shaw 1979, Ashman et al. 1983, Lindzey et al. 1989, Laundre et al. 2000) or known birth date for cougars born to radiocollared females based on female denning behavior. We located radiotagged cougars weekly from fixed-wing aircraft between December 1997 and May 2001 and once per month from June 2001–April 2003.

We used radiotelemetry to identify female denning behavior (consecutive locations at the same location), timing of family breakup, and emigration of subadults. We assumed emigration when an individual dispersed from its mother, had not yet exhibited territorial behavior, and we were no longer able to detect its radio signal. We estimated age of juveniles of unknown birth date by applying the growth-curve models developed in the Northern Great Basin (Laundre and Hernandez 2002) after adjusting them for differences detected when comparing model estimates to size of known-age juveniles in the Snowy Range (C. R. Anderson, unpublished data).

Experimental design

We manipulated size of the Snowy Range cougar population using regulated hunter harvest to reduce and then allow recovery of the population; all cougars harvested during the study except 2 were taken using hounds. The cougar-hunting season was open from 1 September–31 March, but most cougar harvest did not occur until mid-November, when snow conditions were adequate for tracking cougars using trained hounds; >90% of cougars harvested in Wyoming were taken using hounds (Wyoming Game and Fish Department

2003). Annual harvest levels were regulated by a quota system in which the season was closed if the quota was met before 31 March. Young (<1 year old) cougars and females with young at side were legally protected from harvest. We concurrently monitored sex and age composition of the population and the harvest and annually tested predictions of harvest composition based on abundance of sex- and age-class cougars in the population and their relative harvest vulnerability (Barnhurst 1986). We predicted that harvest composition would be predominantly subadults (possibly more females) during the pretreatment year (high density, low harvest), shift to adult males during the first year of treatment (from high to moderate density, high harvest), shift from adult males to adult females during the second treatment year (from moderate to low density, high harvest), and return to subadults during the post-treatment period (increasing population, low harvest) where the subadult segment would initially consist primarily of males and eventually consist primarily of females as the population approached pretreatment levels. We examined annual changes in harvest composition of adult males, adult females, and subadults using the Fisher's exact test; we applied 1-tailed tests to compare the first 4 seasons where changes were predicted and 2-tailed tests to examine the recovery period when composition was not expected to change greatly. We also examined the relationship between proportion of adults in the female harvest and estimated harvest rate using simple linear regression analysis, expecting adult female harvest composition to increase with harvest level.

We then compared harvest composition documented in the Snowy Range to that observed in Laramie Peak. Although we did not monitor density in this area, it represented a geographic population (i.e., occupied cougar habitat surrounded by inhospitable, unoccupied landscapes) similar to the Snowy Range, contained a similar amount of cougar habitat, had adequate hunter access to facilitate population reduction, and the population was exposed to harvest levels similar to those we applied in the Snowy Range before and during the treatment period. We assumed that harvest composition from this area would show similar trends to those documented in the Snowy Range if harvest composition changed predictably with population size in harvested populations. We tested for differences in annual harvest composition between populations using the Fisher's exact test (2-tailed). We

also determined ages from counts of cementum annuli of harvested adult females in both populations to determine whether age of adult females declined as the population declined following high harvest levels.

Age-class estimates

We assigned harvested and captured cougars to age class based on tooth wear, presence or absence of a canine ridge, evidence of spots or foreleg bars, evidence of previous lactation if female (Anderson and Lindzey 2000), and counts of bands in the cementum of premolars removed from harvested cougars. We first gave priority to evidence of previous lactation in females (subadult: nipples white and ~4–6 mm wide; adult: nipples dark or mottled and ~8–10 mm wide), followed by annuli age (subadult = 1–2 yr), canine ridge eruption (absent = subadult), and finally foreleg bars (dark = subadult or young adult) and spots (present = subadult or young adult). To evaluate reliability of our aging techniques, we compared ages estimated from counts of cementum bands to ages estimated with the other criteria for those cougars that were captured and later harvested.

Population estimates

During the first winter (Dec 1997–Apr 1998), we conducted intensive capture efforts in 2 regions of the Snowy Range to obtain an initial density estimate and to create a marked sample for subsequent mark-recapture efforts. We captured cougars in a 439-km² area in the southeast region and a 382-km² area in the west-central region of the Snowy Range; 90% of cougar harvests in the Snowy Range came from these primarily public land areas (Wyoming Game and Fish Department mountain lion harvest data base, Lander, Wyo.). We estimated density for the 2 areas by summing number of cougars marked and tracks of known, unmarked cougars. We included unmarked cougars only if track characteristics (identified as male or female via planter pad width and stride length; Fjelline and Mansfield 1988) and number and size of young accompanying a female suggested a unique individual and when tracks were located outside traditional use areas of radiocollared cougars identified from previous telemetry locations. The initial density estimates from the 2 areas were then applied to the remainder of cougar habitat in the Snowy Range to estimate population size for the study area. Cougar habitat was delineated using elevations and topography used by

radiocollared cougars February–April, 1998.

We applied the Lincoln-Peterson estimator (Pollock et al. 1990) to calculate annual, pre-hunting-season (autumn) population estimates of independent cougars. Post-hunting-season (spring) population estimates were pre-season estimates minus harvest removals and estimated natural mortality from our marked sample. We attempted to meet assumptions of the technique by modifying our sampling design and using information from radiotagged cougars. We addressed geographic closure by recapturing during late autumn and winter months when emigration and immigration were least likely (Ross and Jalkotzy 1992). We addressed the demographic closure assumption by adjusting for deaths based on records from radiocollared cougars and by considering young cougars in our marked sample independent at the mean age family groups became loosely associated (prior to dispersal), and thus available for recapture (e.g., harvest), by the beginning of the recapture period (15 Nov, average date of sufficient snow for hunting). Because cougar captures relied heavily on adequate snow conditions for tracking that varied temporally and spatially, maintaining equal capture effort throughout the study area was not possible and reduced our ability to assure equal capture probabilities across cougars. To minimize potential biases from capture heterogeneity and provide sufficient time to sample the entire study area, we treated the entire winter sampling period (15 Nov–31 Mar) as a single capture effort and counted each individual detected only once in the recapture sample regardless of the number of times they were actually detected. Because captured cougars remained ear-tagged throughout the study but transmitter failures occasionally occurred, we assumed individuals that had established territories prior to transmitter failure and that had been monitored until the previous summer were still in the population and available during the following winter recapture period; on 10 of 12 occasions where transmitters failed, marked residents were subsequently recaptured or harvested.

The capture sample was independent, radio-tagged cougars in the population at the beginning of the recapture sampling period (15 Nov) during both treatment and recovery periods. The recapture sample was cougars harvested by hunters during the hunting seasons of the treatment periods, but, because harvests were intentionally reduced during the recovery period (winters of 2000–2001,

2001–2002, and 2002–2003), we augmented the recapture sample by hunting the study area after hunters had finished. During our hunting we tagged and released unmarked cougars, recorded marked cougars recaptured, and recorded presence of individual, unmarked cougars (defined earlier) we were unable to capture. We included cougars marked in the population prior to 15 November each year in our initial capture sample and those captured from 15 November–31 March in our recapture sample. We recorded capture effort as number of hunter days for successful hunters (no data for unsuccessful hunters) and number of days spent tracking and capturing cougars by study personnel. Post-season population estimates were pre-season estimates minus harvest and mortality from other causes estimated from our marked sample during the recapture period. We estimated 90% confidence intervals around pre-season population estimates following Pollock et al. (1990). We estimated autumn sex and age composition of the population by adding unmarked cougars harvested during that year's hunting season to our sample of marked cougars.

Results

We tagged 16 independent and 13 dependent male and 17 independent and 15 dependent female cougars between December 1997 and February 2002. Twenty-one marked, independent cougars were harvested during the treatment and recovery phases of the project, and 9 marked cougars (5 adult males, 4 adult females) were alive at the end of the study. Cougar ages estimated using cementum annuli counts were in agreement with other aging criteria in 14 of 18 comparisons and within 1 year for 3 others (Anderson 2003). We noted that ages of dependent young of known birth date in the Snowy Range were consistently underestimated (\bar{x} = 1.47 mo, SD = 1.26, n = 13) using the Northern Great Basin growth-curve models (Laundre and Hernandez 2002) and therefore added the mean difference to estimate ages for litters of unknown birth date.

Dependent cougars

became independent at an average age of 14 months (range = 11–17 months, n = 7); 2 litters became independent following the death of their mother at 14 and 17 months old (1 natural, 1 harvest). Association among family members became progressively looser over the month before independence. Thus, to account for recruitment in our recapture sample, we included marked dependent young as subadults if they were 13 months of age by 15 November each season. Emigration occurred between April and September for 8 of 9 emigrants monitored; 1 subadult male emigrated during January.

Population estimates

We tagged 18 cougars in the study area and identified 6 others from tracks after 60 days of trapping and tracking in the southeast and 45 days in the west-central section of the Snowy Range during winter 1997–1998. We estimated independent cougar density at 3.42/100 km² in the southeast (15 cougars/439 km² × 100) and 2.35/100 km² in the west-central region (9 cougars/383 km² × 100). Cougar habitat in the Snowy Range during this period, estimated from characteristics of habitat used by marked cougars February–April 1998, was 1,720 km². We estimated 50 independent cougars in the Snowy Range in spring 1998 (45–55 depending on the density estimate applied). A harvest quota of 25 was then set for the next 2 hunting seasons (treatment; 1998–1999 and 1999–2000) to elicit the desired (about 50%) reduction in the Snowy Range cougar population.

Harvests were 25 and 17 cougars for the 2 treatment seasons, resulting in an estimated population of 20 independent cougars by spring 2000 (Table 1). Harvest quotas were then reduced to 6–8 cougars per season to facilitate population recovery.

Table 1. Pre (autumn) and post-harvest (spring) cougar population estimates^a from the Snowy Range, Wyoming, USA, autumn 1998–spring 2003. Note population decline following 2 years of high harvest and population increase following 3 years of light harvest.

Season	n_1	n_2	m_2	\hat{n}_{pre} (90% CI)	No. harvested	% natural mortality	\hat{n}_{post}
1998/99	15	25	6	58 (36–81)	25	11	30
1999/00	19	17	8	39 (28–50)	17	9	20
2000/01	15	21	9	34 (26–42)	8	0	26
2001/02	15	25	10	37 (29–44)	6	0	31
2002/03	11	39	7	59 (42–76)	8	9	46

^a $\hat{n}_{pre} = [(n_1 + 1)(n_2 + 1) / (m_2 + 1)] - 1$, where n_1 = number marked and released in first sample, n_2 = number captured in second sample, and m_2 = number captured in second sample that were marked from first sample. $\hat{n}_{post} = (\hat{n}_{pre} - \text{harvest}) - [(\% \text{ natural mortality}) (\hat{n}_{pre} - \text{harvest})]$.

very. The population increased to an estimated 46 independent cougars by spring 2003 (Table 1). The number of hunter-days totaled 17 and 79 during the 2-year treatment period and 27, 50, and 21 days during the 3-year recovery period. High hunter effort during the second treatment year and the second recovery year were due to excessive time spent hunting by an individual hunter each year (50 and 36 days, respectively). We spent 60, 54, and 68 days tracking and marking cougars to augment the recapture sample during the recovery phase.

Cougar harvest composition in response to manipulation

Cougar harvest ($n=22$) composition during the pretreatment period was composed primarily of subadults (46%, 1–27%, 30) followed by adult males (25%) and finally adult females (14%, Figure 1). As harvest levels increased and the population declined in size, there was an initial increase (40%) followed by a decrease (24%) in proportion of adult males in the harvest and a consistent increase in

the proportion of adult females (14 to 24 to 31%). Subadult harvest declined from the pretreatment period (from 63 to 36%) but was consistent during the treatment period (35%) and was primarily composed of females (28 and 29%). Subadult cougars again dominated the harvest after harvest quotas were reduced, but subadult male composition was relatively higher than during pretreatment and treatment periods until the third year of recovery when the population returned to pretreatment levels. Annual harvest composition among adult males, adult females, and subadults differed significantly ($P<0.05$) from the pretreatment period through the first year post-treatment and was similar ($P\geq 0.66$) during the 3-year recovery phase.

We compared harvest records from Laramie Peak, the comparison population, to harvest records from the Snowy Range including the first 5 years of harvest (harvest levels below quota) in Laramie Peak and 2 years of harvest treatment and the first year post-treatment in the Snowy Range. During the 3-year period, harvest declined and pri-

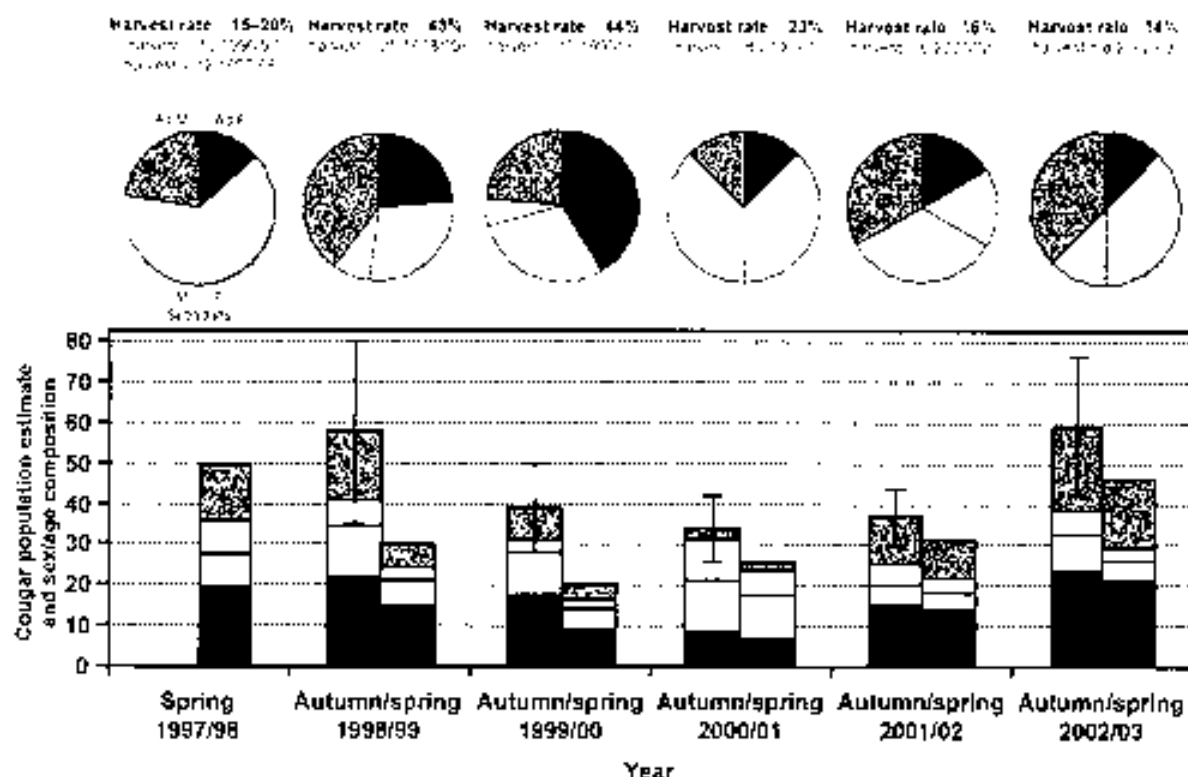


Figure 1. Sex-age composition of cougar harvest (pie charts) in the Snowy Range, Wyoming, relative to population change through increased 1998–2003 and reduced 2003–2004 harvest levels (order of sex-age classes in bar graphs follows pie charts). Harvest quotas (ton and ratio) prior to 1999 represent harvest years 1990, 1997, and 1997–1998 combined. First column of the population estimate for spring 1998 was determined from mark-recapture data collected from capture and tracking efforts during winter 1997–1998; subsequent population estimates were derived using mark-recapture methods. Error bars represent 90% confidence intervals. Number of cougars known to be in the population each spring were 12, 13, 15, 19, 20, and 32, respectively.

mainly consisted of adult males initially, followed by adult females, and finally subadults in both populations (Figure 2). annual harvest composition was similar between populations ($P \geq 0.217$). Mean annual age of adult females declined following the first treatment year from 6–8 years old to 4–6 years old the second year in both populations. Unlike the Snowy Range, unrestricted harvests continued in Laramie Peak for the next 4 years, resulting in annual oscillations in harvest level and harvests of primarily subadults (Figure 2); adult females averaged 4.5 years of age during this period.

Characteristics of female cougar harvest

We noted that proportion of adults in the female harvest increased with harvest rate, ranging from 20% with a 22% harvest rate to 58% with a harvest rate of about 44% (Figure 1), but this relationship was not statistically significant ($r^2 = 0.10$, $P_{Y10} = 3.52$, $P = 0.14$). Sixteen adult and 19 subadult females were harvested (total harvest = 64) in the Snowy Range during the 2-year treatment and 4-year post-treatment periods. Of 8 marked adult females har-

vested, 1 were without young, 3 had young at the time, and we suspect the last female may have had young when harvested because we had seen kitten tracks with her 2 months earlier. All harvested females with young were taken during the treatment period (50% harvest rate).

Discussion

The Snowy Range cougar population recovered in numbers after 2 years of intensive harvest (>44% of independent cougars) followed by 3 years of light harvest (<18% of independent cougars). Recovery of the population was facilitated by immigration of males and recruitment of females from within the population as found in other recovering cougar populations (Lindzey et al. 1992, Logan and Swenar 2001). Composition of the harvest from pretreatment through the 2 years of heavy harvest supported our predictions based on predicted relative vulnerability of the various sex and age classes. The most vulnerable classes were harvested until their reduced abundance in the population

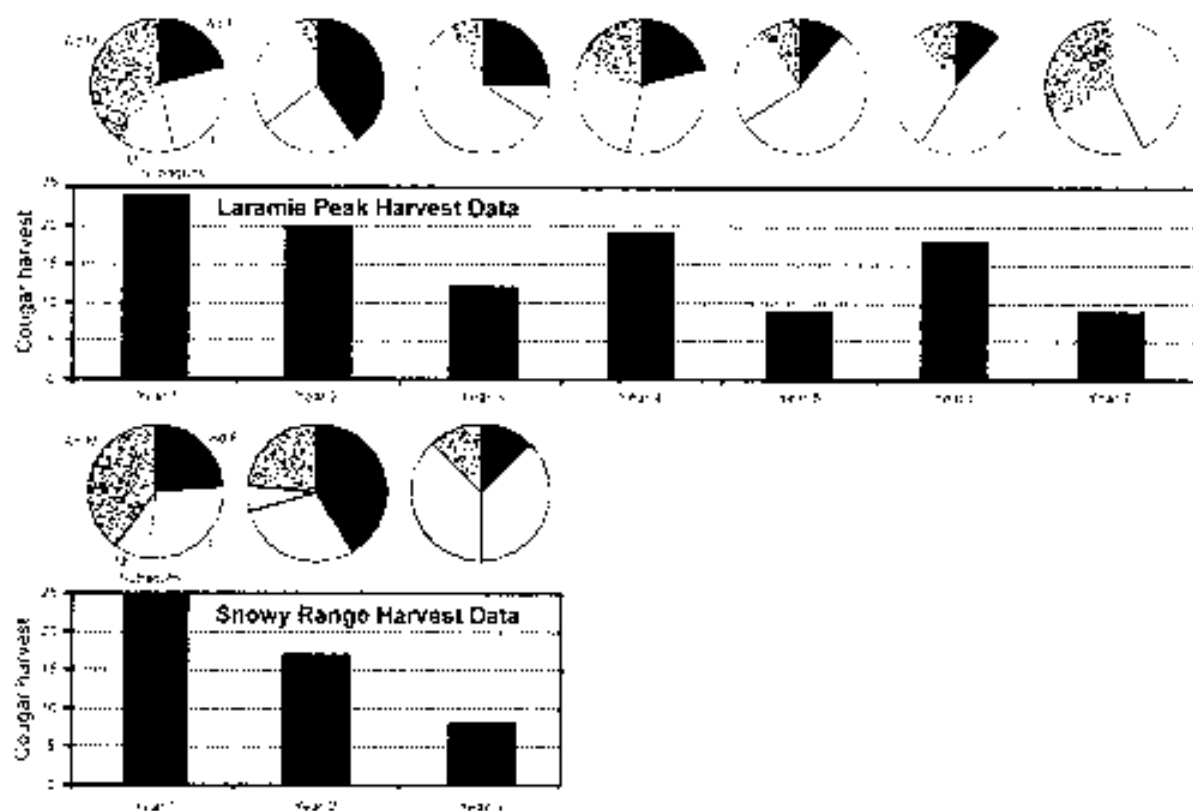


Figure 2. Cougar sex and age harvests during intensive treatment and post-treatment periods in Laramie Peak and the Snowy Range. Sex and age composition of the harvest is shown in the pie charts above the bar charts. Note that the composition of the harvest varies among the treatment and post-treatment periods. Sex-specific harvest rates are shown in the pie charts.

exposed the next most vulnerable class, terminating in a harvest dominated by adult females (Figure 1). The increase in adult females in the harvests coincided with a decrease in size of this hunted population, suggesting that proportion of adult females in harvests may be a useful indicator of trends in other hunted cougar populations. The similarity of composition trends in the Snowy Range and Laramie Peak populations during the initial years of intensive harvest suggests that the intensive harvest in the Laramie Peak population had achieved its goal of reducing population size in this area. Decline in average age of harvested females in both populations further suggested that harvests had similar effects on the 2 populations.

While factors other than composition of hunted cougar populations (e.g., weather patterns, changes in legal access) can influence harvest level, none should result in adult females dominating the harvest if they are not proportionately the most abundant sex or age class present in the population. Experienced cougar hunters often can differentiate males and females from track size, presence of scrapes, or body characteristics if the cougar is seen, but selective hunters tend to harvest males. Further, our experience suggests that hunters tend to be most selective when competition for available cougars is low. When demand exceeds harvest quotas, competition among hunters appears to result in less-selective hunting, and harvest should reflect the relative abundance or vulnerability of sex and age classes. Snow conditions also can affect hunting success (>90% of cougars harvested in Wyoming are hunted using hounds and most require snow cover), but this should influence harvest rate, not the relative vulnerability of the sex and age classes. Access, influenced by weather events or land-ownership patterns, can create ephemeral or more permanent refuges within cougar management areas. In these situations harvests may be maintained by adjacent, unavailable adult females providing young females for the harvest (e.g., Figure 2). We identified areas of suitable cougar habitat in the Laramie Peak area that received no cougar harvest and apparently were functioning as refuges. The similar abundance of subadult females in the pretreatment Snowy Range harvest and post-treatment harvests from Laramie Peak illustrates the contribution of refuges to maintaining harvests and underscores the need to monitor harvest composition over a number of years before drawing inferences about trend in the pop-

ulation from harvest composition. Subadult females in the pretreatment Snowy Range harvest reflected their relative abundance and vulnerability to harvest, while their dominance in later harvests from Laramie Peak apparently reflected their abundance in the portion of the area accessible to hunters. Examination of composition of earlier harvests should help identify whether the harvest reflects a lightly hunted population or one that has been reduced with harvests being supported by young produced by adjacent, unavailable adult females. Prior harvests in the Laramie Peak area were composed of progressively more adult females, suggesting the population had been reduced in size.

Management implications

Cougar managers typically have used harvest level and occasionally sub-quotas typically aimed at protecting females to achieve population objectives, although both imply knowledge of population size. While observations suggest that cougar populations can sustain harvest rates of up to 20–30% (Ashman et al. 1983, Ross and Jalkotzy 1992), the effect of harvests on populations will differ depending on sex and age of cougars removed. Harvest of males, the cohort most easily replaced by immigration, and subadult females, which can be quickly replaced by female young produced in the population, will have less impact on the population than harvest of adult females, which are more difficult to replace. Adult females that die are most often replaced by the population's female progeny and less often by immigrating subadults because most female progeny are philopatric (Lindzey et al. 1989,



Duggin Wroe's dog, Luna, corners male cougar number 610. Photo by Hall Sawyer.

Anderson et al. 1992, Logan and Sweeney 2001).

Monitoring levels of adult females in cougar harvests to index the effect the harvest is having on the population is intuitive. Sensitivity analyses by Martorello and Beausoleil (2003) suggest that cougar populations are most sensitive to survival of this sex and age class. Adult females provide the resiliency in a population that allows it to respond to loss of members. This approach will work well in an adaptive management framework, where harvest composition goals are set to achieve specific population objectives. Hunting programs can simply be modified until harvest composition indicates that desired population and recreation objectives are being met. The proportion of adult females in the Snowy Range harvest when the more vulnerable sex and age classes had been removed and the population was beginning to decline was about 25%, while the population appeared to sustain a harvest composed of 10–15% adult females (Figure 1). The 25% estimate came from a single experiment and should be used with caution in other programs because cougar populations more isolated than the Snowy Range or that contain more refuge areas may respond differently to similar harvest rates of adult females. Also, because harvest from a single management area in a single year may be too small to support inferences, and harvest level may vary because of weather events, combining years or adjacent management areas for analyses may be appropriate.

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Associate editor: *Chris*



Non-Invasive DNA-Based Black Bear Density Estimates in Colorado – 2009.

Jerry A. Apker, Paul Lukacs, John Broderick, Brian Dreher, Julie Mao, Allen Vitt

ABSTRACT We estimated black bear (*Ursus americanus*) density in two survey areas in Colorado. The southeast survey area (SESA) (575 km²) is located northwest of Trinidad, Colorado, and the northwest survey area (NWSA) (500 km²) is located southwest of Glenwood Springs, Colorado. Each survey area represents high quality black bear habitat. Surveys were conducted from late June through early August of 2009. Scent baits were used to attract bears to hair snag stations and natural rub trees adapted for hair snagging were used to non-invasively collect hair samples from which DNA could be extracted and genetically analyzed. Tissue samples from black bear mortalities and also from conflict bears handled in the vicinity of the survey areas were also a source of DNA for analysis. All samples of adequate quality were genotyped using 7 microsatellite loci and gender identified using the ZFX/ZFY gender marker method to identify unique individuals within the survey areas. We used several different mark-recapture analysis methods and applied assumed home range data from Idaho and New Mexico to calculate a range of possible densities. Applying the most robust mark-recapture methods, our analysis suggests that there are 45-50 bears/100 km² in the NWSA. In the SESA our analysis indicates 44-85 bears/100 km². Analysis challenges and key assumptions are discussed.

We conducted surveys to non-invasively collect DNA samples of black bears in two survey areas of Colorado. Both survey areas were selected because they are considered high quality black bear habitat and are in relatively close proximity to high human-bear conflict areas. One survey area was located near the Spanish Peaks, northwest of Trinidad (SESA) (Fig. 1) in Game Management Unit (GMU) 85, Data Analysis Unit (DAU) B-9. The other was near Divide Creek, southwest of Glenwood Springs (NWSA) (Fig. 2) in GMUs 42 and 43, DAUs B-11 and B-17. The SESA was 575 km² and the NWSA was 500 km² in size.

With minor modification survey protocols followed those described by Kendall (K. Kendall, USGS, personal comm. 2009) for research being conducted on grizzly (*Ursus arctos*) and black bears in northwestern Montana and previously by Mowat and Strobeck (2000) and Woods et al. (1999). We modified the survey protocols by using a smaller grid area of 25 km² (~9.5 square miles per grid) in order to accommodate a survey focused solely on black bears which have smaller home range areas than grizzlies. The smaller grid area provides increased opportunity for all bears within the survey area to have opportunity to encounter one or more snag stations. The survey areas ultimately were configured to their final shape and size in order to include bear habitat typical of the high quality habitat in the DAUs they are located and also to avoid human development (or potential human conflicts).

Vegetation types were grouped into broad categories and differed between the two survey areas (Table 1). Ponderosa pine and ponderosa affiliations with gambel oak or aspen was a significant component of plant communities in the SESA, but absent from the NWSA. Oakbrush and serviceberry were avoided

Table 1. Vegetation composition in survey areas based on CDOW GIS Basinwide layers, in broad categories.

Vegetation types	NWSA % composition	SESA % composition
Aspen dominant	40%	4%
Conifer (not ponderosa pine)	21%	21%
Ponderosa Pine	-	33%
Conifer/Aspen Mix	10%	6%
Gambel Oak	10%	17%
Berry/Mesic Mtn. Shrub	8%	-
Sagebrush	3%	-
Pinyon-Juniper Mix	1%	6%
Dryland/Irrigated Agri.	<1%	2%
Alpine/Subalpine (grass, forb, or shrub)	2%	1%
Riparian	1%	1%
Other	4%	9%

and aspen stands or mixed aspen/conifer types were selected for when formulating the grid area in the NWSA. While oakbrush and serviceberry are important black bear habitat types in fall season, they were not deemed as important for a survey conducted in the summer on the NWSA. In contrast, the SESA included oakbrush habitats (although serviceberry was not present in the SESA). The SESA also included more open meadow grassland areas and dryland and irrigated agriculture lands which were not found in the NWSA.

We collected hair from late June through early August. Snag stations were baited mainly with decomposed, liquefied fish (mung) soaked burlap and drizzled on logs, Anise oil soaked burlap strips, decomposed deer roadkill-soaked burlap strips. Some stations were baited with portions of road kill deer or elk. Hair collections occurred every 5-7 days on average (\bar{x} = 6 days, range 2-10 days) for up to 9 repeated collection sessions.

We collected tissue or hair samples from black bears handled due to human conflicts during the course of summer and fall. We also collected tissue samples from other bear mortalities such as road kills, second strike bear, or hunter harvest documented by the Division of Wildlife (DOW). We submitted these additional samples from GMUs within or surrounding the survey area for genetic analyses. NW GMUs for these additional samples included 33, 34, 42, 43, 45, 47, 421, 444, 471, and 521. SE GMUs for these additional samples included 83, 861, 84, 85, 851, and 140.

Results

A total of 1,103 snagged hair samples were submitted to the lab for analysis; 457 from the NWSA and 646 from the SESA. An additional 259 samples (161 from NW GMUs, 98 from SE GMUs) were submitted from harvest mortality, non-harvest mortality, or euthanized conflict bear; these are called “known bear” samples. Wildlife Genetics International conducted the genetic analysis under the direction of Dr. David Paetkau, president and geneticist. We have attached the genetic analysis report to this report. Laboratory protocols exceeded DOW specified quality controls and Dr. Paetkau independently, and at no charge to DOW, took additional steps to conduct more detailed analyses and to safeguard against false identifications of unique individuals.

The genetic analysis resulted in identification of 117 unique bears in the NWSA and 149 unique bears in the SESA. We documented a surprisingly low number of recapture events (Table 2). We reconstructed the capture histories for all identified individuals.

Table 2. Summarized capture history by site and ‘x’ week.

Number of times detected	NWSA		SESA	
	Individuals	% of total	Individuals	% of total
1	82	70%	113	75%
2	19	16%	18	12%
3	13	11%	10	7%
4	2	2%	4	3%
5	0	-	4	3%
6	1	1%	0	-
Total	117		149	
Recaptured in Harvest or other	6	-	4	-

In general, the frequency of capturing new individuals declined over time (Table 3). Declining numbers of new individuals is expected in capture-recapture sampling, but other factors may have contributed to the decline. Bears may become attenuated to the bait material or bears may be beginning hyperphagic movement to lower elevation mast production areas. Bait attenuation might result when bears detected no novel scents and having previously explored baits used at one or more snag stations were no longer driven to investigate the scent further. We attempted to mitigate bait attenuation by using different bait material at different snag stations over time. Although, not all snag stations had different baits over the course of the survey.

Table 3. Summary of captures of new female and total individuals by week.

Week #	NWSA				SESA			
	Date Start	Date End	New Female N	New Total N	Date Start	Date End	New Female N	New Total N
0	6-9	6-12	5	9				-
1	6-16	6-18	9	23	6-22	6-26	18	31
2	6-23	6-27	12	22	6-29	7-3	8	25
3	6-26	7-1	9	16	7-6	7-10	9	20
4	7-2	7-8	3	8	7-13	7-17	5	13
5	7-9	7-14	7	9	7-20	7-24	9	17
6	7-15	7-22	5	14	7-27	7-31	10	17
7	7-22	7-28	3	10	8-3	8-7	6	13
8	7-28	7-31	3	6	8-10	8-14	4	13
Sum			56	117			69	149

Movements by bears to lower elevation mast production areas would be expected later in the summer to early fall as bears entered hyperphagia. This could result in less frequent detection of new bears as they moved out of the survey area in later survey collection sessions. This should have been most notable in the NWSA since its grid layout avoided substantial oakbrush/serviceberry vegetation complexes, although it could have been offset by the earlier end date of the NWSA survey. While the NWSA survey efforts were concluded prior to the expected time in which bears would enter hyperphagia, it might be possible that movements toward lower elevations occurred earlier than we predicted.

Density

We analyzed the encounter data using three different mark-recapture analysis methods (Table 4); spatially-explicit mark-recapture (Bochers and Efford 2008), maximum likelihood mark-recapture (Otis et al. 1978), and a jackknife mark-recapture (Burnham and Overton 1979).

Spatially explicit method. This method uses the distance between captures to estimate the average center of activity and area used by a bear. With sufficient recapture events this method would provide a strong representation of the size area that bears are moving within during our sampling time frame. The paucity of recaptures we have to work with severely weakens this analysis. Because there are so few recapture events we are not confident that they are representative of the actual area of use by bears in either survey location. Although this estimation method suffers from the low number of recaptures in 2009 it can be applied across multiple years which increases sample sizes and increases the power of the analysis. This estimation method results in density estimates of 47 bears/100 km² in the NWSA and 44 bears/100 km² in the SESA.

The following two estimation methods attempt to account for the effect of enticing bears that may be on the periphery of the survey area into snag stations. In any survey of this nature there will be some individuals whose home areas overlap the outer boundary of the survey area. Presumably, these bears may be enticed to hair snag stations by the scent baits. Since their home areas extend beyond the outer edge of the survey area, there must be some accounting for the larger geographic area of impact when calculating an estimated density. The mechanism for doing this is to apply an estimated home area at each snag station point. The estimated home area is derived from projecting an area with ½ the radius of an assumed home area. The outer perimeter of this projection is then used to compute an estimation of the amount of area actually surveyed. The estimated population size from the mark-recapture analysis is then divided by the estimated survey area to arrive at the density.

The assumed home area values used for our analysis were estimates from Idaho research (Beecham and Rohlman 1994) and the mean annual primary home area found in the northern study area (NSA) in New Mexico (Costello et al. 2001). In both cases we used home ranges estimated for males and females. In the Idaho research, home areas were presented in a range so we applied a small and large home area size to yield a range of density here as well. The primary home area in New Mexico doesn't include the long distance movements that bears occasionally embark upon, but subsequently return from (Costello et al. 2001, Baruch-Mordo personal comm. 2009). Ultimately we selected Idaho and New Mexico home area values due to the similarity in our raw density (minimum individuals per total grid area) and Idaho density results, and similarity of New Mexico NSA habitat to Colorado survey area habitats.

Home area data from Colorado studies were not used for several reasons; the Black Mesa study (Beck 1991) estimated annual ranges from relatively infrequent VHF locations per individual bear and consequently computed an extremely wide range of home area sizes (although the mean values fell within the range of values we applied). Data from the more recent Roaring Fork valley investigations were not used because all tracked bears were captured within towns and represent potentially biased home areas as "conflict" bears. In addition the principle investigator was out of the country and unavailable to update home area sizes reported from 2007 data.

Maximum likelihood method. This method estimates the number of bears available to be detected in each survey. We then applied the assumed home area values to the estimated population size to calculate density. This method assumes that there is no difference in detection probability among individuals (except by sex which can be analyzed separately). This assumption is known to result in estimates biased low when compared to known densities. This analysis method yields an estimated density range of 28-32 bears/100 km² in the NWSA and 54-59 bears/100 km² in the SESA.

Jackknife method. This method applies home areas in the same manner as the maximum likelihood method. This method does assume that there is variation in the detection probability among individual bears, but doesn't presume any specific cause for the variation. This assumption seems reasonable. This analysis method results in an estimated density range of 45-50 bears/100 km² in the NWSA and 78-85 bears/100 km² in the SESA.

Table 4. Estimated black bear densities derived from hair snag mark recapture analysis. Results are from three methods; spatially explicit model, maximum likelihood model, and the jackknife model. The maximum likelihood and jackknife models apply assumed home range areas from New Mexico, northern study area (Costello et al. 2001) and Idaho (Beecham and Rohlman 1994). The Idaho home areas presented a range of values, therefore we applied a small home area value and a large home area value in our analyses.

Spatially Explicit Capture-Recapture					
Combined Gender Density		Bears/ha	SE	Bears/sq. mile	SE
NWSA		0.0047	0.0007	1.22	0.18
SESA		0.0044	0.0006	1.14	0.16
Density by Gender					
NWSA	Female	0.0026	0.0006	0.67	.016
	Male	0.0022	0.0005	0.57	0.13
	Total	0.0048	0.0008	1.24	0.20
SESA	Female	0.0025	0.0005	0.65	0.13
	Male	0.0021	0.0004	0.54	0.10
	Total	0.0046	0.0006	1.19	0.17

Maximum Likelihood Capture-Recapture												
				Small Home Area (ID)			Large Home Area (ID)			NM Home Area		
				Bears/sq.			Bears/sq.			Bears/sq.		
				N	SE		Area	mile	SE	Area	mile	SE
NWSA	Female	80	9.48	202	0.40	0.05	212	0.38	0.04	205	0.39	0.05
	Male	117	19.06	278	0.42	0.07	337	0.35	0.06	343	.034	0.06
	Total	197	21.29		0.82	0.08		0.73	0.07		.073	0.07
SESA	Female	276	46.94	298	0.93	0.16	309	0.89	0.15	294	0.94	0.16
	Male	231	29.37	387	0.60	0.08	455	0.51	0.06	457	0.51	0.06
	Total	507	55.37		1.52	0.17		1.40	0.17		1.44	0.17

Jackknife Capture-Recapture												
				Small Home Area (ID)			Large Home Area (ID)			NM Home Area		
				Bears/sq.			Bears/sq.			Bears/sq.		
				N	SE		Area	mile	SE	Area	mile	SE
NWSA	Female	140	25.08	202	0.69	0.12	212	0.66	0.12	205	0.68	0.12
	Male	168	27.24	278	0.60	0.10	337	0.50	0.08	343	0.49	0.08
	Total	308	37.03		1.30	0.16		1.16	0.14		1.17	0.15
SESA	Female	358	35.98	298	1.20	0.12	309	1.16	0.12	294	1.22	0.12
	Male	390	36.76	387	1.01	0.09	455	0.86	0.08	457	0.85	0.08
	Total	748	51.44		2.21	0.15		2.02	0.14		2.07	0.15

Ideally at least two of the methods would produce similar estimates and thus we could have confidence in selecting results with most relevance for management. Unfortunately, substantial differences exist between the estimates for each method. Future results will help us draw more meaningful conclusions and inferences. In the interim, managers should consider that our results may have potential biases in capture probability between age classes and genders and could also be influenced by our assumed home area sizes. Although preliminary and considering the various assumptions in the different methods we place most confidence in the estimates produced by the spatially explicit and jackknife methods which yield densities of between 45-50 bears/100 km² in the NWSA and between 44-85 bears/100 km² in the SESA.

In order to place our results into context, we examined black bear density estimates from certain studies in different States and Provinces, representing different habitat types (Table 5). Although there is little doubt that the method of density estimation along with size of the study area plays a role in density estimates, we

attempted to minimize disparity by selecting reports from, in most cases, mark-recapture surveys. However, three are derived from minimum individual animal reconstructions (Colorado – Beck 1991, Utah – UDWR 2000, and Colorado – Baldwin and Bender 2007). We also excluded extremely small study areas with the exception of island habitats (Washington – Lindzey 1977 and Wisconsin – Belant et al. 2005), where populations would be closed and allow for more accurate enumeration. We included the Nevada – Tahoe Basin urban estimate (Beckmann and Berger 22003) due to the extreme influence of a highly rich food source. In general, black bear densities are greater in areas of greater quality and abundant forage.

Table 5. Reported black bear densities from research, analysis, or management reports in diverse locations and habitat types. Bullet •, indicates results of this study.

Location	Source	Per 100 km²
Washington	Lindzey 1977	112 – 149
Nevada – Tahoe Basin (urban)	Beckmann and Berger 2003	120
•Colorado – SESA	Apker et al. 2010 unpublished	44 – 85
Wisconsin	Belant et al. 2005	50 – 64
Idaho	Beecham and Rohlman 1994	31 – 77
•Colorado – NWSA	Apker et al. 2010 unpublished	47 – 50
Idaho	Beecham 1980	43 – 47
Alberta	Kemp 1976	38
Montana	Jonkel and Cowan 1971	38
Colorado – Uncompahgre	Beck 1995 Fed Aid Rpt	36
Idaho	Rohlman 1989	34
Arizona	LeCount 1982	33
Nevada – Sierra Range	Goodrich 1990	20 – 40
Arizona	Waddel and Brown 1984	27.8
Colorado – BMSA	Beck 1991	17.9
New Mexico	Costello et al. 2001	9.4 – 17
Colorado – Middle Park	Beck 1997 Fed Aid Rpt	8.1
Utah	Utah Division of Wildlife Resources 2000	7.7
Arizona	LeCount 1987	6
Wyoming	Grogan and Lindzey 1999	2.1 – 3.0
Colorado - RMNP	Baldwin and Bender 2007	1.35

Application of this particular survey methodology (scent bait hair snag station) commonly results in a bias against small black bears (D. Moody, WY G&F, personal comm. 2009, K. Kendall, USGS personal comm. 2009). Given that the first year results show relatively high bear densities, bear home range areas in our survey locations may be smaller or more overlapping than we first considered and consequently we potentially missed bears because snag stations didn't occur in some bear home areas within the overall survey area. The hair collection methodology definitely misses most cubs, due to both their size and behavior. To a lesser extent the negative bias extends to sub-adults and females but the extent of bias isn't known.

A second consideration for interpreting the results is the influence of our assumed home area. We used assumed home areas in two of the mark recapture analyses in order to consider the potential "impact area" from which we were actually surveying bears. The home area values we used were annual home areas. We presume that these home areas are likely to be larger than the area that bears are using in the relatively short period that hair is being collected. We offset this potential error somewhat by including opportunity for recapture to include fall hunter harvest periods when bears will have had opportunity to use more expansive portions of their home areas.

Another consideration is that cementum age data on large numbers of harvested bears in Colorado, statewide, as well as in the vicinity of these two survey areas shows a relatively young mean and median age structure for

Colorado bear populations. Cementum age structure derived from hunter harvest is almost always biased younger than the actual population. Yet comparing Colorado's harvest age composition results to hunter harvest results in other states has indicated that Colorado appears to have a younger average age at harvest. If this is reflective of the actual population then a larger than expected portion of bears on both survey areas may be highly mobile animals, yet to settle into an established home area. Consequently, the potential "impact area" may be much larger than that represented by even large home areas and the resulting density of bears would be lower than our results show. This could also explain the relatively low number of recapture events during hair snag collection sessions. It does not, however, explain why there were relatively few hair snag bears 'recaptured' in hunter harvest.

Gender

Hair snare captures and known bear captures were slightly male biased (53% and 56% respectively). The "known bear" group of samples is derived mostly from hunter harvest. Genetic gender identification of this group closely matches the identification of gender reported for hunter harvest in the 3 DAUs in which the survey areas (56.7% male). In fact, out of 256 unique genotypes identified from the known bear captures group only 4 bears identified as male at the mandatory check were, based on genetic analysis, found to be females.

The small difference between mortality based samples (56%) and hair snag population based samples (53%) could be due to normal variation in sample collection or could be attributed to a slight tendency of hunters to select for larger bears which tend to be males more frequently than females. Likewise, the slight male bias in the hair snag sample may be due to normal variation in sample collection or could be due to the previously discussed bias against smaller bears, which tend to be females and young bears.

Conclusion

Our results are among the highest black bear densities reported in the Rocky Mountains, but are not inconsistent with other densities derived from mark-recapture methods in most other highly productive mast producing habitats. Although the small recapture sample sizes, especially the independent known bear (mortality based recaptures), influence confidence in our computed densities, future replication of the surveys will increase sample size and power and therefore increase the confidence of our estimates.

With that in mind, we have replicated both survey areas in 2010 and have begun sending samples to the laboratory for analysis. It is our plan that the NWSA is concluded and a new survey site will be selected and should be conducted for two years. The SESA is an area in a DAU in which some experimental management is planned. Therefore, we propose to continue with surveys in this area through 2013 to test if bear population trend can be detected. After 2013 we propose to close the SESA and move to another site.

We suggest that at least two survey areas should be continuously operated in Colorado until representative densities derived from two consecutive years of survey data are obtained for each black bear DAU. Conducting surveys in this manner will support and bolster black bear DAU plan development which has begun this year. Results from surveys can be applied to habitat and population models and ongoing monitoring in experimental management strategies.

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Figure 1. Southeast survey area (SESA) and snag points.

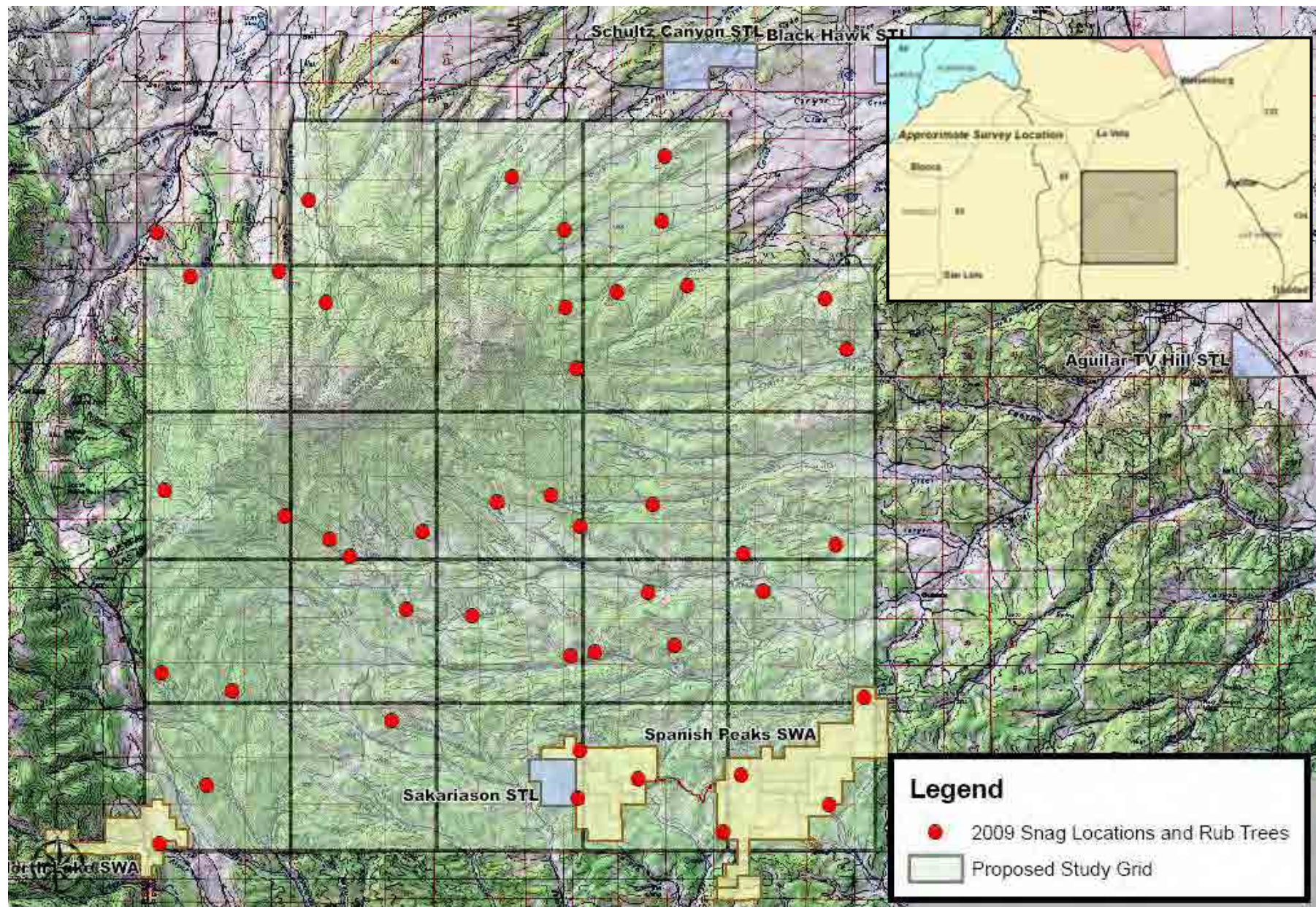
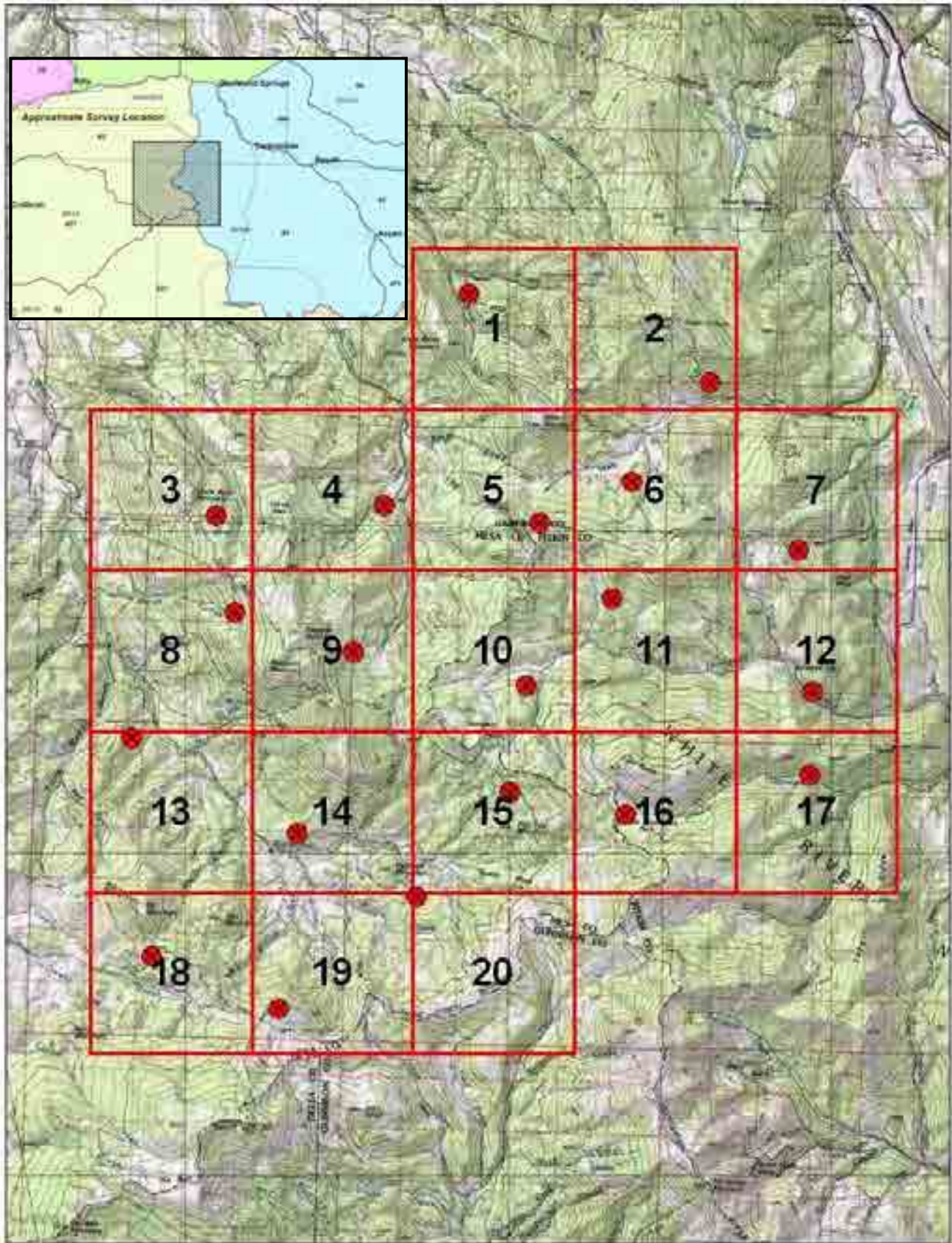


Figure 2. Northwest survey area (NWSA) and snag points.





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June 9, 2010

Jerry Apker and Brian Dreher
Colorado Division of Wildlife
0722 South Road 1 East
Monte Vista, CO 81144

Re: WGI project g0805 Colorado BB

Dear Sirs:

I have enclosed genetic results for 1,362 black bear hair and extracted DNA samples that we received from you on January 21st, 2010. The results are presented in the attached MS Excel workbook in which one spreadsheet lists field, extraction and genetic data for each sample, while a second sheet summarizes information by individual. The following notes should provide the information needed to understand and defend this project, but feel free to contact us for further detail on any aspect of this project.

Sample Classification Summary

Of the 259 samples from known bears, 256 produced complete genotypes suitable for individual identification, including all 210 of your DNA extracts. The 1,103 hair samples from snares were classified as follows:

- Xspecies* (0%): 5 samples that did not look like bear hair
- Xinadequate* (22%): 241 samples that lacked suitable material for extraction
- Xmixed* (1%): 12 samples that appeared to contain DNA from > 1 bear
- Xbomb* (13%): 139 samples that failed during genetic analysis
- sample* (64%): 706 samples with complete genotypes for 7 microsatellite markers (plus gender) that were assigned individual ID

The 706 good snare samples were assigned to 266 individuals, while the 256 successful 'known' samples were assigned to 256 individuals.

Database Issues

We noted the following discrepancies between database records and information on sample envelopes:

Samples NW0512 – NW0519 show a trap site of 04_01 in your spreadsheet versus trap site 09 on the envelopes.

Sample SE0312 shows a trap site of SE15A-4 in your spreadsheet versus trap site 21A on the envelope.

The following discrepancies were noted between the collection dates indicated in your spreadsheet and those on the sample envelopes:

Sample ID	Date in Spreadsheet	Date on Envelope
SE0490 – SE0500	8/6/2009	7/30/2009
SE0510 – SE0514	8/6/2009	7/30/2009
SE0538	8/3/2009	8/10/2009
NW0668	7/13/2009	7/12/2009
985121006936833	7/5/2009	7/7/2009
4452666771	8/29/2009	12/18/2009
NW0571 & NW0572	6/27/2009	6/26/2009
985121009462869	9/9/2009	9/11/2009
985121009094047	8/29/2009	12/18/2009

The following discrepancies were noted between the barb numbers indicated in your spreadsheet and those on the sample envelopes:

Sample ID	Barb # in Spreadsheet	Barb # on Envelope
SE0352	122	120
SE0607	73	74
SE0608	74	73
NW0626	132	134
NW0671	48	47

DNA Extraction

In dialogue with you, and with reference to preliminary results, we decided to exclude samples from the extraction process if they contained no guard hairs with roots and < 5 underfur (*Xinadequate*) or if their appearance was inconsistent with that of bear hair (*Xspecies*; mostly coarse ungulate hair or banded hair). We noted a disproportionate number of inadequate samples from the SE region (32%), as compared to the NW region (7%).

DNA was extracted using QIAGEN's DNeasy Tissue kits, and following the manufacturer's instructions (for details search <http://www.qiagen.com/>). We aimed to use 10 guard hair roots (see '#G' column) where available. When underfurs were used, the number recorded (see '#U' column) was an estimate because entire clumps of whole underfur were extracted rather than clipping individual roots. An estimate of the amount of the leftover hair (see 'Left' column) was made using three classes: no guard hairs (C); 1–4 guard hairs (B); and > 4 guard hairs (A).

Sample quality was very good, with a mean of 4.8 guard hairs per extracted sample. Many of the samples from known bears had shorter hairs that we typically see, although this did not appear to affect results. If possible, however, we would prefer longer hairs, as these tend to have larger roots and are easier to work with. Alternatively, a piece of footpad the size of a lentil is the best sample material from dead bears, both for ease of handling and data quality.

Marker Selection

Marker selection turned out to be more involved than we envisioned, as we struggled to find markers with the 75% to 80% heterozygosity that we expect in large black bear populations. We initially screened 12 markers that had worked well in previous black bears projects from Utah, Idaho, Texas and Wyoming. These markers were tested on 30 known bears, after which we identified 6 markers (*G10J*, *G10L*, *G10B*, *G1D*, *G10H*, and *G10M*) with mean $H_E = 0.76$ to use for analysis of individual identity. We decided to add a gender marker to this 6-locus system, providing a further reduction in match probability of $\sim 50\%$.

After analyzing ~ 200 samples we became concerned that there were more pairs of highly similar genotypes than expected, suggesting a higher than anticipated match probability. We also began to fully appreciate the large number of individuals that you had sampled, which creates a challenge since the number of false matches between individuals scales with the square of this number. We

therefore tested another 8 microsatellite markers on 29 or 30 individuals, and identified a 7th marker (*GIA*) to use in the analysis of individual identity. This marker had the largest observed number of alleles of the 14 candidate markers (20 minus the 6 already in use) based our sample at the time of 29–30 individuals. The remainder of the analysis of individual identity was therefore conducted with 8 markers, including 7 microsatellites and a gender marker.

Unfortunately, with the benefit of hindsight (Table 1) we can see that *GIA* was not as variable as our original marker selection data had suggested, and that it would have been better to use *G10U* as the 8th marker. Despite the large number of alleles at *GIA*, allele 192 occurs at such high frequency (> 70% in the NW study area) that the marker contributes little to individual identification. I recommend that future projects in this region replace *GIA* with *G10U*, and continue to use 7 microsatellites, plus a gender marker.

Table 1. Summary of marker variability. The first 7 markers, and a gender marker, were run on every sample for the purpose of individual identification. *G10U* was subsequently run on 1 sample per individual to further differentiate pairs whose genotypes were so similar as to be candidates for genotyping error.

Locus	<i>N</i>	<i>H_E</i>	<i>H_O</i>	<i>A</i>
<i>G10J</i>	512	0.79	0.80	10
<i>G10L</i>	512	0.81	0.81	12
<i>G10B</i>	512	0.73	0.68	7
<i>G1D</i>	512	0.78	0.73	7
<i>G10H</i>	512	0.75	0.73	10
<i>G10M</i>	512	0.75	0.73	7
<i>GIA</i>	512	0.49	0.46	7
7-Locus Mean		0.73	0.70	8.6
<i>G10C</i>	30	0.30	0.33	3
<i>G10P</i>	30	0.16	0.17	4
<i>MU23</i>	30	0.56	0.53	5
<i>MU59</i>	30	0.59	0.63	6
<i>G10X</i>	30	0.64	0.50	5
<i>REN145P07</i>	29	0.66	0.52	5
<i>MSUT2</i>	29	0.59	0.55	4
<i>CPH9</i>	30	0.51	0.60	3
<i>CXX110</i>	30	0.65	0.63	5
<i>CXX20</i>	30	0.65	0.63	5
<i>MU51</i>	30	0.46	0.43	2
<i>MU50</i>	29	0.13	0.14	2
<i>G10U</i>	86	0.70	0.65	8
20-Locus Mean		0.59	0.56	5.9

Microsatellite Analysis

While the marker selection was not straightforward, the analysis of individual identity went smoothly once the markers were selected. This analysis started with a first pass of all 8 markers (including gender). After first pass, we culled 10 mixed samples (*Xmixed*) and 119 samples that had produced high-confidence genotype scores¹ for < 4 of 8 markers. This culling step is central to the efficiency and accuracy of our process, eliminating the samples with the lowest success rate and the highest rate of genotyping error (Paetkau 2003).

¹ We use a combination of objective (peak height) and subjective (appearance) criteria to classify genotype scores. Low-confidence scores are identified by removing the leading digit from the allele score, and should be treated as equivalent to missing data.

The first pass was followed by a cleanup phase in which we re-analyzed data points that were weak or difficult to read the first time. In some cases multiple rounds of re-analysis were used to confirm weak data points. Another 21 samples were excluded following cleanup, but the remaining 962 samples had complete, high-confidence scores for the 8 markers that we were analyzing.

The last phase of analysis was error-checking, following our published protocol of selective data re-analysis (Paetkau 2003). Through a combination of reviewing the original results for data entry errors, and re-analyzing obvious candidates for amplification error, we found 12 errors in the new data. We normally encounter errors in about 2–3% of remotely collected hair samples (Paetkau 2003), so the number of errors detected in this project was below average at ~ 1.25%. Rates of amplification error vary with sample quality, suggesting higher than average sample quality in the current project.

After correcting these 12 errors, there were 4 1MM-pairs (pairs that matched at 7 of 8 markers) and 24 2MM-pairs remaining in the file, as well as 6 3MM-pairs that fit the pattern expected of ‘allelic dropout’ (ADO; the only type of error that is expected to affect 3 markers in a single sample). With this total of 34 pairs that were candidates for error-checking, we decided to analyze *G10U* on each pair (1 sample per genotype) to reduce the number of similar pairs prior to the formal process of confirmation through re-analysis.

After adding the *G10U* results there were 2 1MM-pairs, 5 2MM-pairs, and 2 ADO-style 3MM-pairs left in the file, each of which was then confirmed by re-analyzing the mismatching markers (twice for the 1MM-pairs). Extensive testing with blind control samples has shown that this protocol effectively prevents the identification of false individuals through genotyping error (Kendall *et al.* 2009).

Notes on the Gender Analysis

We originally indicated that the amelogenin marker would be used for gender analysis, and we started the analysis using that marker. However, the decision to add *G1A* to the analysis created a size overlap conflict with amelogenin, prompting us to switch to a newer ZFX/ZFY gender marker. This marker is functionally equivalent to amelogenin, using a single pair of primers to amplify a segment of DNA that occurs on the ‘pseudoautosomal’ portion of the sex chromosomes, but with different lengths on the X- and Y-chromosomes.

Some of your samples arrived with 'known' gender from the field, but we included these samples in the gender analysis since we were already setup with an 8-locus marker system for the rest of the project. There were 4 cases where successful known samples were identified as male in your spreadsheet but then produced female gender results. We analyzed each of these samples at least twice for gender, including at least one analysis with the amelogenin marker. Given the reproducibility of the results, and the concordance between markers, we believe that these 4 animals are indeed female. Gender results for these bears are highlighted in yellow in the results file.

A final note on the gender results is that they come with an expected error rate of ~ 0.001 unless they have been replicated. When more than one sample is identified per individual, then the entire genotype has been replicated between samples. A subset of samples (~ 1 in 30) were also replicated by being re-run as positive control samples. However, in many cases there was only 1 sample identified from a given individual, and there was no field data to confirm the gender, and in such cases there is no method short of wholesale data replication for detecting the approximately 1 in 1000 animals with inaccurate gender data.

Notes on the Success Rate

Of the 706 successful snare samples, 274 were extracted from samples that did not meet the original quality threshold of 3 guard hairs. Success rate, expressed as the proportion of extracted samples that were analyzed successfully, was higher than we typically see, at 80% for the SE region, 85% for the NW region, and 99% for known bears. We expect remotely snared samples to have a lower success rate than samples from bears that have been physically handled, but I was interested in the difference between study areas, and so looked at that in more detail.

While there was an obvious difference between study areas in terms of extraction rate, among the samples that were collected in June and July the success rate for the SE study area was only 2–3% lower than for the NW study area. In both areas the extraction rate and the success rate were lower in July than in June. Where the study areas differed more significantly was that August collections were only made in the SE, and the success rate for August was substantially lower than for either June or July. This decline in sample quality as the season advances has been noted in other studies, and we presume that it relates to the ease with which hair can be pulled at different times of year. In studies that continue into the fall, and even into winter in places like Florida, sample quality continues to decline until spring.

Identification of Individuals

Once the genotypes were completed and checked for errors, we defined individuals for each unique genotype, taking ID numbers from the first sample to be assigned to a given individual. This information is cross-referenced in the “Individual” column of the “Samples” worksheet, and the “List of Samples” column of the “Individuals” worksheet.

The 706 hair snare samples with good genotypes were assigned to 266 individuals (117 NW, 149 SE), with no individuals caught in both study areas.

Unsurprisingly, the 256 known samples were assigned to 256 different bears, including 10 ‘recaptures’ of bears identified from hair snare samples. In each case where a snared bear was matched to a known bear, the gender results were the same, and the snare capture event preceded the physical ‘capture’ event. Both the hair snare captures and the known bears were slightly male-biased (53% and 56% male, respectively).

Marker Power

The 6-locus marker system that we started the project with (the first 6 rows of Table 1) have a respectable H_E of 0.77, in keeping with our recommendation for 6-locus marker systems (Paetkau 2003). Each individual that we identified in this project had a unique genotype for these 6 markers, so the addition of a gender marker and *GIA* to the analysis had no practical influence on the individual identifications.

Calculated match probabilities vary by orders of magnitude depending on what assumptions are made about the degree of relatedness among the individuals sampled. For example, in the current file the sibling match probability for the 7 microsatellite markers at which all samples were typed was 2×10^{-3} whereas the match probability for unrelated individuals was 1×10^{-7} (both of these values should be multiplied by approximately 0.5, which is the match probability for gender, independent of degree of relatedness). The disparity between these values renders them unhelpful for assessing the actual risk that we sampled any pair of individuals with the same 8-locus genotype.

An alternative to calculated match probabilities is to extrapolate from an observed mismatch distribution (Paetkau 2003). Experience with data from known individuals has shown that this approach provides a more precise estimate of the risk of false matches. For example, had we analyzed the 256 known bears in this

dataset using just the first 4 markers in Table 1 — reducing the number of markers to the point where some false matches will occur — extrapolation from the observed mismatch distribution would have provided a reasonable prediction of the number of false matches (Fig. 1).

While each of the 256 ‘known’ bears had a unique 8-locus genotype, we would like an estimate of the risk of false matches in the rest of the dataset, either between pairs of snared bears, or between snared bears and known bears. For this exploration I used the 7 markers that I am recommending for continued use, allowing us to confirm that those 7 markers have an appropriately low match probability. The 7-locus mismatch distribution included 5 1MM-pairs (Fig. 2), which is enough to convince us that an 8th marker is called for, but not so many as to call into question the current results.

My conclusion is that the marker system used in this project left little chance for false matches between individuals, but I encourage you to look for evidence of errors as you compare the genetic results to your field data. For example, if we have placed an animal at implausibly distant points within a short period of time, the samples in question should be analyzed at additional markers to confirm the match.

Fig. 1. Distribution of genotype similarity for 256 known bears using data from just 4 markers. This example illustrates how extrapolation from an observed mismatch distribution can accurately predict the number of pairs of animals with identical genotypes (3 in this example).

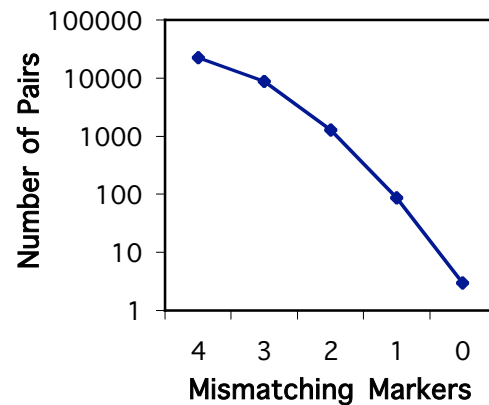
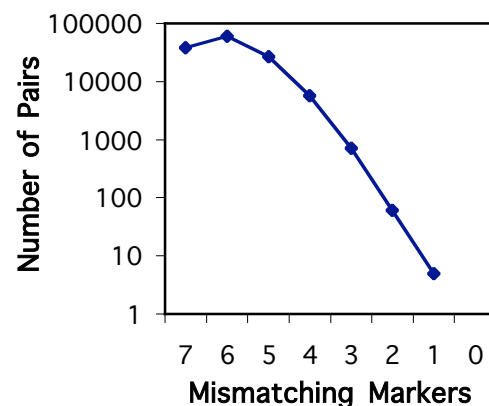


Fig. 2. Actual mismatch distribution for 512 individuals in the attached results file, based on the 7 markers (including gender) that we recommend to continue using (i.e. without *GIA*). Extrapolation suggests < 1 pair of individuals with identical genotypes were sampled. Adding *G10U* to future analyses would further reduce the match probability.

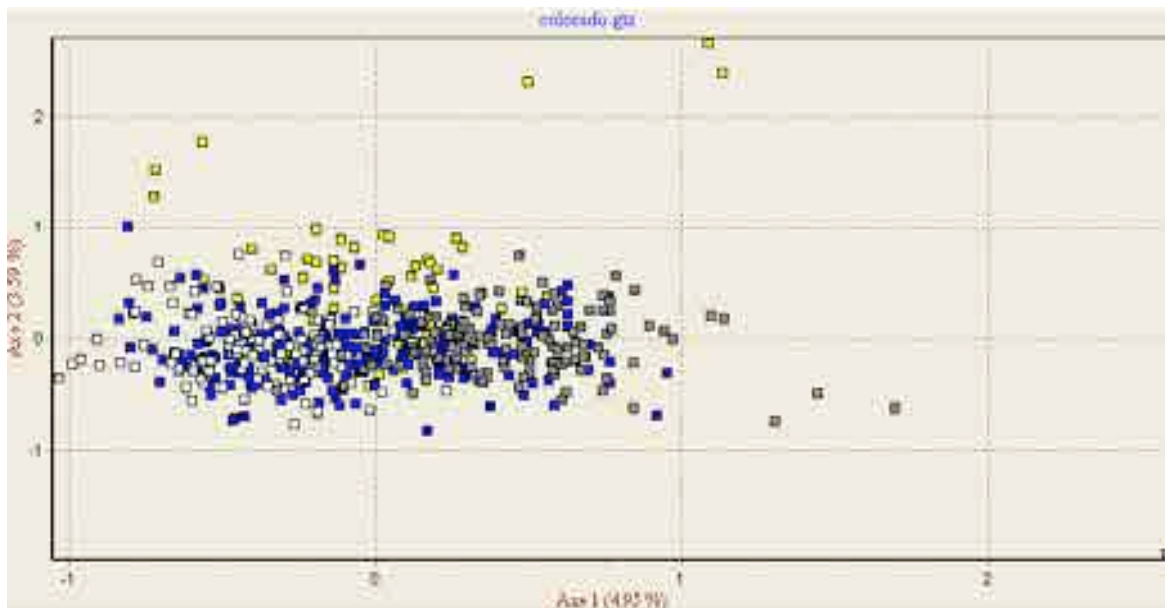


Population Clustering

I realize that we were unlikely to have sampled any grizzly bears, or immigrants from genetically distinctive populations, but it is always worthwhile to check a dataset like this in a clustering program to see if any individuals stand out for any reason (e.g. genotyping error). I was also interested in the distinctiveness of your two study areas, although I don't know their locations. I therefore performed a quick clustering analysis in the program Genetix, which performs a principle components-style treatment on individual genotypes. Out of personal interest, I included reference data from a similar project in Utah.

While the clusters produced for the SE and NW study areas were not superimposed, as would be expected if they were genetically homogeneous, the degree of differentiation between areas appeared slight (Fig. 3). There was one particular outlier that I looked at in detail, including reviewing genotyping runs, but this appeared to be a simple case of an individual with a rare genotype, as are often encountered when clustering analysis is based on so few markers.

Fig. 3. Results from the first two dimensions of a factorial correspondence analysis (program Genetix) based on 6-locus microsatellite data from NW (white), SE (grey), and 'known' (blue) study groups, as well as comparative data from an unknown population in Utah. Data for *GIA* were not available from Utah, so this marker was not included in the analysis. I could find no explanation for the outlier at bottom right, other than it had some rare alleles in its genotype; an analysis based on more markers would be required to conduct a serious investigation of individual origins.



Various and Sundries

It is my intention to communicate these documents in electronic form only, but I'd be happy to send hardcopies through the post if you need them. An invoice for US \$43,550 accompanies these results, with unit prices taken from the contract (including the \$5 discount for samples that you extracted). We did not charge you for a customs invoice that we received because you declared a commercial value of \$200 on the shipment, but please enter a nominal value of \$1 on future shipments. Unless you tell me otherwise, I'll count on you to get the invoice to the appropriate desk for processing.

While there were unusual administrative demands associated with the lead up to this project, and unexpected complexities at the marker selection phase, the high sample quality, large sample size, and straightforward nature of the work alleviated any initial concerns about the financial viability of the project. Now that we have dealt with many one-off complexities, any opportunity for involvement with your future studies would be more than welcome.

We understand that you would like any unused hair returned to you. Please let us know the contact name and address for where you would like the hair sent, as well as a courier account to which shipping charges can be billed. Note that we are also willing to archive your leftover materials under appropriate conditions for 5 years, as long as there is a prospect for continuing work; we often refer to such archived material when error-checking new data against old, or when adding data in the context of population genetics or parentage analysis.

Please keep us in mind when distributing reports relating to this work; we are always interested to learn more about the projects that we have worked on.

Thank you for your patronage, and please feel free to call with any questions or concerns.

Yours sincerely,



David Paetkau, Ph.D.
President

encl.: g0805 Results.xls; g0805 Invoice.pdf.



**THE
MOUNTAIN
LION
IN
NEVADA**

STATE OF NEVADA

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THE MOUNTAIN LION IN NEVADA

Prepared By:

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This publication is the result of studies undertaken with Federal Aid to Wildlife Restoration funds under Pittman-Robertson Projects and is specific to W-48-13, Study S&I 1, Job 5 and Study R-V, Job 1, Final Report. Under Title VI of the 1964 Civil Rights Act, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, or national origin.

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INTRODUCTION

The mountain lion (Felis concolor) is one of the most intriguing large game species in Nevada and the controversies surrounding this great cat have often become embroiled in a battle between fact and fiction, love and hate, and conservation and exploitation.

In its simplest interpretation the lion has been merely laying claim to the land it has freely roamed since the Pleistocene epoch. The recent invasion of its realm by the modern American and his livestock, followed by the bounty hunter, the fur hunter, and the sport hunter, contradicted that claim and resulted in a reduction of Nevada's mountain lion populations, as well as a conflict in ideologies among the people of the state. Hopefully, now, in a more enlightened period, we may, in some way, find a means of compromising the forces which have been working against the mountain lion's survival. In order to do this a basic understanding of the lion's life history is required so identified conflicts can be resolved or mitigated. If the myths are separated from the facts, and people are willing to try and resolve their differences, then a management plan which will provide for sustained mountain lion populations can be implemented.

In March 1972, the Nevada Department of Wildlife initiated a study of the mountain lion as a part of the Ruby-Butte deer project (Papez 1976) in eastern Nevada. The objective was to determine the status of lion populations within this highly valuable deer area and evaluate them in relation to deer populations. Within two years this objective was changed to: a) establish population estimates of mountain lions by mountain range or management area statewide, b) establish basic habitat requirements, 3) establish a harvest management program. From that period on, increased emphasis was placed upon lion capture and marking with the more sophisticated telemetry devices which were being manufactured. This program involved lion monitoring from both land and air and was instrumental in expanding our life history data base as well as providing an approach toward estimating the annual population status of key mountain ranges. The findings which resulted from this study were then utilized in formulating an approach toward estimating statewide lion populations.

In doing this, the Department was essentially moving toward the development and implementation of a Unit Harvest Management scheme. This management approach was a direct result of pressures arising from three distinct groups of people, all of whom had different interests:

1. The livestock industry which wanted stringent predator control.
2. The professional mountain lion guide who wanted the freedom of taking clients where he desired, with minimum restrictions in season length, harvest, or area of hunt.
3. The protectionist who basically wanted no harvest of the mountain lion.

The role of the Department of Wildlife was, therefore, one of attempting to develop a plan which satisfied most interests as well as meeting the legislative mandate of preserving viable mountain lion populations for the future. In the latter years of the study, while developing a Unit Management approach, Department personnel throughout the state were assigned to pertinent jobs in their local areas, the study areas, or both.

ACKNOWLEDGMENTS

Dave Ashman was the principal investigator assigned to the mountain lion study during most of its ten year duration. A rough draft, which was partially used in the preparation of this manuscript, was written by Dave prior to his resignation from the Department in 1982.

Personnel from the United States Fish and Wildlife Service cooperated in this study from its initiation by providing experienced lion hunters with trained hounds and much of the necessary equipment. The late Dick Hall, a U.S. Fish and Wildlife Service lion hunter in Nevada from 1936-79, unselfishly provided a vast storehouse of knowledge, time and experience during the first 7 years of the study. Jim Bahler and Richard Holcomb, also government lion hunters, provided able assistance in capturing lions during the last 3 years of study.

Many Department of Wildlife employees assisted in the field work, some of which was done under the most adverse winter conditions. A listing of them would include almost the entire Game Division staff and most of the Regional game personnel, all of whom willingly assisted in study design, equipment procurement, and endless hours of field work. Allan Flock, Jim Jeffress and Gregg Tanner provided help beyond the normal call of duty.

Dave Beatty of Telonics, Inc. was instrumental in designing and manufacturing the telemetry equipment which was used so successfully during the later years of the study. A phone call to Dave saved many a day when there were equipment crises.

Glen C. Christensen was responsible for data analysis, rewriting and editing of this manuscript. In doing so he drew freely upon the talents of George Tsukamoto, Mike Hess and Mike Wickersham of the Nevada Department of Wildlife and Harley Shaw of the Arizona Game and Fish Department.



DESCRIPTION OF THE STUDY AREAS

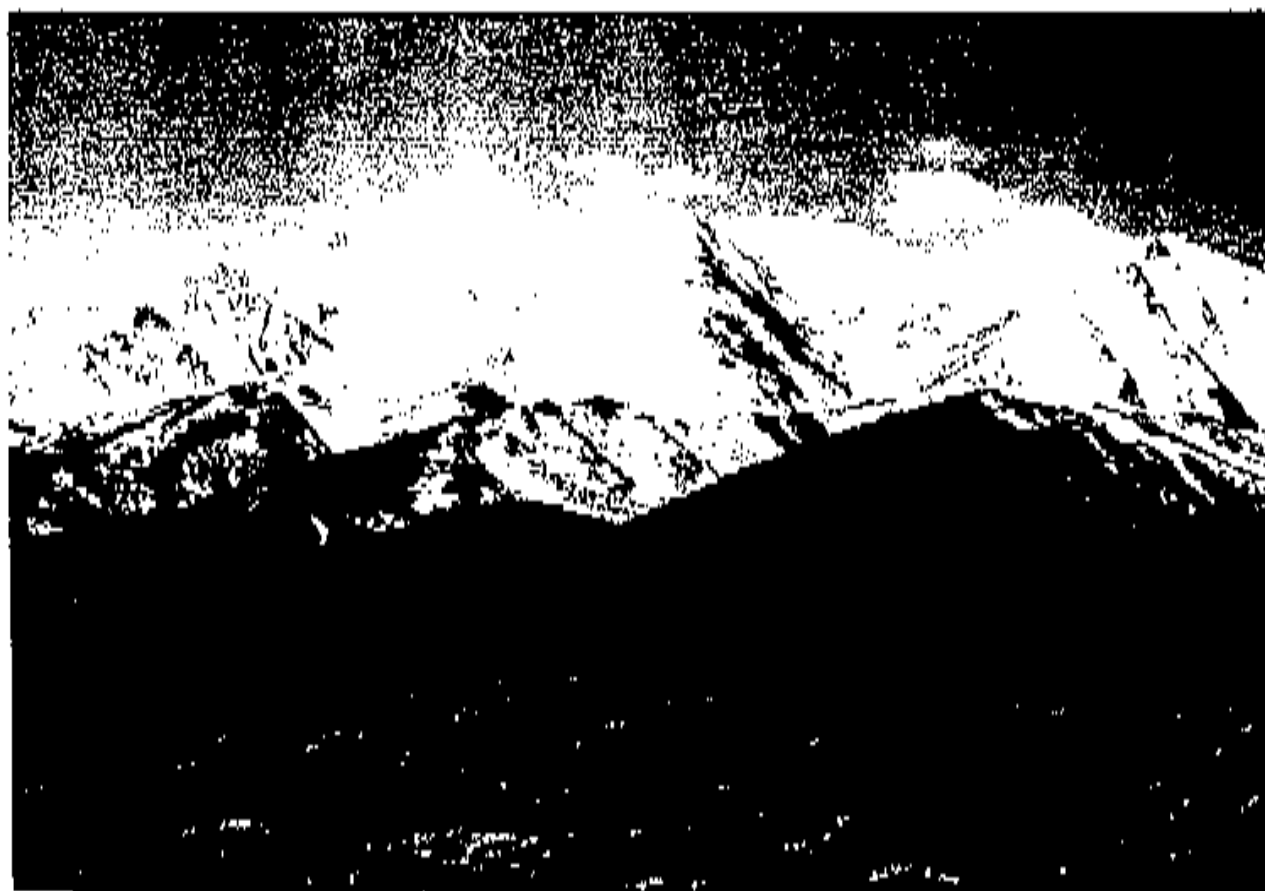
Location

The principle study areas were located in the Ruby Mountains (eastern Nevada) and in the Monitor Range (central Nevada). Additional, but less extensive work was conducted in the following ranges: Schell Creek, Cherry Creek-Egan, Spruce, White Pine, Toona, Maverick Springs, Snake, Jarbidge and Antelope-Fish Creek, all of them being grouped in Northeastern and Central Nevada (Figure 1).

RUBY MOUNTAINS--The Ruby Mountains are composed of three distinct divisions: the East Humboldt Range, Ruby and South Ruby (Figure 2). The East Humboldt Range, which comprises the northern portion, is located north of Secret Pass and south of Wells encompassing an area of 221 square miles. This division embraces extensive summer range for both mule deer (Odocoileus hemionus) and lions. Winter range is limited due to deep snow which forces the deer to migrate considerable distances south and east (Papez 1976).

The Ruby division, located between Secret Pass and Harrison Pass, is the largest unit and contains 362 square miles of mule deer and mountain lion summer and winter range.

The South Ruby division is primarily winter range for mule deer and lions, although some fair to good summer range is present on the west slopes between Harrison Pass and Overland Pass. This area embraces 270 square miles, but generally lacks good water distribution and high quality deer habitat.



South Ruby Mountain Range Lion Habitat

The entire Ruby study area encompasses approximately 853 square miles. The northern third of the Ruby Range and the majority of East Humboldt Range are composed of intermixed private and public lands.

MONITOR RANGE--The Monitor Range extends 97 miles north to south between the general vicinity of Eureka and Tonopah, Nevada. Most of the field work was conducted on the northern 25 miles of the range, primarily from Dobbin Summit north, which included an area of 335 square miles (Figure 3), nearly all of which is on public lands.

General Characteristics of the Environment

Detailed descriptions of the topography, soil, climate and vegetation, which are applicable to the study areas, are presented in the Nevada Department of Wildlife publication titled "The Ruby-Butte Deer Herd" (Papez 1976). Generally, these descriptions also apply to mountain lion habitat throughout the state, with some local modifications, which are well covered by Billings (1951).

In brief, the physiographic characteristics are typical of the Great Basin. The mountains and valleys trend in a north-south direction with elevations ranging from 5,500 feet in the valleys to heights of 9,000-11,000 feet for the mountain peaks. The exceptional Wheeler Peak, in the Snake Range, crests at over 13,000 feet.



Monitor Range Lion Habitat

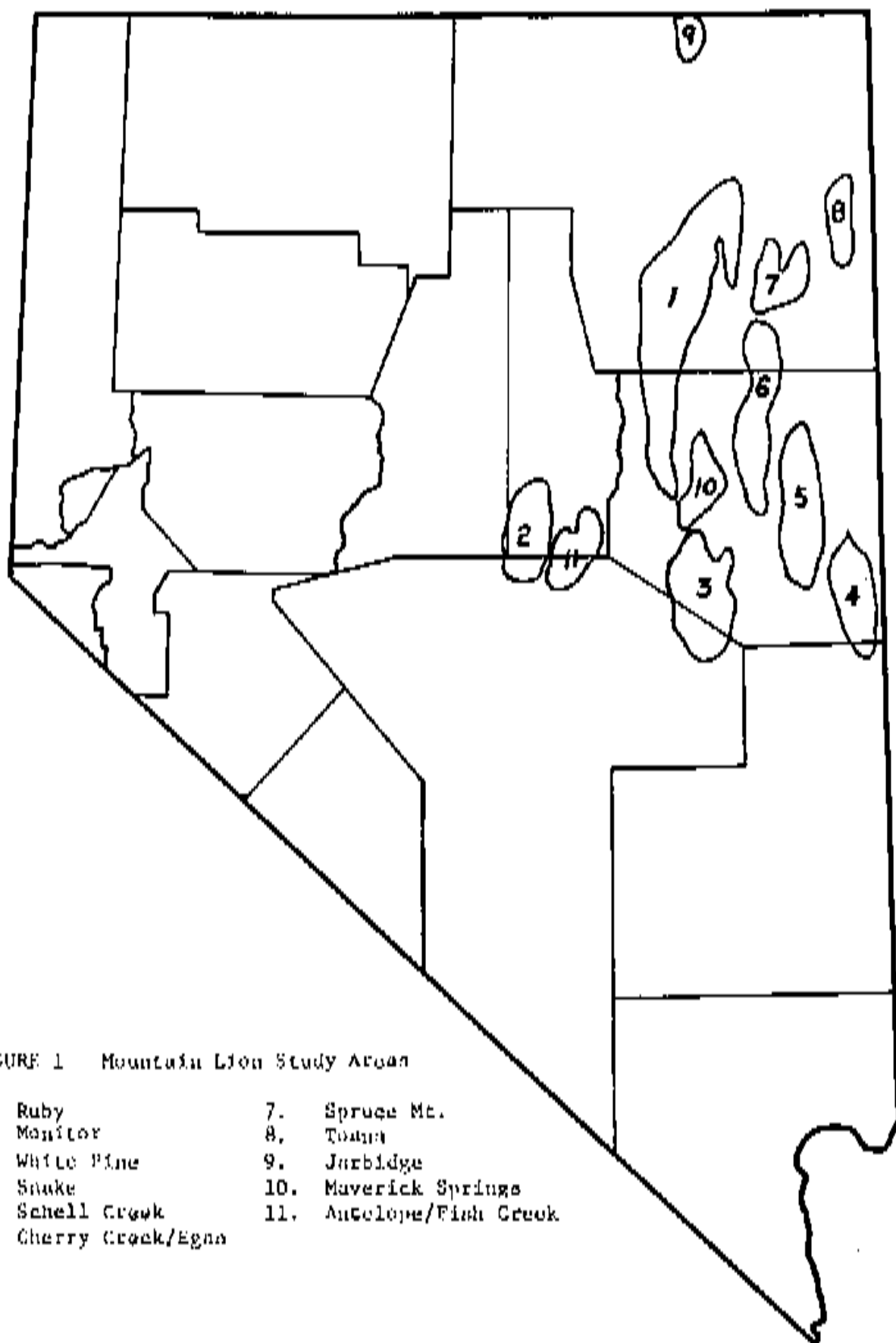
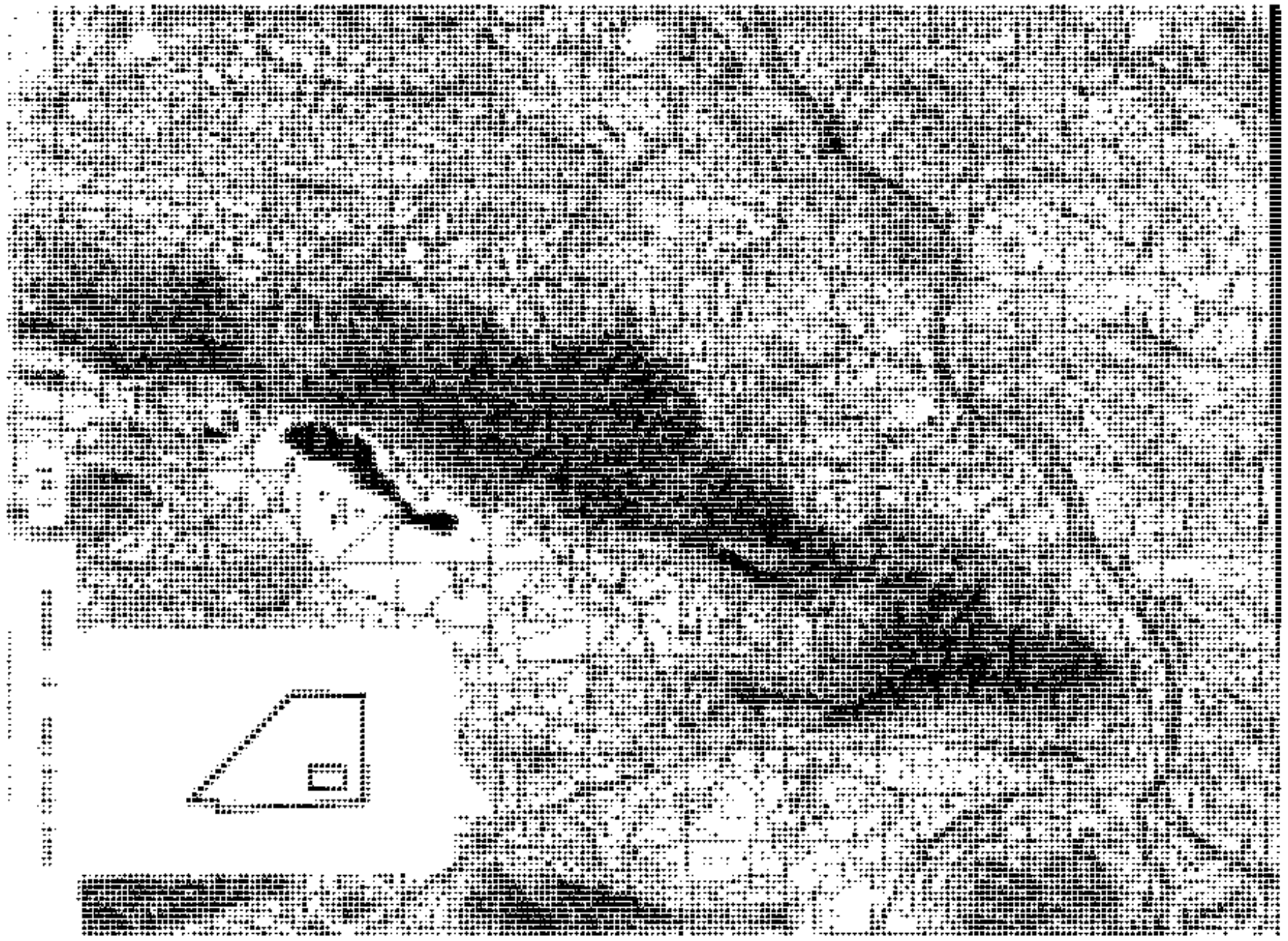
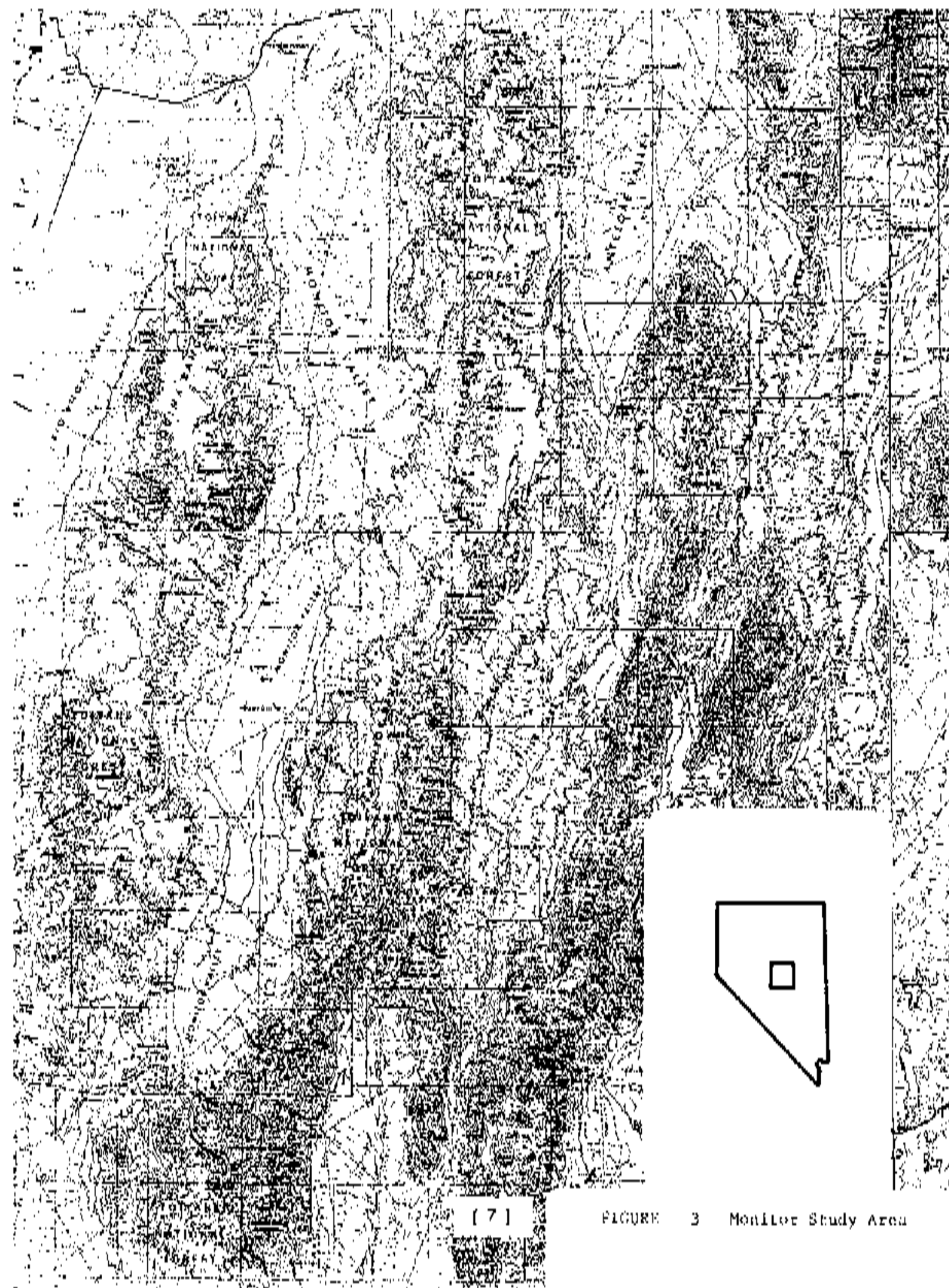


FIGURE 1 Mountain Lion Study Areas

- | | |
|----------------------|-------------------------|
| 1. Ruby | 7. Spruce Mt. |
| 2. Monitor | 8. Tama |
| 3. White Pine | 9. Jarbidge |
| 4. Snake | 10. Maverick Springs |
| 5. Schell Creek | 11. Antelope/Fish Creek |
| 6. Cherry Creek/Egna | |





The climate is typically one of hot, dry summers and cold, wet winters. Maximum precipitation occurs in late winter and early spring and varies considerably by site, being 13-15 inches annually at elevations above 7,500 feet in the study area. Temperatures vary dramatically over a 24-hour period and it is not unusual to record a 50°F spread between the morning low and the afternoon high. Similarly, there is also a great variation between the winter lows and summer highs, such as a -43°F minimum and 107°F maximum recorded in Elko, Nevada. The wide ranging temperatures are a feature of the Great Basin area which makes it prudent for one to carry a down sleeping bag the year around.

The vegetation is typified by a Sagebrush Zone which dominates the valley floors and the lower foothills. Big sage (Artemisia tridentata) is the major species. Big sage and black sage (Artemisia nova) are also well represented in the other vegetational zones which occur in the study area. At the lower elevations of the deer summer range, which would also demark the mountain lion ranges, big sage is associated with bitterbrush (Purshia tridentata) and rabbitbrush (Chrysothamnus vicidiflorus).

On the foothills above the sagebrush zone, but below 7,500 feet, a belt of Pinyon-Juniper (Pinus monophylla - Juniperus osteosperma) becomes the dominant type. This pygmy forest is a very important transitional zone for deer as they move through it from their summer and winter ranges. The major understory plants are sagebrush, bitterbrush, rabbitbrush and serviceberry (Amelanchier alnifolia). Pinyon-Juniper is not significantly present in the Ruby Mountains north of Harrison pass; however, in the Monitor study area it is the dominant vegetation at the lower elevations.

Elevations above 7,500 feet to 9,500 feet are characterized by mountain brush. This summer range is an extremely important zone for deer, and consequently mountain lions, and is dominated by quaking aspen (Populus tremuloides), mountain mahogany (Cercocarpus ledifolius), snowbrush (Ceanothus velutinus), chokecherry (Prunus virginianus), willow (Salix spp.) and wild rose (Rosa spp.).

Along the crests of the mountains at elevations above 9,500 feet, the Alpine-Subalpine forest is found. Limber pine (Pinus flexilis), whitebark pine (Pinus albicaulis) and occasionally white fir (Abies concolor) and bristlecone pine (Pinus aristata) are the dominant trees. Prominent understory species are snowbrush, dwarf juniper (Juniperus communis) and bearberry (Arctostaphylos uva-ursi).



METHODS

Harvest data, which included U.S. Fish and Wildlife Service depredation removal and the Nevada Department of Wildlife sport harvest records, were reviewed to identify mountain ranges throughout the state that contained lion populations. Sight records, of lions or their tracks, obtained by professional government lion hunters, sport hunters and guides, and Department personnel were used to augment harvest data in compiling distribution maps. All records were plotted on 1/250,000 topographic maps and the area of occupied lion habitat was delineated and square miles computed.

The primary methods used for obtaining data was through lion capture, marking and recapture, and from radio-telemetry monitoring. The majority of the capture efforts were conducted during winter months when the ground was covered with snow and tracks could be located by driving roads, snowmobiling or on foot. Once fresh tracks were found, trained hounds owned by government hunters would be started and followed until a successful capture was made or the hounds had to be pulled off the trail due to severe weather, darkness, exhaustion or other reasons. Once a lion was cornered, its weight was estimated and the proper drug dosages prepared for tranquilizing. During the first six years of the study the drugs Sernylan (Phencyclidine hydrochloride) and Sparine (Promazine hydrochloride) were used in combination, with a ratio of 1-3 parts Sparine to 1 part Sernylan, depending on the dart syringe capacity (1.5-3.0 cc). These drugs were used at a rate of 0.1 cc per each 20 pounds of body weight. During the last 4 years of the study the drug Ketaset/Vetalar (Ketamine hydrochloride) was used with considerable success, although the volume required (1 cc per 20 pounds) did present some difficulties because occasionally not all of the drug was absorbed by the muscle. All drugs were manufactured by Park, Davis & Company, Detroit, Michigan. All Cap-Chur syringes, powder charges and guns were supplied through Palmer Chemical and Equipment Company, Douglasville, Georgia.

After immobilization each animal was sexed, weighed and aged. Any injuries, other abnormalities and ectoparasites were recorded. Females were checked for indications of pregnancy, estrus or nursing. Tooth replacement, amount of stain and wear, and a measurement of the upper canines from the gum line to the tips of the labial side of the tooth were recorded for selected lions. During subsequent recapture or harvest any changes were noted. Numbered metal ear tags were placed on some lions early in the study but due to losses were discontinued in favor of numbered rope collars. Once the telemetry program gained momentum radio collars were used. Following data collection and marking the lion was placed in a protected location and allowed to recover.

During the period of 1973-75 lions were instrumented with low frequency radio collars (31 MHz) manufactured by Thomas Owens, Sacramento, California. These collars were either solar powered or a combination solar/nickel cadmium battery units with a life expectancy of less than 6 months. A variety of receiving equipment was used to locate and monitor the radioed lions, but none of it was entirely satisfactory.

During late 1977 more reliable radio collars were obtained from Telonics, Inc., of Mesa, Arizona. These units were of a higher frequency (159 MHz) and were entirely operated by lithium batteries with a theoretical life of up to 44 months. The receiving unit (Telonics Model TR-2) had a direct frequency reading and self-contained rechargeable power pack. Searches and monitoring were conducted from small aircraft and from the ground. Aerial reception varied from 2-30 miles and ground reception from 0.5-20 miles. Some radio collars incorporated a motion sensing device (mercury switch) where non-movement after 3 hours caused an increase in pulse rate (mortality mode) and this feature proved to be very helpful.



FINDINGS

The Mountain Lion

The mountain lion, locally called the cougar, puma, panther or just plain lion, is endemic to Nevada. It is the largest of the unspotted cats in the United States and the sexes are colored alike. The color of adults is tawny or greyish above and whitish below with dark brown on the tip of the long tail, backs of ears and sides of nose. The young are spotted with blackish-brown on a pale fawn ground color. Males are larger than females.

Ninety-seven lions were captured and marked between March 1972 and February 1982 (Table 1). Three of these were captured in western Nevada and 94 from the primary study areas in central and eastern Nevada. The sex and age composition was 57 males and 40 females of which 46 were classified as adults, 16 as subadults and 35 as kittens (see age section for classification criteria).

Fifty-two of the 97 lions were captured and recaptured 116 times and located 695 times through radio telemetry monitoring (Table 2). Many hours and miles were logged in tracking lions on foot which further added to the knowledge of a particular animal. Daily, monthly and seasonal movements were determined for several lions. This monitoring effort made it possible to gain insight on many of the life history subjects presented in this section. Additional information was obtained through the examination of lions killed (for depredations or by sport harvest) during the course of the study.

Distribution

Since mountain lions are adaptable to a great variety of environmental conditions, they are able to occupy most of the mountain ranges in Nevada and are found from the hot southern deserts to the coldest extremes of the northeastern mountains. A generalized distribution map which depicts the probable extent of the mountain lion's range, when considering habitat types and prey base as well as documented lion occurrence, is presented in Figure 4. Based on this map it is estimated that there are 27,811 square miles of mountain lion habitat in Nevada.

Reproduction

Breeding Age -- The average estimated age of first conception for nine female lions which were examined was 29 months, with a range of 22-40 months. Using a 90-day gestation period (Asdell 1964) the average age for giving first birth was 32 months. Eaton and Velandar (1977) found that 4 captive females in Washington state had first birth between 26.5-30 months of age. They also reported that the earliest record of a lion giving birth was 21 months.

No data for sexual maturity of male lions was obtained during this study.

TABLE 1. MOUNTAIN LIONS CAPTURED IN NEVADA, 1972-82.

<u>Lion No.</u>	<u>Sex</u>	<u>Estimated Age at Capture</u>	<u>Age Group*</u>	<u>Weight (lbs.)</u>	<u>Date Captured</u>
1	M	7 years	A	147	3-17-72
2	F	18-20 months	SA	95	4-4-72
3	M	18-20 months	SA	--	4-8-72
4	F	6 years	A	--	4-14-72
5	M	20-24 months	SA	123	5-2-72
6	M	6 years	A	--	12-17-73
7	M	2 years	A	144	11-22-75
8	F	3 years	A	105	1-9-73
9	M	7 months	K	55	1-9-73
10	M	18-20 months	SA	--	1-17-73
11	F	16-18 months	SA	79	12-12-75
12	F	18-20 months	SA	--	1-17-73
13	F	18-20 months	SA	105	1-17-73
14	F	4 years	A	95	1-29-73
15	M	5 years	A	152	5-8-73
16	M	20-24 months	SA	--	12-4-73
17	M	18-20 months	SA	128	1-8-74
18	M	7 months	K	55	1-24-74
19	M	7 months	K	50	2-8-74
20	M	7 months	K	53	2-8-74
21	F	4 years	A	110	2-2-74
22	M	4 months	K	35	2-1-74
23	F	4 months	K	30	2-2-74
24	F	4 months	K	28	2-2-74
25	M	5 months	K	42	2-6-74
26	M	5 months	K	42	2-6-74
27	M	15-16 months	K	122	1-28-75
28	M	15-16 months	K	118	1-28-75
29	F	9 years	A	115	1-29-75
30	M	5 months	K	39	1-29-75
31	M	5 months	K	40	1-30-75
32	F	15-16 months	K	--	2-19-75
33	F	17-19 months	SA	--	2-21-75
34	M	2 years	A	130	4-1-75
35	M	6 years	A	155	4-11-75
36	F	13-14 months	K	71	11-21-75
37	F	16-18 months	SA	91	12-18-75
38	F	16-18 months	SA	93	12-18-75
39	M	16-18 months	SA	115	12-19-75
40	F	18-22 months	SA	--	1-7-76
41	F	5 years	A	84	1-8-76
42	M	2 months	K	23	1-11-76
43	M	15-16 months	K	123	1-6-76
44	F	2 years	A	88	1-11-77
45	M	3 years	A	133	1-14-77
46	M	17-19 months	SA	140	1-21-77
47	F	15-16 months	K	81	1-12-78
48	M	15-16 months	K	100	1-13-81
49	F	20-24 months	SA	85	1-23-78
50	M	10+ years	A	145	1-24-78
51	M	8-9 years	A	--	1-25-78
52	M	3 months	K	--	2-2-78
53	F	14-15 months	K	78	2-18-78

TABLE 1. MOUNTAIN LIONS CAPTURED IN NEVADA, 1972-82. (cont.)

Lion No.	Sex	Estimated Age at Capture	Age Group*	Weight (lbs.)	Date Captured
54	M	14-15 months	K	80	2-18-78
55	F	20-24 months	SA	85	6-30-77
56	F	14-15 months	K	70	2-18-78
57	M	6 years	A	128	2-19-78
58	M	3 years	A	137	3-18-78
59	F	6 years	A	--	1-7-79
60	F	4 months	K	--	1-14-79
61	M	3 years	A	135	1-26-79
62	M	5 years	A	--	3-19-79
63	F	9-10 years	A	87	1-17-79
64	M	3 months	K	33	1-17-79
65	F	3 months	K	33	1-17-79
66	M	3 months	K	35	1-17-79
67	M	2 years	A	112	1-19-79
68	M	3 years	A	128	2-21-79
69	F	4 years	A	94	1-30-79
70	F	4 months	K	40	1-30-79
71	M	5 years	A	145	11-30-79
72	F	10+ years	A	93	1-31-79
73	F	18-20 months	SA	--	2-24-79
74	M	9 months	K	68	5-31-79
75	F	9 months	K	--	5-22-79
76	F	9 months	K	64	5-22-79
77	M	2 years	A	--	6-6-79
78	M	3 years	A	132	1-17-80
79	M	6 years	A	--	1-20-80
80	F	9-10 years	A	112	1-24-80
81	F	3 years	A	--	1-14-80
82	F	3 years	A	--	2-5-80
83	F	2 years	A	95	2-14-80
84	M	2 years	A	123	2-22-80
85	M	3 years	A	162	2-23-80
86	M	8 months	K	73	2-27-80
87	M	10+ years	A	149	5-21-80
88	M	6 years	A	121	4-29-80
89	M	18-20 months	SA	133	5-1-80
90	F	6 years	A	100	7-21-80
91	M	3 years	A	--	11-27-80
92	M	3 years	A	--	4-3-81
93	F	2 years	A	--	4-22-81
94	M	9 months	K	87	4-28-81
95	M	3 years	A	143	4-30-81
96	M	9 months	K	83	2-12-82
97	M	3 months	K	27	2-9-82

* A - Adult (24 months +)

SA - Subadult (17-23 months)

K - Kitten (0-16 months)

The location of capture for the above lions is as follows: Ruby Mountains (52), Cherry Creek-Egan (12), Monitor-Antelope (8), Schell Creek (7), Snake (4), White Pine (3), Toana (3), and one each in the Diamond-Fish Creek, Maverick, Spruce, Toiyabe, Pine Nut, Pine Grove, Wellington Hills and Independence.

TABLE 2. NUMBER OF CAPTURES AND RADIO LOCATIONS FOR 52 MOUNTAIN LIONS IN NEVADA, 1972-82.

<u>Lion No.</u>	<u>Sex</u>	<u>No. of Captures</u>	<u>No. Radio- Locations</u>	<u>No. Months Followed</u>
1	M	6	0	10
2	F	3	0	32
3	M	6	4	34
5	M	2	0	3
6	M	2	0	49
7	M	2	0	1
8	F	2	54	24
10	M	2	0	6
12	F	2	0	--
13	F	3	0	13
14	F	3	26	6
15	M	5	1	21
18	M	3	0	52
21	F	2	0	18
29	F	1	0	7
34	M	2	0	6
35	M	3	6	38
36	F	4	116	77
39	M	2	0	48
40	F	3	0	46
45	M	2	0	20
46	M	2	0	19
47	F	2	16	13
48	M	1	0	5
50	M	3	36	19
51	M	1	0	24
54	M	2	0	24
57	M	2	16	44
58	M	2	43	15
61	M	2	0	13
62	M	2	7	3
63	F	2	7	5
67	M	2	27	35
68	M	2	6	3
71	M	2	12	5
73	F	1	5	5
75	F	2	62	36
76	F	2	46	28
77	M	2	18	12
78	M	2	1	7
79	M	1	21	23
80	F	1	21	23
82	F	1	21	22
84	M	2	6	5
85	M	2	34	18
87	M	1	17	19
88	M	3	28	17
89	M	2	13	6
92	M	2	8	2
94	M	2	6	7
95	M	2	7	4
96	M	1	4	3
		116	695	

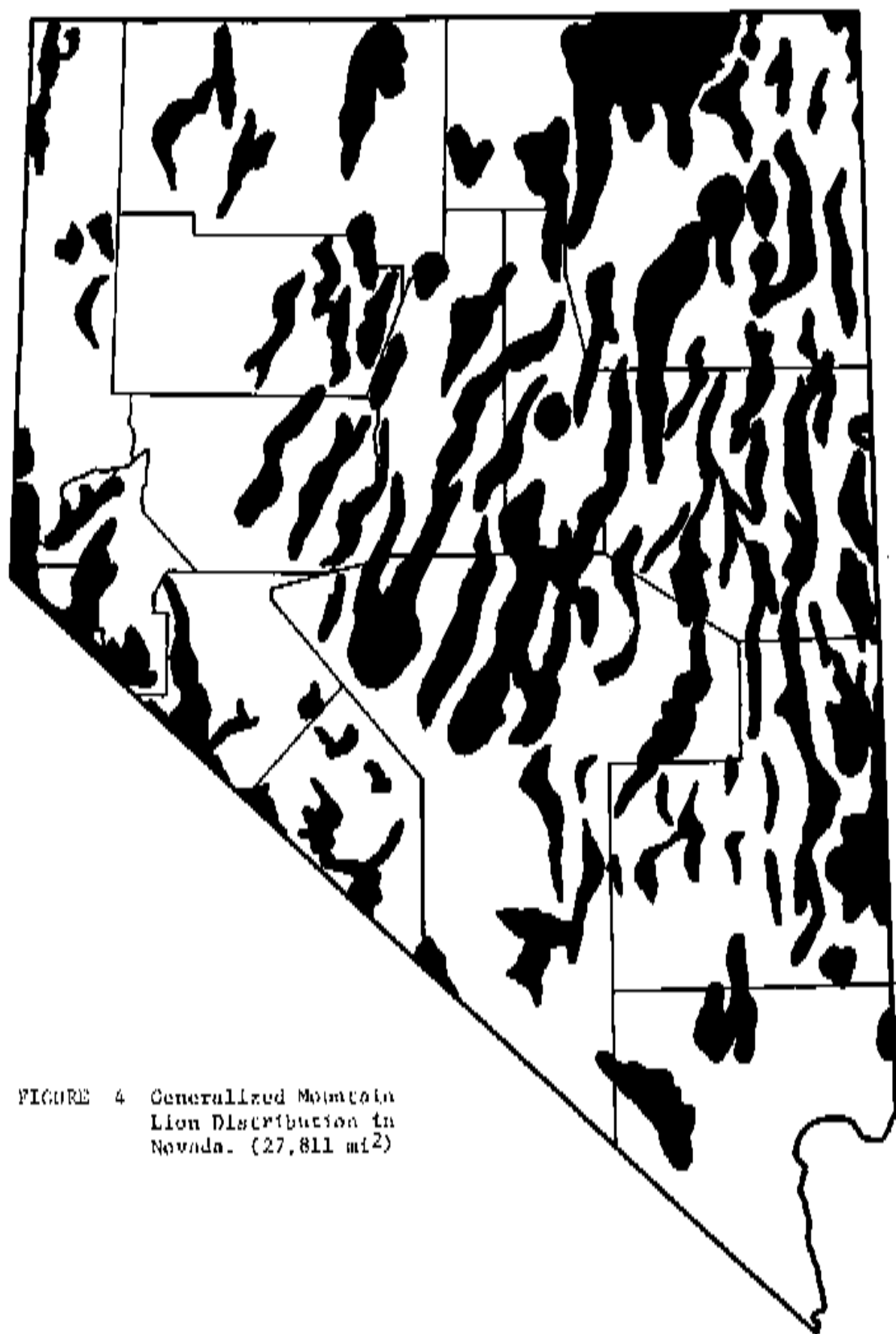


FIGURE 4 Generalized Mountain
Lion Distribution in
Nevada. (27,811 mi²)

Time of Birth -- The month of birth was calculated for 135 litters by projecting forward for prenatal litters and backdating for postnatal litters... No kittens older than 12 months (estimated age) were included in the calculations (see section on aging for criteria). The majority of reproductive tracts examined were from females in the latter stages of pregnancy. Prenatal young were aged based on crown-rump measurements or by the overall size of the fetuses in the case of U.S. Fish and Wildlife Service records. The following measurements are believed to be a reasonably accurate means of determining prenatal monthly age classes:

- (1) First month ----- 25 mm or less
- (2) Second month ----- 26-125 mm
- (3) Third month ----- 126 mm or larger

Kittens were born in every month of the year with a peak occurring during the months of June-July (Figure 5). During April-September a total of 94 litters were recorded (70%) as compared to 41 litters (30%) during the remainder of the year. Robinette et al. (1961) computed birth months for 145 litters in Nevada and Utah and found the peak months to be June-September. In central Idaho Seidensticker et al. (1973) reported most births occurred during late spring and early summer.

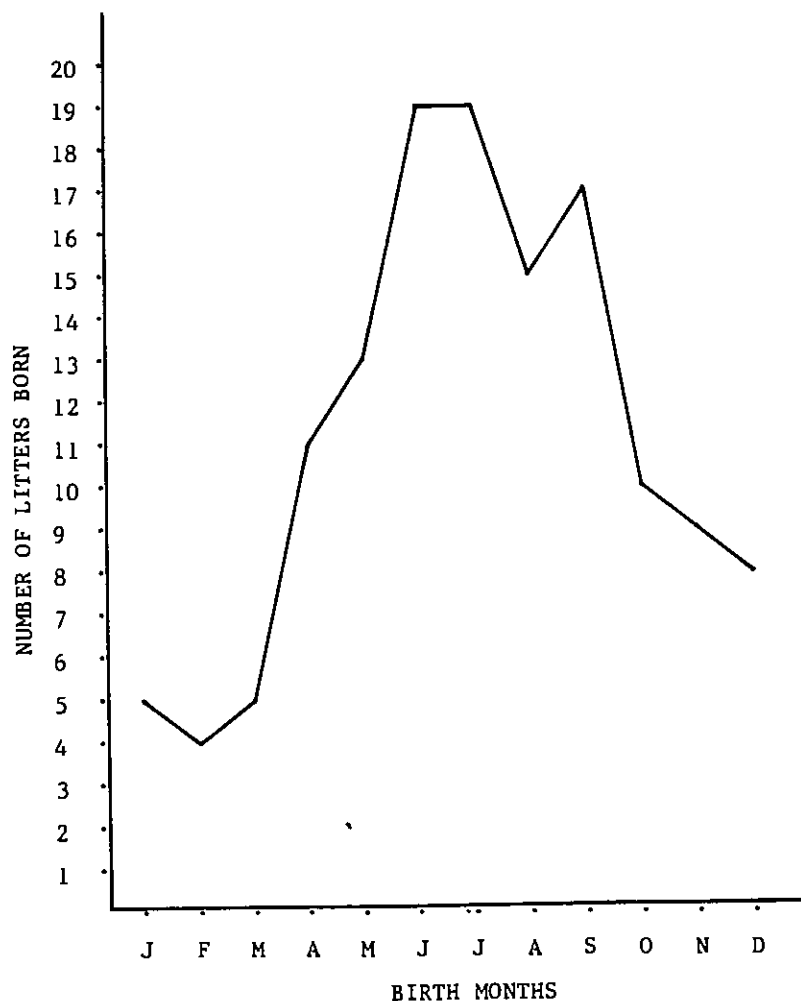


Figure 5. Birth Months for 135 Mountain Lion Litters in Nevada, 1956-82.

Frequency of Litters -- Data from 12 adult female lions indicated that the reproductive cycle (time between litters) ranged from 11.5-24 months and averaged 17.4 months.

Litter Size and Survival -- Examination of 36 prenatal litters revealed an average litter size of 3.08 kittens. The number of kittens per litter varied from 1 to 5 as shown in Table 3.

As the kittens grew there was a gradual loss and the number of kittens observed with their mothers declined to an average of 2.23 by the 12th month. Table 4 shows this loss by estimated age group. In analyzing Tables 3 and 4 it would appear that the prenatal litter size of 3.08 kittens is probably higher than the actual number of kittens born. Furthermore, the litter size for the 4-month age group (2.59) would reflect losses from birth to that time. Therefore, it is felt that the actual birth rate lies somewhere between the two and 2.8 kittens was used as the average litter size when calculations requiring this were needed.

TABLE 3. PRENATAL LITTER SIZES OF MOUNTAIN LION KITTENS.

	Number of Kittens per Litter					Total Sample	Average Litter Size
	1	2	3	4	5		
Number of Litters	1	7	18	8	2	36 litters (111) kittens	3.08

TABLE 4. MOUNTAIN LION KITTEN SURVIVAL BY AGE GROUPS.

	Number Kittens with Mother				Total Sample		Average Litter Size
	1	2	3	4	Families Observed	Kittens Observed	
<u>Estimated Age</u>							
4 months	3	14	21	3	41	(106)	2.59
5-11 months	6	19	15	2	42	(97)	2.31
12 months	6	25	15	1	47	(105)	2.23
TOTAL	15	58	51	6	130	(308)	2.37

Currier (1976) reported the average litter sizes for Colorado as 1.6 (13)*, California 2.0 (8)*, Arizona 2.2 (11)*, and Idaho 2.4 (33)*, while captive lions in Washington averaged 2.6 (92)*. The sample size in all of these states, except Washington, was very small.

The rate of kitten survival in Nevada is good and when coupled with the lions' high reproductive potential it can be speculated that mountain lions are capable of rapidly replacing individuals that are removed from the population.

*Number of kittens in sample shown in parenthesis

Population Turnover -- Data relating to population turnover was restricted primarily to the Ruby Division, where records from track counts, captures and recaptures, and radio-telemetry locations indicated that the lion population consisted of approximately 35 animals. During the period of 1954-60 there was a sustained mortality on this population of at least 11 lions per year (30% of total). In 1974 and 1975 thirty lions were known to have been removed from the population, with sport hunting accounting for the highest percentage. Yet, three years later (1978), following the initiation of very restrictive sport hunting regulations, this population appeared to have recovered to its former level. This conforms with the findings of Robinette, et al. (1977) who felt that the annual recruitment and mortality of cougars in their Utah study area was 32%.

It appears that under moderate to heavy exploitation (30%-50% removal) Nevada lion populations have the recruitment capability of rapidly replacing annual losses.

Sex Ratios -- U.S. Fish and Wildlife Service and Nevada Department of Wildlife records for the period between 1954 and 1982 show that 83 litters containing 198 kittens had a sex composition of 89 females and 109 males (100 F; 125.5 M). The data clearly shows an unequal sex ratio, in favor of males; however, a large number of litters recorded by the U.S. Fish and Wildlife Service were not sexed and the data base to date may not be representative of true conditions.

Aging -- The terminology used for classifying mountain lion age groups has been confusing to say the least. The term kitten is commonly applied to young lions and in some instances this appellation is used until the youngster finally leaves its mother (approximately 2 years old). Under this connotation the kitten can be newborn, with obvious kitten-like characteristics, or an immature lion which, on superficial examination, cannot be differentiated from an adult -- a broad category indeed. Shaw (1980) not only uses the term kitten but also classified lions in the age group of 0-2 years as subadults. This probably can be attributed to "lion talk" between the professional hunter and the researcher, where they recognize a difference but have not defined it. Seidensticker (1973) related that "as a lion grows older, it passes through a series of relatively discrete behavioral stages: kitten, transient adult, resident adult." He also referred to small kittens and big kittens (over a year old). In this case behavioral stages and age groups could become confusing. Hornocker (1970) refers to kittens, juveniles and adults but offered no criteria for distinguishing them, other than calling a 1 year old a



A Mountain Lion Kitten at Less than 4 Months Showing Distinct Spotting.

kitten. Currier (1976) did set up a rudimentary classification for three age groups: kitten, adolescent and adult, but it is very generalized and there is some major overlap in criteria. The term yearling has also popped up in the literature and in lion discussions and could be interpreted as being interchangeable with kitten or subadult, but also has the connotation of distinguishing a large kitten from a small one. The need for some approach toward standardization of terminology and relating it to criteria has been evident for some time (Mountain Lion Workshop 1976).

When this study was initiated some broad criteria for the general classification of age groups was adopted. As the study progressed additional criteria, primarily relating to tooth eruption and growth, were incorporated into the key. Even now the distinction between the three proposed age groups (kittens, subadults and adults) often requires a subjective evaluation. However, the criteria presented in Table 5, if used, certainly will help eliminate some of the general age classification confusion.

A further refinement, for aging juveniles by months and adults by year, was explored through the use of tooth eruption sequences, growth, stain and wear. Sufficient data was not collected to be statistically sound, and initial ages had to be estimated; however, this information could be a starting point for additional research toward determining ages more accurately.

Teeth from 94 kittens and subadults were examined to develop the eruption

TABLE 5. CRITERIA FOR A GENERAL CLASSIFICATION OF MOUNTAIN LION AGE GROUPS.

KITTENS (0- 16 months)

- * 1. Body weight.
- 2. Pelage spotting; fading by 3rd or 4th month.
- 3. Still with mother.
- 4. Deciduous teeth present or permanent teeth erupting.
(See Table 6 for a guide to estimating kitten ages).
- 5. If all teeth are permanent then canines are not fully extended.
Canine length is less than 28 mm in males and 23 mm in females.

SUBADULT (17 - 23 months) - Has passed through juvenile period but not yet attained typical adult characteristics.

- * 1. Body weight.
- 2. Pelage spotting still present on insides of front legs.
- 3. Not sexually mature. Females not nursing (small teats and no areola).
- 4. May or may not be with mother.
- 5. Full extension of canines. Canines measure 28-31 mm in males and 23-25 mm in females.
- 6. Teeth ivory white in color, not stained.

ADULTS (24 months or over)

- * 1. Body weight.
- 2. Independent of mother.
- 3. No spotting on pelage or very faint.
- 4. Sexually mature. Evidence of nursing in females, large teats and presence of areola (may not be evident in young females just entering this age group).
- 5. Tooth wear and/or stain. (See Table 8 for a guide to estimating adult ages.)

* The following standards are based on weights from Table 1.

Kittens

Males - up to 123 lbs.

Females - up to 81 lbs.

Weight differences between kittens and subadults are obvious up through approximately 9 months. From this age on there can be an overlap and other criteria must be used in conjunction with weight.

Subadults

Males - 115-140 lbs.

Females - 79-105 lbs.

Adults

Males - 112-162 lbs.

Females 84-115 lbs.

TABLE 6. A GUIDE FOR ESTIMATING AGES OF MOUNTAIN LION KITTENS
BY TOOTH ERUPTION SEQUENCES.

Age (Months)	Sequence of Permanent Tooth Eruption
2	Complete set of deciduous teeth; permanent P^2 and M^1 erupted
3	Permanent incisors erupted
4	Upper canines and P^4 erupt
5	M_1 and lower canines erupt
6	P^3 erupts
7	P_4 erupts
8	P_3 erupts; upper canines 50-60% extended from gum lines (males: 16-18 mm, females: 12-14 mm)
9 & 10	P^4 , M_1 , and P^3 become fully extended
11 & 12	P_4 and P_3 fully extended; upper canines 70-80% extended (males: 20-22 mm, females: 15-17 mm)
13 & 14	Upper canines 80-90% extended (males: 24-27 mm, females: 19-21 mm)
15 & 16	Upper canines fully extended by 16th month (males: 28-31 mm, females: 23-25 mm)

TABLE 7. CRITERIA FOR ESTIMATING AGES OF ADULT MOUNTAIN LIONS.

2 YEARS OLD

1. Canines white, no staining.
2. No wear on incisors 1 and 2. Third incisor may show slight wear.
3. Tips of canines show little or no wear.

3 and 4 YEARS OLD

1. Canines lightly stained.
2. Slight wear on highest point of crown of third incisor. Area of wear 1-4 mm across.
3. Incisors 1 and 2 with little or no wear.
4. Tips of canines with little or no wear (2 mm or less).

5 and 6 YEARS OLD

1. Canines moderately stained.
2. Third incisor worn to within 1-4 mm of crest of incisors 1 and 2.
3. Incisors 1 and 2 have slight to moderate wear along crown.
4. Tips of canines with obvious wear (3-5 mm worn off).

7-9 YEARS OLD

1. Canines darkly stained.
2. Third incisor worn level with incisors 1 and 2 and to within 1-4 mm of gum line.
3. Tips of canines flattened to nearly rounded.
4. Dentine exposed on incisors.

10 + YEARS OLD

1. All incisors worn nearly to gum line, or missing.
2. Canines worn rounded to blunt, darkly stained.

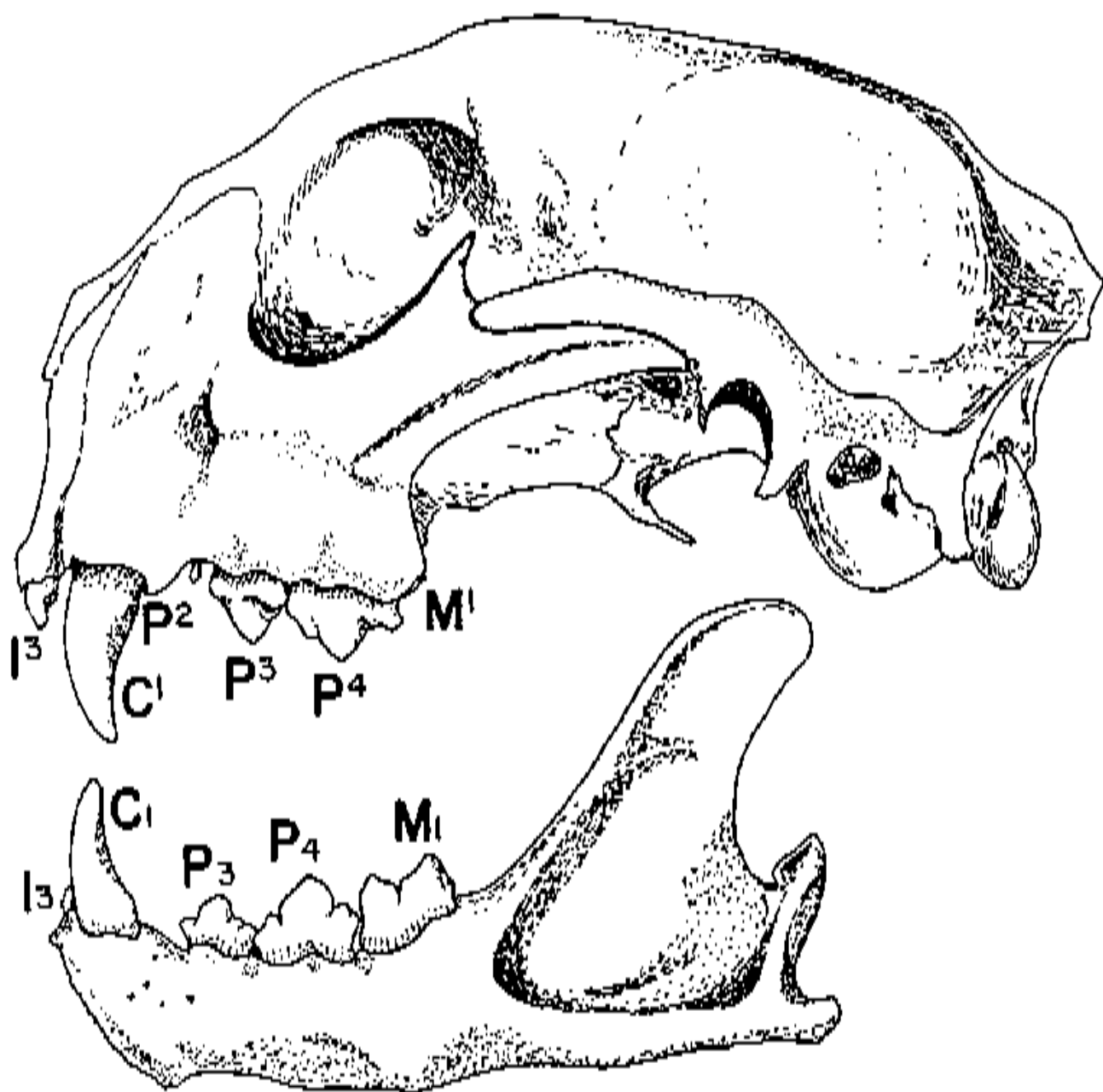


FIGURE 6 Lateral view of a mountain lion skull with letter/number designations for permanent dentition.
Drawing by M. Alderson.

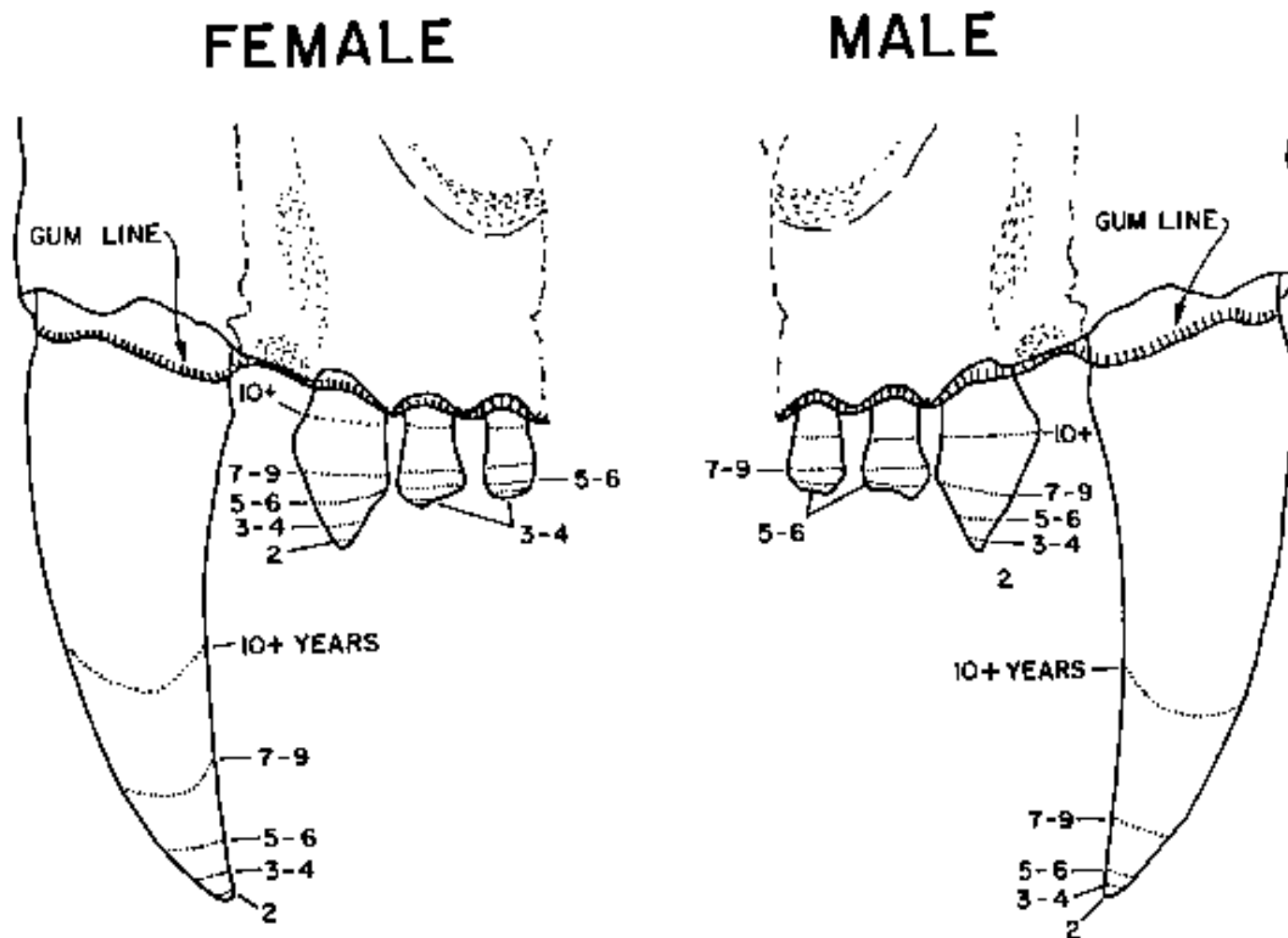


FIGURE 7 Frontal view of upper teeth of female and male mountain lions displaying relative wear by adult age classes.
Drawing by M. Alderson.

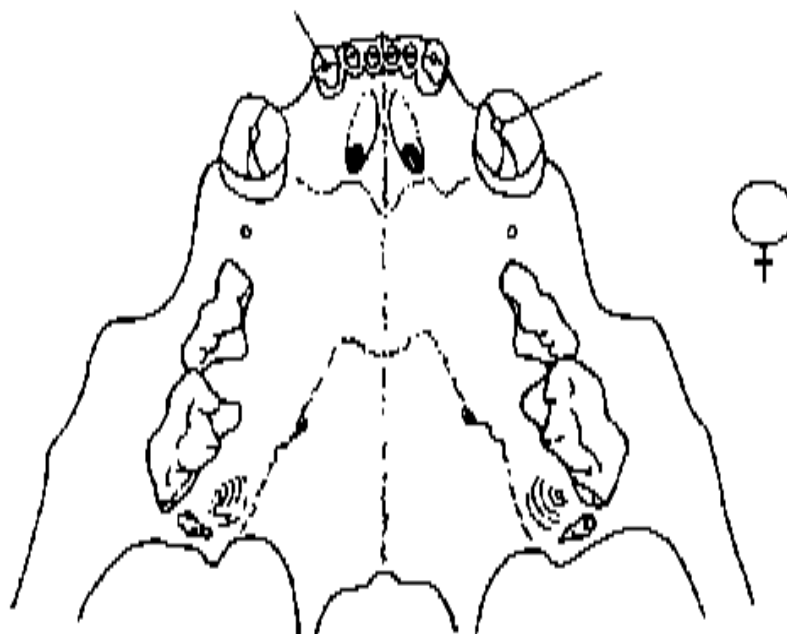


FIGURE 8 Ventral view of the upper dentition of a 3-4 year old female mountain lion showing wear points on apex of third incisor and canine teeth.
Drawing by M. Alderson

sequences and to formulate the aging guide shown in Table 6. Of this number 21 were kittens or subadults which had been captured, marked, their age estimated, and then released. When these animals moved into the adult age group they provided information concerning tooth stain and wear which was used to help develop Table 7. Figures 6, 7 and 8 illustrate permanent dentition and adult lion tooth wear patterns.

Although not shown in Table 7 there is some evidence available to show that there is differential wear on the canines and incisors of males versus females.

Weights -- Only limited data was collected on the weights of newborn kittens. Nine fetuses, judged to be in the last 2 weeks before birth, had a weight range of 0.77-1.17 pounds. Two kittens estimated to be 1-3 days of age weighed 1.06 and 1.17 pounds.

The weights of all captured lions are provided in Table 1. Based on 21 lions the adult males ranged from 112 to 162 pounds and had an average weight of 137 pounds. Thirteen adult females ranged from 84 to 115 pounds and averaged 98 pounds. The average weights recorded for lions in California was 105.8 pounds for males and 76.5 pounds for females; in Arizona, 114.5 pounds for males and 72.6 pounds for females; and in Utah, 136.9 pounds for males and 92.5 pounds for females (Sitton, 1977).

Movements

Dispersal of Juveniles -- Data was obtained from 8 family groups as to the approximate age of the kittens when they separated from their mothers. The range in ages was 10.5 months to 19 months with an average of 14 months. It was observed on several occasions that following separation from their mothers the young frequently remained in their home range for a time before finally dispersing.

To become established as part of the breeding population a newly independent mountain lion normally progresses through three phases:

- (1) Independent kitten or subadult -- upon leaving its mother.
- (2) Transient - when searching for a new home range.
- (3) Resident - upon establishment of a new home range.

This behavioral pattern is similar to that observed by Seidensticker, et al. 1973, with the important exception that Seidensticker called all transient and resident lions adults. In contrast, the data from this study shows that when using the age classification groups in Table 5 transients can be kittens, subadults or adults and residency can be established by subadults. Behavioral patterns do not necessarily establish the age of the lion.

The transient phase can be very limited, particularly with females, as was observed with lion number 13 who stayed in the mountain range of her birth, was bred at the approximate age of 24 months, and established a home range immediately adjacent to her mother's (number 14).

Documented movements recording the dispersal of 16 young mountain lions in the Ruby Mountains and vicinity are shown in Figure 9. Eleven of these lions stayed within the mountain range where trapped (and believed to have been born) and 8 left to become established in another mountain range. Travel routes were unknown for the lions that left their home range but it is presumed they sometimes had to cross wide, barren valleys to reach their new residence. Of the 8 males tracked only 2 remained in the mountain range where first captured and presumably born. Females generally did not move as far as males (averaging 18 miles as compared to 31 miles for males) and they tended to remain in the mountain range where they appeared to have been born. Extreme movements of 36 miles for a female and 57 miles for a male lion were noted. The initial dispersal of independent kittens or subadults from their home ranges appears to be an important characteristic which contributes towards maintaining viable populations throughout their habitat. For example, in areas where mountain lions are heavily exploited (see Mortalities), such as in the Ruby Mountains, the influx of transient lions is essential in order to maintain a population.

Home Range -- Sufficient data was obtained from radio-tracking, recaptures and track sightings to at least partially construct the home range size of 13 lions. This data covered a time period which ranged from 15-77 months per lion and involved anywhere from 17-116 locations per lion (Table 8). Male lions had home ranges three times as large as females averaging 224 square miles as compared to 69.5 square miles (Figures 10-22). It is believed that smaller home ranges in the Ruby Mountains were due to higher deer densities compared with the other mountain ranges. Females occupying the South Ruby portion had considerably larger estimated home ranges than females living in higher deer density habitat in the North Rubies.

Home range overlap was documented for both adult females and adult males; however, sufficient long-term data was not collected to determine if resident lions were being recorded in all cases. In fact, the high lion turnover rate in the study area made it very difficult to distinguish between transients and residents, and in determining resident home ranges some judgements had to be made. Male home ranges either partially or completely overlapped those of neighboring adult females. Less overlap was found between members of the same sex, although on occasion there was considerable overlap during certain seasons. This occurred most frequently during the middle of winter when both deer and lions were concentrated and again during the spring and early summer (primary breeding season).

Both adult males and females tended to use the same areas month after month and year after year within their home ranges. This behavior was similar to that described by Hornocker (1969) and Seidensticker et al. (1973) in Idaho. However, there were some differences between characteristics recorded in Idaho lion populations and those observed in Nevada: (1) males were observed to fight and were not generally tolerant of each other in regard to intrusions into their home ranges, and (2) there was no obvious differences, in regard to home range size, between unexploited and exploited lion populations.

Seasonal Movements -- With the advent of winter snows in late fall the deer move to lower elevations or migrate to traditional winter ranges. The mountain lion normally follows, but may go to the wintering grounds of another

herd. In doing so there may be a movement to a different mountain range and long distances can be traversed (Figures 12 and 13).

Lions usually avoided north-facing slopes in the winter when snow was deep and crossed from one drainage to another by descending to the mouth of the canyon. South-facing slopes received the most use because of less snow and the presence of greater numbers of deer. Snow, however, did not always deter the mountain lion, and they have been noted to cross over mountain passes covered with 3 to 5 feet of snow with little difficulty.

During the summer months the lions' movements were not restricted by environmental factors. North-facing slopes, which were cooler and had more vegetation than south-facing slopes, were preferred. The vegetative cover in the Ruby Mountains is sparse above 9,000 feet (subalpine zone) and lions tended to use these areas much less than the lower elevations where aspen, mountain mahogany and taller shrubs were prevalent. The highest elevation at which a lion was located was 10,400 feet and the lowest was 6,100 feet. The elevational zone of highest use by lions in eastern and central Nevada is between 6,500 and 8,500 feet where deer and other prey species are most abundant.

Movements of Deer in Relation to Lions -- On one occasion deer were observed fleeing in response to a lion's presence, while in other instances they tended to either ignore the lion or they appeared only slightly nervous, often looking in the direction of the lion. Most of these observations were made when deer were in open areas which lacked suitable stalking cover for lions. In one instance several deer were seen to wander into a dense grove of mahogany trees where a lion was present. Within a few minutes the deer walked out of the trees, seemed to be uneasy and frequently looked back in the direction of the lion but did not run. On another occasion several deer were noted to be fearful of a nearby lion and they ran approximately 300-400 yards until they reached an open hillside where they stopped and began to feed.

Food Habits -- The most comprehensive study on food habits of the mountain lions in Nevada was made by Robinette, et al. (1959). Although the emphasis in this study was not directed toward food habits, data was collected when possible. These findings showed that mountain lions ate a variety of prey species ranging in size from wood rats (Neotoma spp.) to elk (Cervus canadensis). The staple food was the mule deer. In some areas feral horses rated second in importance if deer densities were low. In the Ruby Mountains, beaver (Castor canadensis) were a favorite food source and were readily available. Another prey species not listed, but of local importance in southern Nevada, was the bighorn sheep (Ovis canadensis).

Two hundred lion scats were examined during the ten years of field effort and the following food items (listed in approximate order of importance) were found: mule deer, porcupine (Erithizon dorsatum), cottontail rabbit (Sylvilagus spp.), jackrabbit (Lepus californicus), feral horse, beaver, domestic sheep, wood rat, blue grouse (Dendragapus obscurus), coyote (Canis latrans), bobcat (Lynx rufus), unknown rodents, and elk.

In addition to scats, the contents of 14 lion stomachs were examined. This information is presented in Table 9.

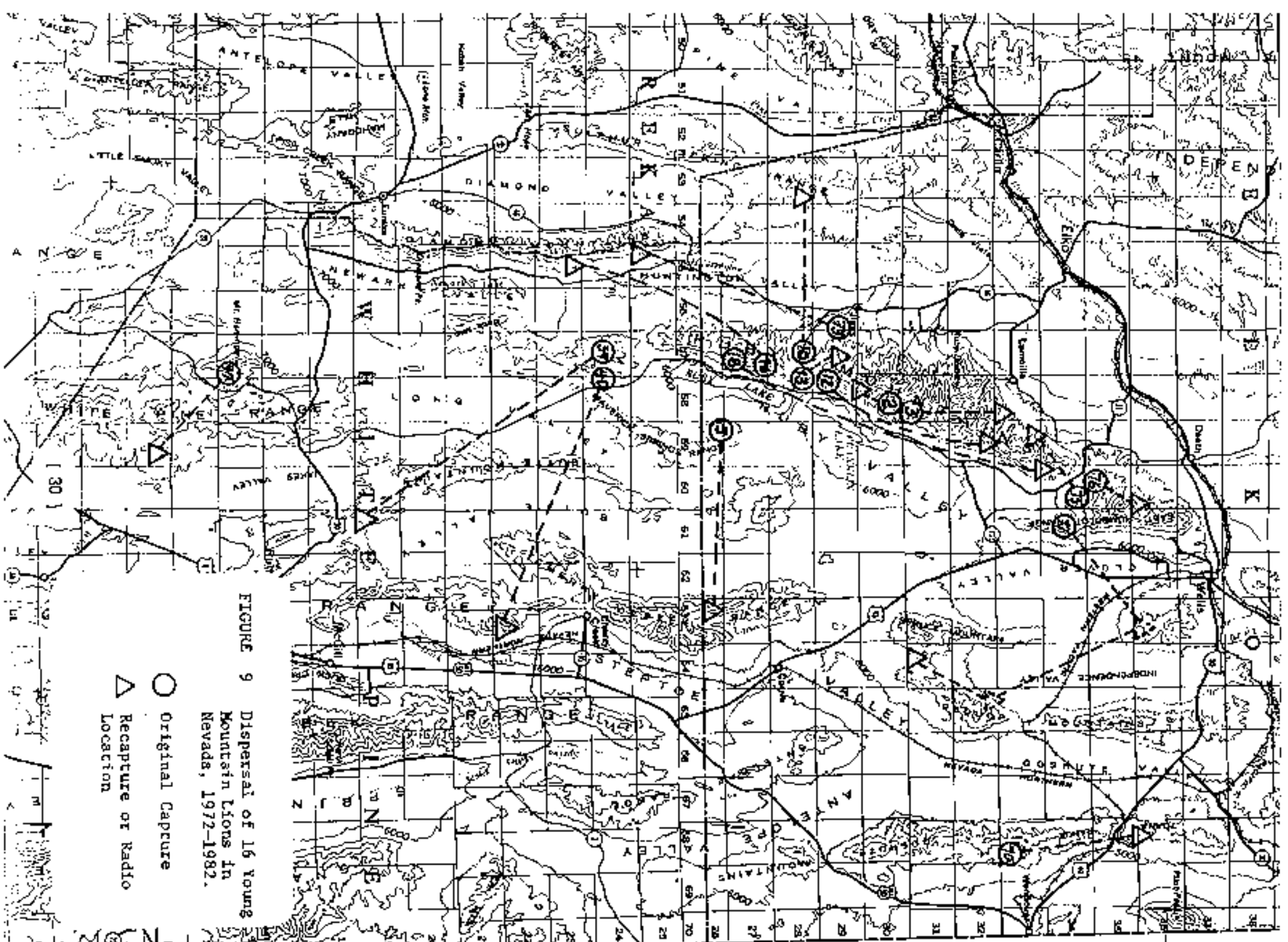


FIGURE 9 Dispersal of 16 Young Mountain Lions in Nevada, 1972-1982.

- Original Capture
- △ Recapture or Radio Location

Radio locations and confirmed sightings and track identification

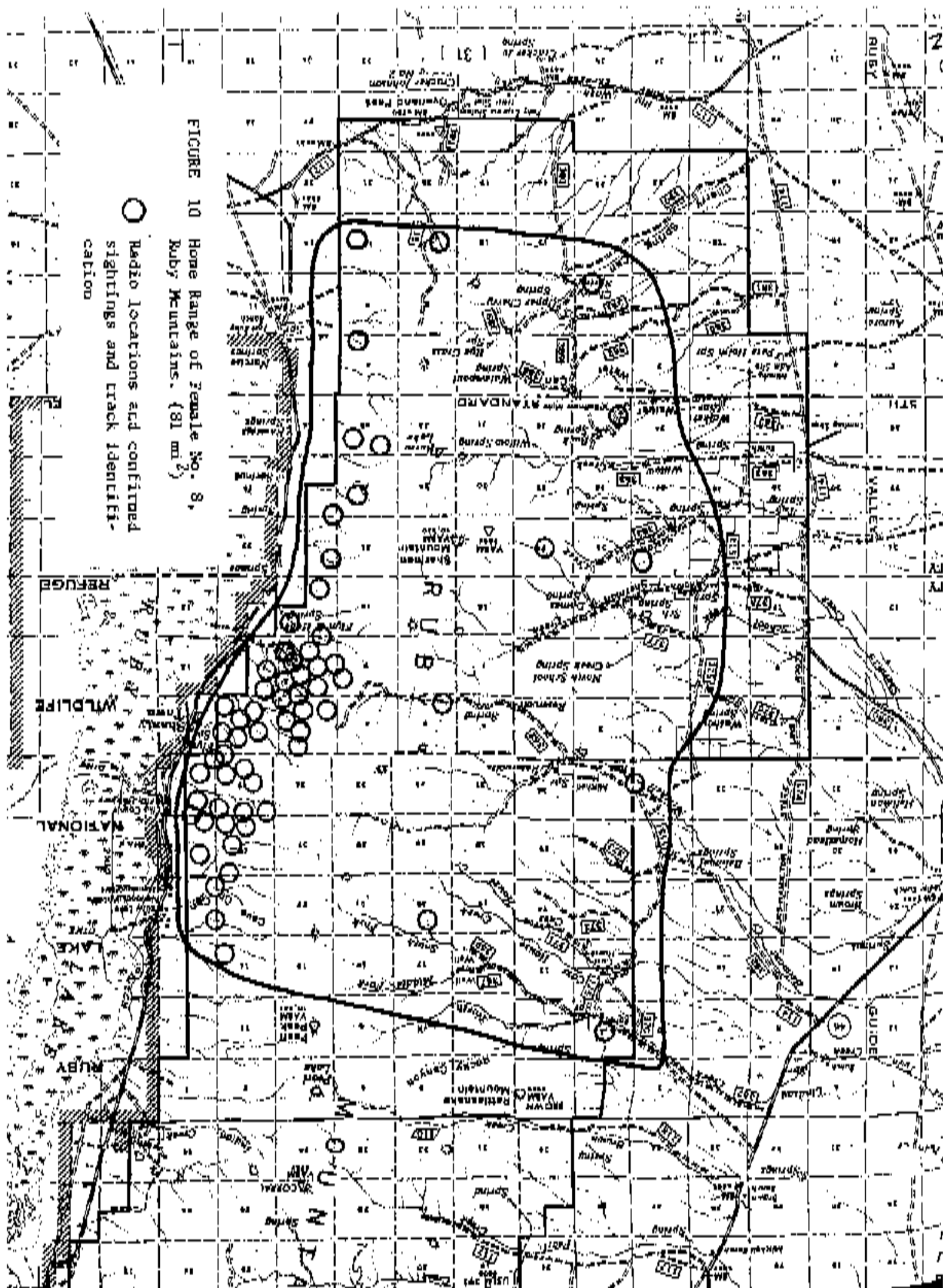
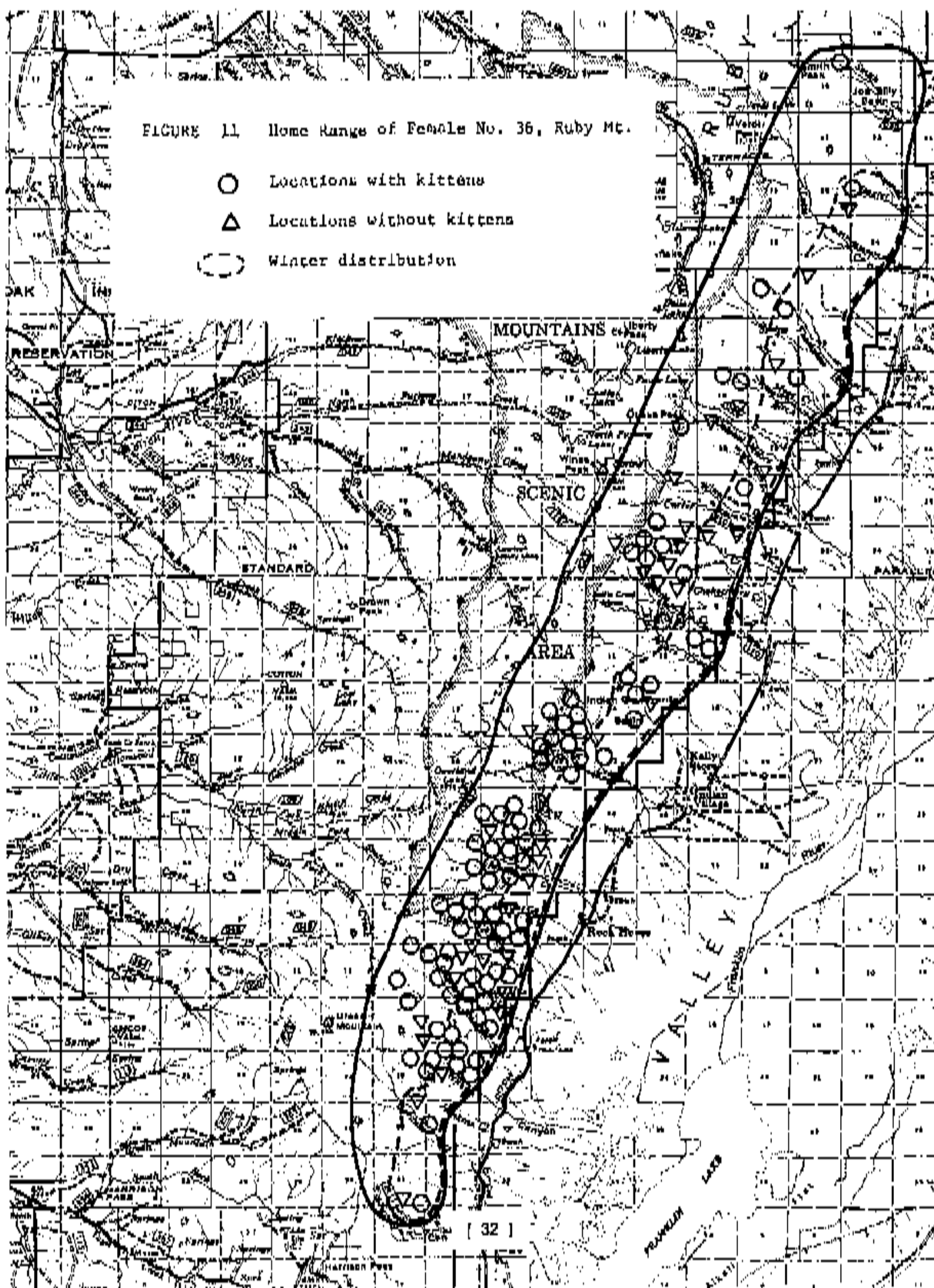
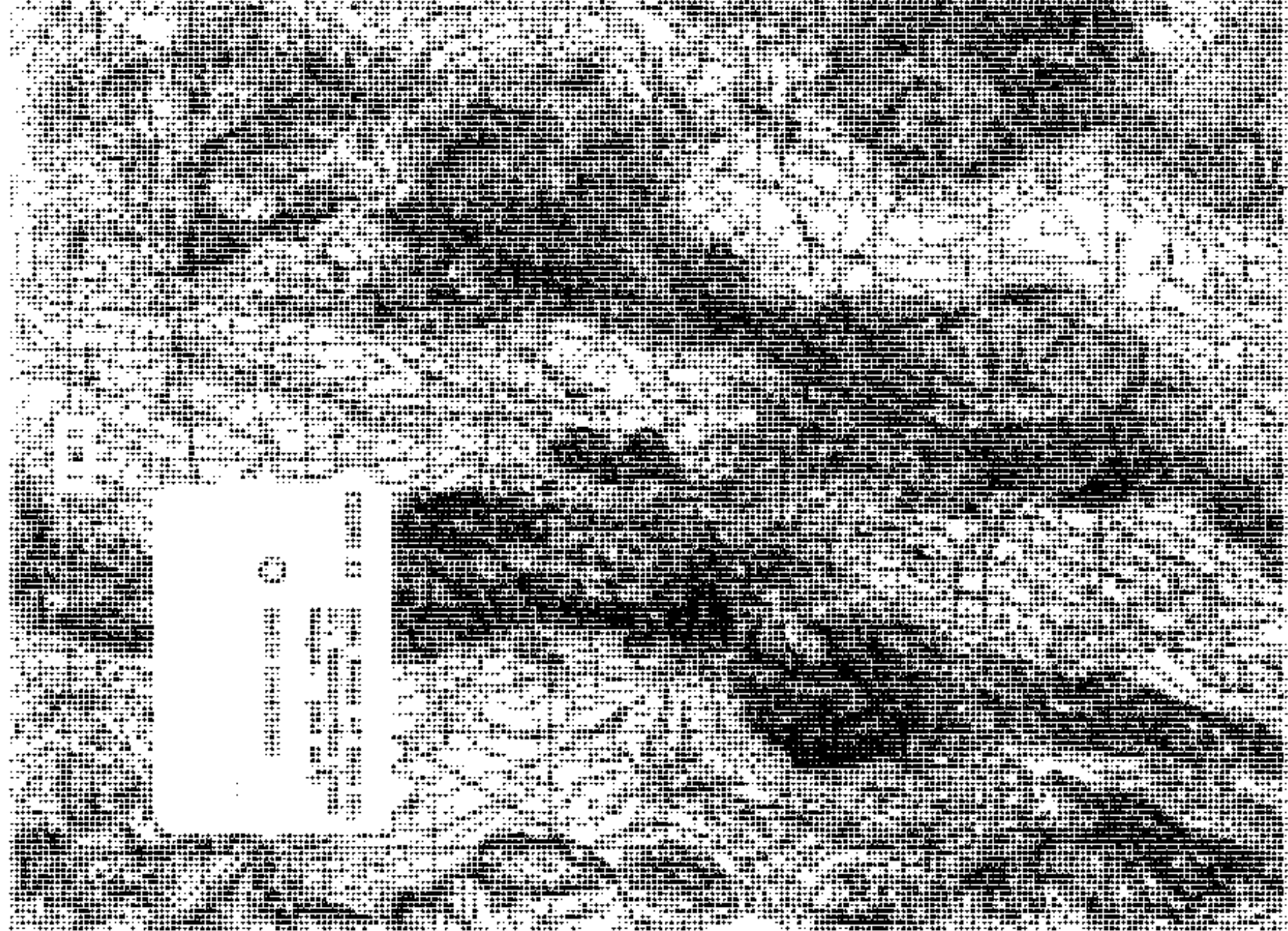


FIGURE 11 Home Range of Female No. 36, Ruby Mt.

- Locations with kittens
- △ Locations without kittens
- (---) Winter distribution



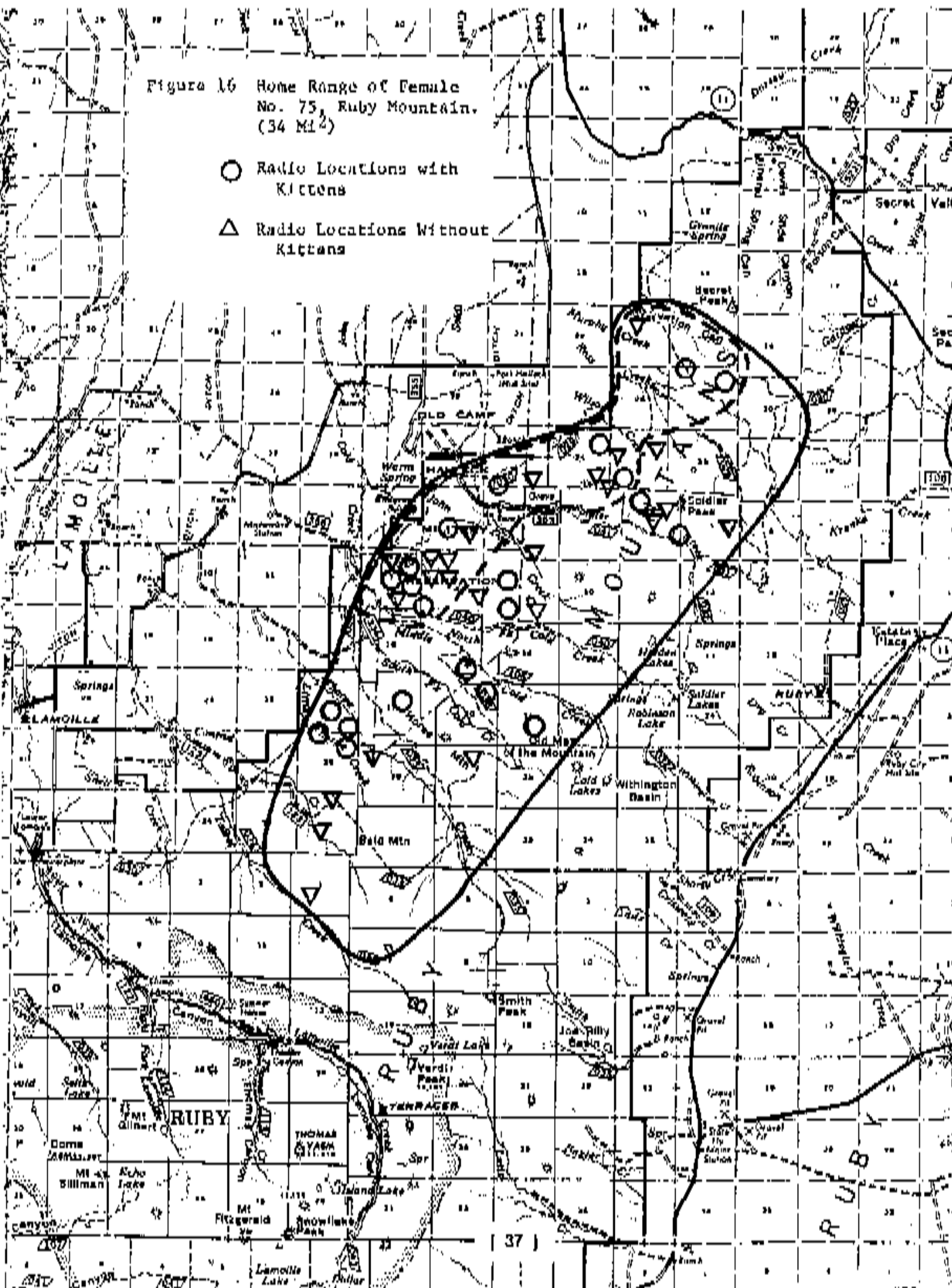
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Figure 16 Home Range of Female
No. 75, Ruby Mountain.
(34 Mi²)

- Radio Locations with Kittens
△ Radio Locations Without Kittens



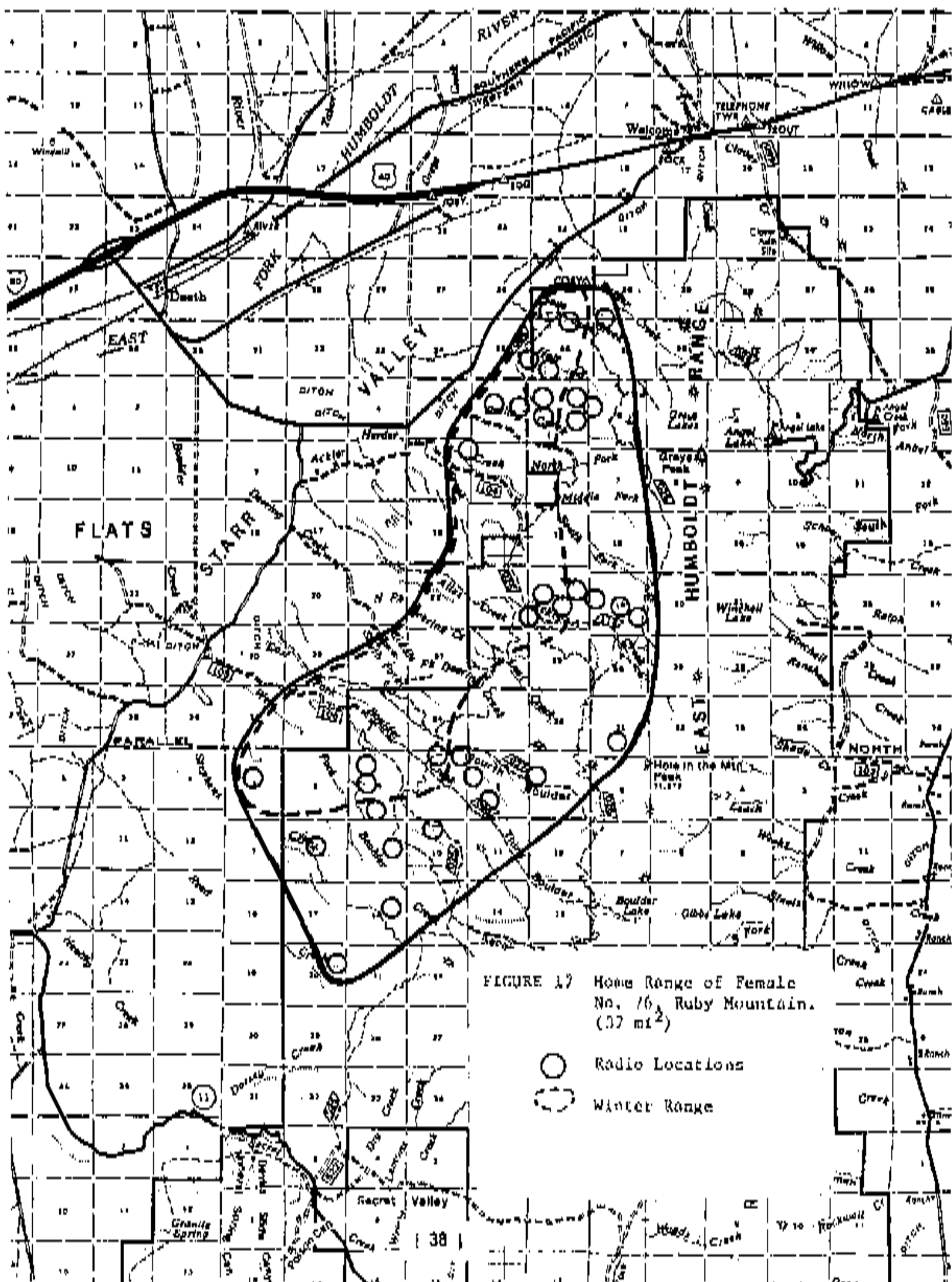
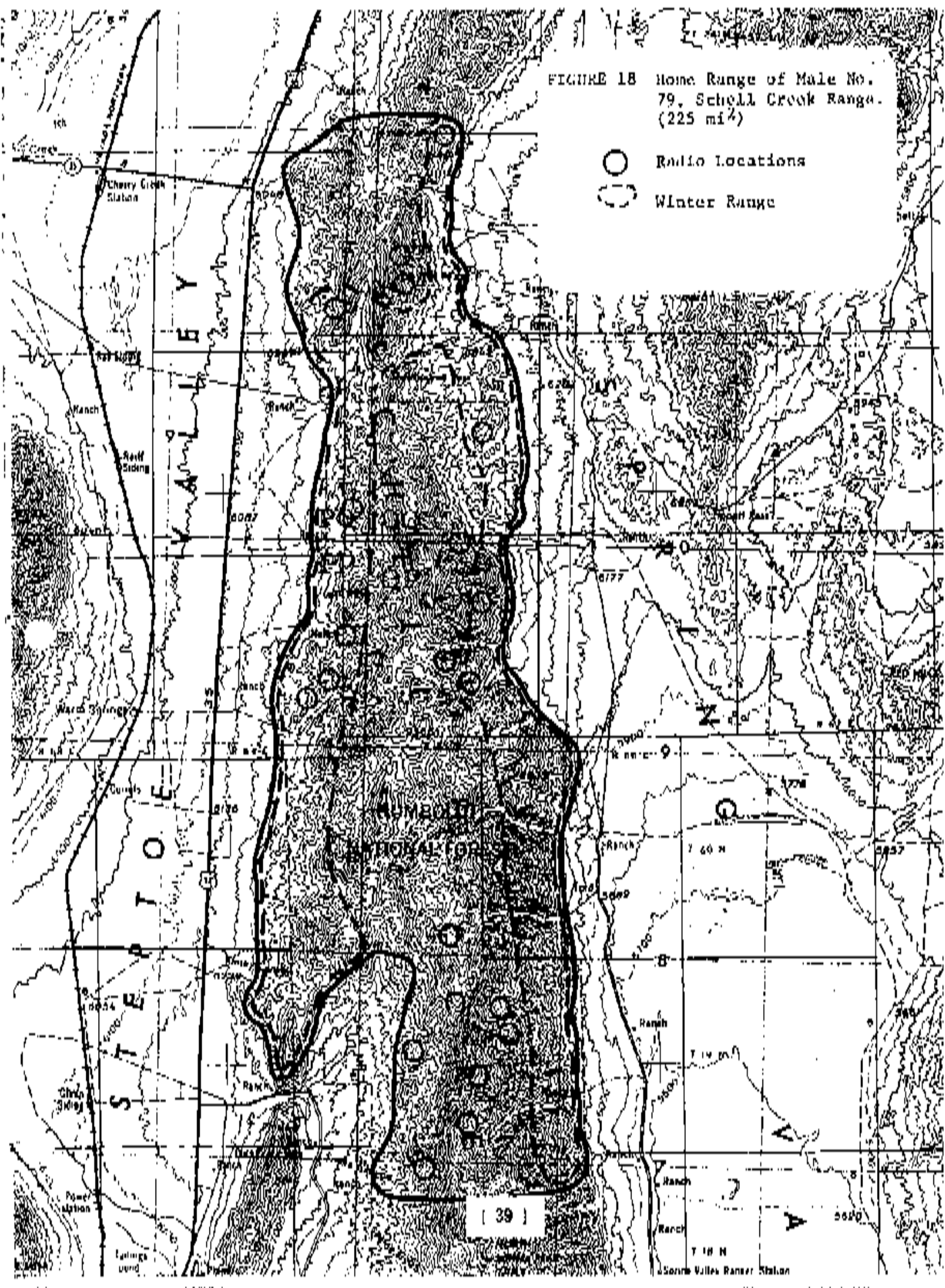


FIGURE 17 Home Range of Female No. 16, Ruby Mountain. (37 mi²)

- Radio Locations
- Winter Range

FIGURE 18 Home Range of Male No. 79, Schell Creek Range. (225 mi²)

- Radio Locations
- Winter Range



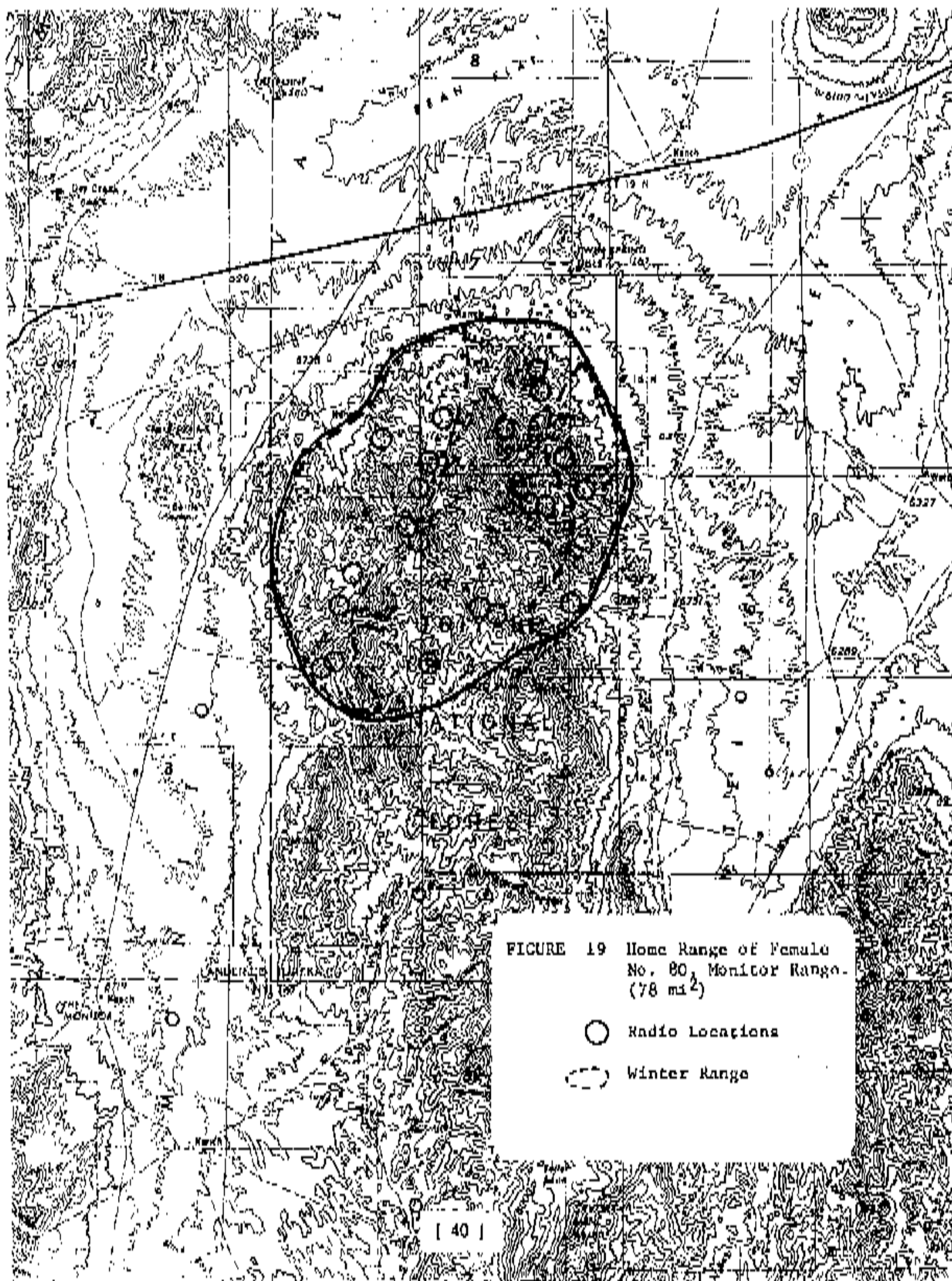
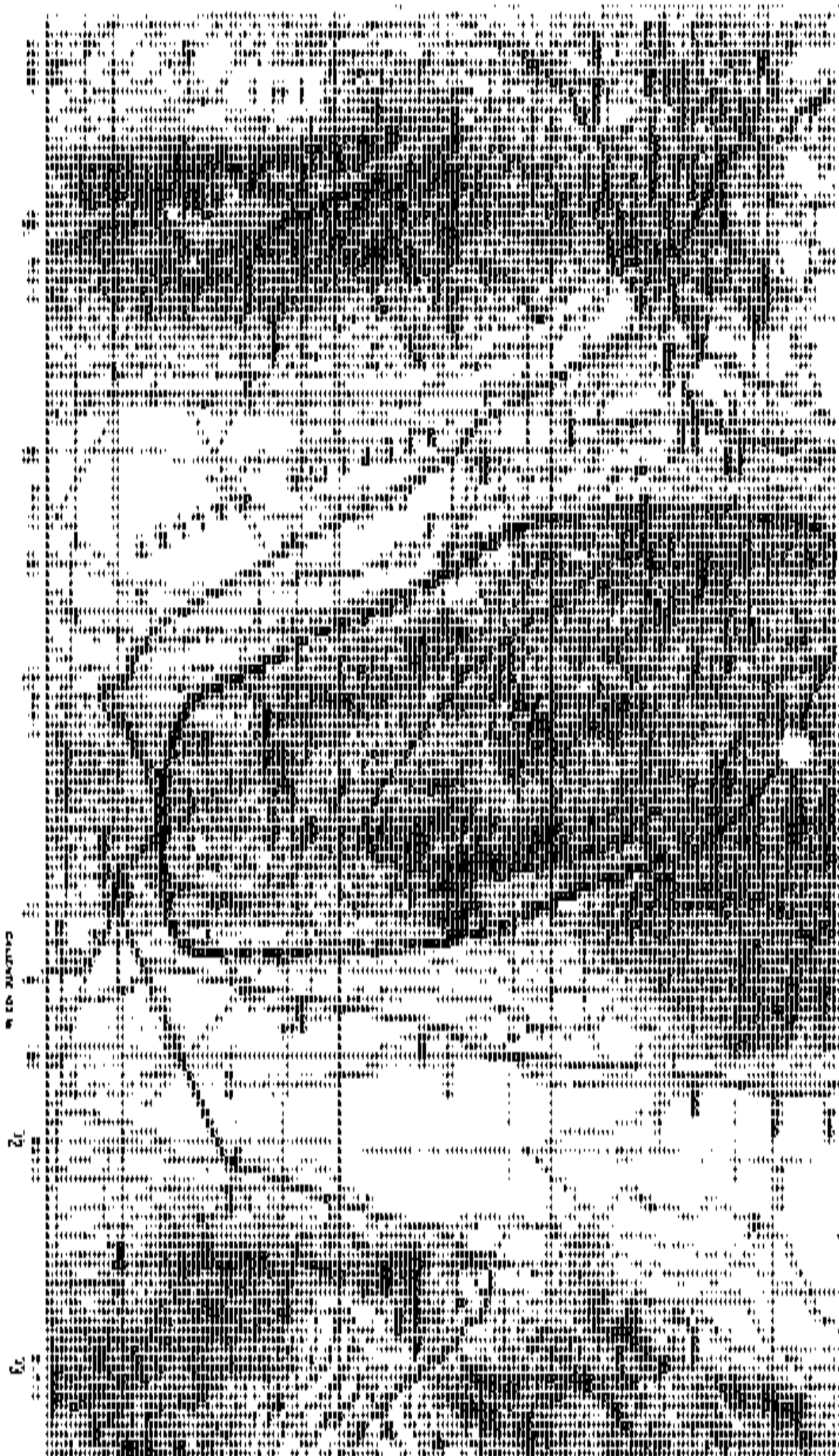


FIGURE 20
Home Range of Female No. 82, Schell Creek Range
(130 mi²)

○ Radio Locations
Winter Range



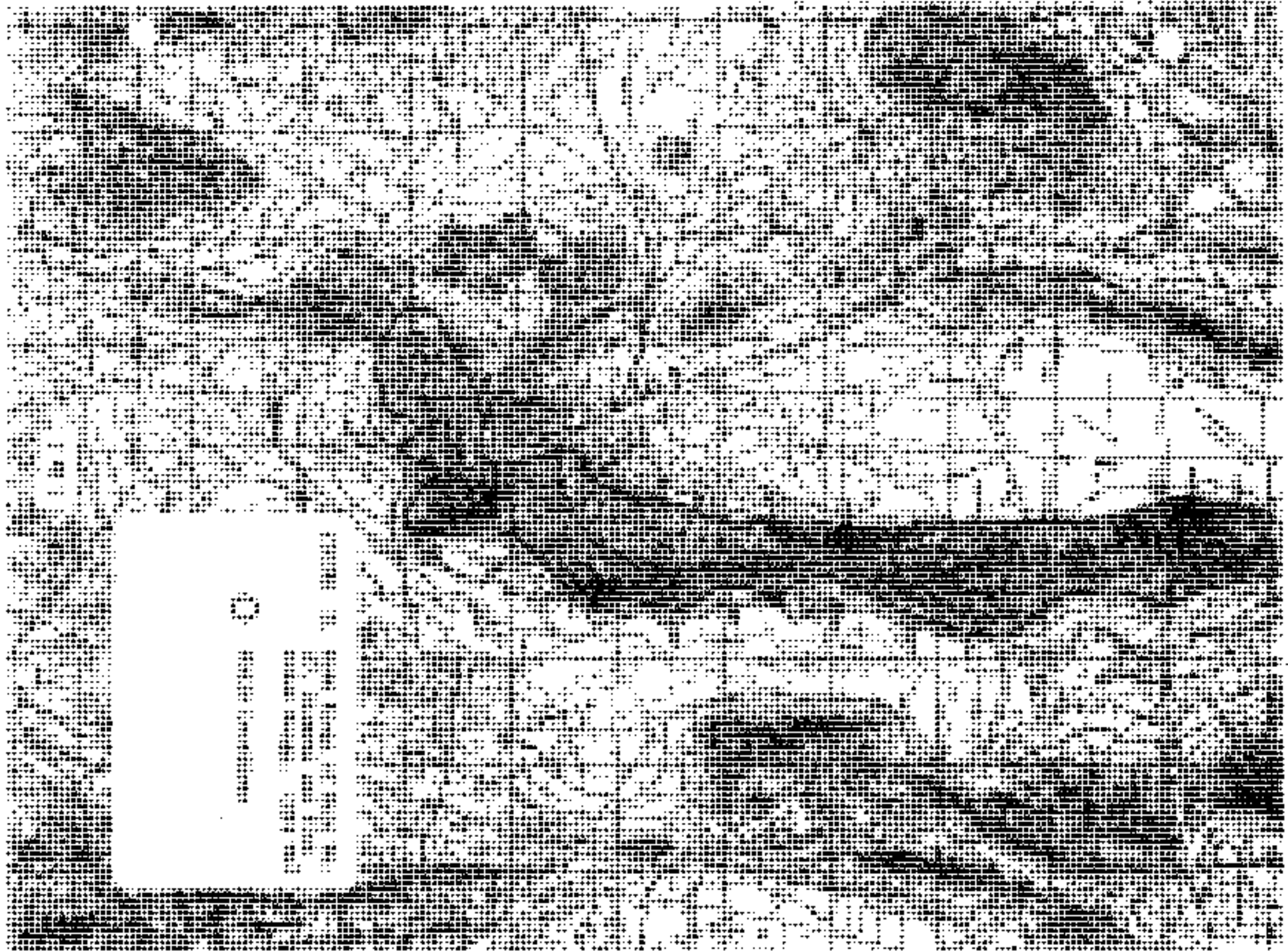


FIGURE 22 Home Range of Male No. 88, Ruby Mountain. (210 mi²)

○ Radio Locations

TABLE 8. NUMBER OF RECORDED LOCATIONS AND HOME RANGE SIZE OF
13 ADULT MOUNTAIN LIONS IN NEVADA, 1972-82.

<u>Lion No.</u>	<u>Sex</u>	<u>Initial Age</u>	<u>Mountain Range</u>	<u>No. of Radio Locations</u>	<u>Home Range Size (mi²)</u>	<u>Period Covered</u>
8	F	3 yr.	Ruby	54	81	1/73-1/75
36	F	13 mo.	Ruby	116	57	3/78-2/82
50	M	10 yr.	Monitor-Antelope	36	193	1/78-8/80
57	M	6 yr.	Monitor-Hot Creek	16	265	2/78-8/79
58	M	3 yr.	Ruby	43	207	3/78-7/79
67	M	2 yr.	White Pine	27	217	1/79-12/81
75	F	9 mo.	Ruby	62	34	5/79-12/81
76	F	9 mo.	Ruby	46	37	5/79-9/81
79	M	6 yr.	Schell Creek	21	225	1/80-12/81
80	F	9 yr.	Monitor	21	78	1/80-12/81
82	F	3 yr.	Schell Creek	21	130	2/80-12/81
87	M	10 yr.	Diamond-Fish Creek	17	253	5/80-6/82
88	M	6 yr.	Ruby	28	210	4/80-7/81

TABLE 9. ANALYSIS OF 14 MOUNTAIN LION STOMACHS COLLECTED IN EASTERN NEVADA.

<u>Food Item</u>	<u>Number of Stomachs</u>	<u>Percent Occurrence</u>	<u>Percent Volume</u>
Mule Deer	9	64.3	52.0
Porcupine	4	28.5	18.8
Domestic Sheep	2	14.3	15.5
Jackrabbit	1	7.1	2.3
Bobcat	1	7.1	3.8
Mountain Lion	1	7.1	3.8
Coyote	1	7.1	3.8
			<hr/> 100.0

Mortalities

Livestock Depredations -- Since 1916 the U.S. Fish and Wildlife Service has attempted to control mountain lion populations in those states where livestock depredations were considered a problem. The Service still maintains this posture in Nevada, although they recognize that mountain lions are resident wildlife, classified as game animals, and that the State has authority for overall management of the species. However, the Service, under the terms of a cooperative agreement, has the authority for control of mountain lion depredations. This agreement states that mountain lions may be taken:

1. When they are causing or are about to cause damage to personal property. This will be coordinated with the respective State wildlife agency on a case-by-case basis; or
2. During nongrazing seasons in specific geographical areas where they have been causing damage and could not be captured during the depredation season and continuing damage is expected during the ensuing grazing season. This post-grazing season corrective control on mountain lions may be done after consultation with and concurrence of the respective State wildlife agency on a case-by-case basis; or
3. Under preventive control measures in a historically, serious, documented depredation area. Preventive control may be authorized by the Area Manager when previous steps have failed and after consultation with and concurrence of the State wildlife agency.

As a compliment to this cooperative agreement, and also as a guide for the Department, the Nevada Department of Wildlife Board of Commissioners has adopted Commission Policy No. 14 which relates to Animal Damage Control. This policy is attached in Appendix A.

SHEEP - In Nevada, mountain lion depredations upon domestic sheep has always been a controversial issue. Since domestic sheep summer use areas often coincide with occupied mountain lion habitat most depredations occur during this time. After the lambs are sold in the fall the adult and replacement ewes are usually trucked or trailed to winter ranges. Some bands of sheep in eastern Nevada are trailed as far as 400 miles (round trip) to and from winter and summer ranges. The winter sheep bands are not normally preyed upon by mountain lions to any significant degree. However, if sheep are allowed to move into tree cover or near rock outcrops, depredations are likely to occur.

The pregnant ewes are trailed or transported from the winter ranges to lambing grounds which are used during the spring months until higher elevations are free of snow and the forage has made its initial growth. These staging areas are located on public (B.L.M.) or occasionally private lands. Lion depredations on lambing grounds, although not normally as severe as on summer ranges, do occur on occasion.



Fifteen lambs killed by a mountain lion overnight.
The carcasses were gathered together to take the photo.

Although the number of sheep grazed in Nevada 20 or 30 years ago is not accurately known, it has been estimated that there were 3 to 4 times as many then as today. As recently as 1978 there was an estimated 80,000-90,000 adult sheep utilizing summer ranges in eastern Nevada. Total numbers, including lambs, were approximately 160,000-180,000 head. Since 1980 the summer ranges in eastern and central Nevada have been stocked with approximately 130,000-150,000 head of sheep (adults and lambs) per year. Table 10 lists the mountain ranges (or geographic areas) in these summer ranges and also depicts the number of domestic sheep and estimated lion populations for each area. Assuming these estimates are reasonable there is a ratio of one lion for each 1,346 sheep on these summer ranges.

The confirmed sheep losses to lions in eastern and central Nevada for the years 1978-81 are as follows:

<u>YEAR</u>	<u>MINIMUM NUMBER SHEEP LOST</u>	<u>APPROXIMATE DOLLAR VALUE</u>
1978	230	\$16,100
1979	231	14,300
1980	380	28,700
1981	234	16,600

In some cases unconfirmed kills (those reported by herders but not verified) occurred in addition to the confirmed losses. However, these losses are believed to be less than 20% of the confirmed losses. Even if the number of sheep killed by lions was double the confirmed loss the percentage would be small compared to the total number of sheep grazed. For example, in 1982 (Table 10) an estimated 140,000 sheep were grazed in eastern and part of central Nevada. If lions killed 500 sheep the loss would amount to only 0.35% of the total number grazed. Even though total losses are not significant to the livestock industry as a whole, impacts to an individual operator are, at times, quite significant. For example, in 1978 one operator in the Ruby Mountains lost sheep valued at \$6,100 during a 3-month period and another operator, in the Schell Creek Range, sustained losses of \$8,000 during the same year.

CATTLE AND HORSES - For some unexplained reason cattle are not preyed upon by lions in Nevada to a significant degree. Both lions and cattle use the same areas during the summer months. Cattle are as available or even more so than are domestic sheep. The basic difference between cattle and sheep operations is the sheep are herded in large dense groups while cattle are allowed to roam individually within an allotted area. Cattle can become somewhat concentrated at times when they must congregate around a water supply or along a stream where succulent vegetation is available. The large size of cattle may preclude some attacks by lions but calves usually weigh less than 400 pounds and can easily be killed by an adult lion. Counts which are made when cattle are turned out in the spring and again when rounded up in the fall show losses from all causes are small. This indicates that lion depredations on cattle in Nevada is probably not significant in most areas.

Occasionally there are reports of lions attacking, injuring or killing domestic horses. Since most horses are kept within the confines of a corral or fenced pasture and away from lion habitat, depredations are infrequent.

TABLE 10. SUMMER USE AREAS FOR DOMESTIC SHEEP, AND MOUNTAIN LION POPULATION ESTIMATES IN EASTERN AND CENTRAL NEVADA, 1982.

<u>Mountain Range</u>	<u>Number of Domestic Sheep¹</u>	<u>Estimated Number of Adult Lions Present²</u>
Jarbridge, Copper Basin, Tennessee Mountain	25,000	14
Independence, Bull Run	17,000	9
Stag Mountain	1,000	0
Ruby Mountains	22,000	20
Simpson Park	4,000	7
Roberts Mountain	10,000	4
Diamond Mountains	6,000	7
Butte Mountains	6,000	3
Cherry Creek	6,000	7
North Egan-Ward Mountain	12,000	10
North Schell Creek	22,000	12
Antelope	1,000	2
Kern Mountain	4,000	3
Snake (White Pine County)	4,000	6
	<hr/>	<hr/>
TOTALS	140,000	104

¹In most cases the number of sheep includes lambs, calculated at 1 lamb per each adult ewe. Some bands, e.g., Stag Mountain, are dry ewes.

²See population section for information on arriving at lion population estimates.

Depredation Harvest Reports

The U.S. Fish and Wildlife Service first began keeping records of the number of lions taken by government trappers and hunters in 1917 (Table 11). The sex of lions killed was recorded for the years 1917-1956 and again from 1969-1981. More males (527) were taken than females (438) with a ratio of 100 F : 120 M. During 1917-1968 many lions were removed in anticipation of future problems and the lion hunters were particularly active from 1956 through 1961. This preventative treatment resulted in lions being killed that were not responsible for depredations. In recent years (1969-1981) most of the lions which were harvested were known to be killing sheep and this was confirmed by examination of stomach contents.

Lion Mortalities in Eastern Nevada

The highest deer populations, the greatest number of lions, and the heaviest use of lion habitat by domestic sheep all center in eastern Nevada. Furthermore, eastern Nevada has historically been one of the better lion sport hunting areas and, consequently, became a favorite area of guides and their clientele. It is no wonder then that most conflicts revolving around the mountain lion occur in this portion of the state.

In analyzing data from the Ruby Mountains, the Cherry Creek-Egan area, and the Schell Creek Range, all of which have a long history of domestic sheep depredations, it was found that there were 146 documented lion mortalities during the period of 1972-81 (Table 12). Of this number 61 (41.8%) were directly associated with domestic sheep depredations.

From 1969-1982, when both sport hunting and depredation harvest have been recorded, there has been 645 lions killed for sport and 272 for depredations statewide (Table 13). The depredating lion harvest of less than 30% clearly shows that on a statewide basis the sheep depredation problem is not nearly as serious as in the study area and again demonstrates the conflict that arises from placing sheep in lion country. Over a similar period of time (1972-82) depredating lions comprised 54% of the mortality recorded from the 97 lions which were marked for this study (Table 14). So once again it becomes apparent that lions and sheep do not mix well. However, an important point to recognize is that the reverse side of the coin shows that there are many lions in the State that are not involved in depredations and that the present agreement between the Department of Wildlife and the U.S. Fish and Wildlife Service concerning livestock depredations, and restricting lion kills to the offending animal, is a great advancement in proper lion management.

Sport Harvest

The lion's classification was changed by regulation from unprotected (predator) to game animal in 1965. The initial impact of this classification was the requirement of a valid hunting license to hunt mountain lion and some restriction in the method of taking. This provision precluded the taking of lions at any time other than from sunrise to sunset and also defined legal weapons as shotgun, rifle, or bow and arrow. The season was defined as either sex, year-round and no limit was set nor was a tag required.

TABLE 11. U.S. FISH AND WILDLIFE SERVICE MOUNTAIN LION REMOVAL
IN NEVADA, 1917-81.

<u>Fiscal Year</u>	<u>Female</u>	<u>Male</u>	<u>Sex Unknown</u>	<u>Total</u>
1917	5	3	--	8
1918	2	3	--	5
1919	3	3	--	6
1920	1	1	--	2
1921	1	2	--	3
1922	2	0	--	2
1923	0	0	--	0
1924	0	3	--	3
1925	1	3	--	4
1926	1	0	--	1
1927	1	1	--	2
1928	2	3	--	5
1929	3	0	--	3
1930	1	1	--	2
1931	2	2	--	4
1932	0	0	--	0
1933	2	0	--	2
1934	0	0	--	0
1935	0	0	--	0
1936	0	0	--	0
1937	0	0	--	0
1938	2	1	--	3
1939	6	2	--	8
1940	3	7	--	10
1941	1	4	--	5
1942	3	7	--	10
1943	3	1	--	4
1944	1	2	--	3
1945	1	0	--	1
1946	3	3	--	6
1947	0	2	--	2
1948	3	2	--	5
1949	2	3	--	5
1950	23	31	--	54
1951	33	44	--	77
1952	27	31	--	58
1953	30	36	--	66
1954	38	43	--	81
1955	52	40	--	92
1956	75	80	--	155
1957	--	--	116	116
1958	--	--	181	181
1959	--	--	108	108
1960	--	--	133	133

TABLE 11. U.S. FISH AND WILDLIFE SERVICE MOUNTAIN LION REMOVAL
IN NEVADA, 1917-81. (cont.)

<u>Fiscal Year</u>	<u>Female</u>	<u>Male</u>	<u>Sex Unknown</u>	<u>Total</u>
1961	--	--	116	116
1962	--	--	69	69
1963	--	--	87	87
1964	--	--	97	97
1965	--	--	99	99
1966	--	--	50	50
1967	--	--	51	51
1968	--	--	70	70
1969	19	28	28	61
1970	9	11	26	46
1971	10	8	2	20
1972	5	8	1	14
1973	7	4	0	11
1974	4	8	0	12
1975	10	10	0	20
1976	5	14	0	19
1977	7	10	1	18
1978	7	17	0	24
1979	8	16	0	24
1980	11	12	0	23
1981	3	17	0	20
	<hr/>	<hr/>	<hr/>	<hr/>
TOTALS	438	527	1,221	2,186

TABLE 12. LION MORTALITIES FROM 3 MOUNTAIN RANGES IN EASTERN NEVADA
CONTAINING DOMESTIC SHEEP, 1972-81.

<u>Mountain Range</u>	<u>No. Sheep Killed¹</u>	<u>Avg. Kill/ Incident</u>	<u>No. Lions Removed on Depredations</u>			<u>No. Lions Removed by Hunters & Others</u>		
			<u>F</u>	<u>M</u>	<u>Total</u>	<u>F</u>	<u>M</u>	<u>Total</u>
Ruby Mountains	205	10.25	8	12	20	8	16	24
Cherry Creek- Egan Range	294	9.19	10	22	32	10	11	21
Schell Creek	305	9.84	1	8	9	19	21	40
	—	—	—	—	—	—	—	—
TOTALS	804	9.76	19	42	61	37	48	85

¹Number of sheep killed includes only those sheep found and confirmed by District Field Assistants (trappers) or lion hunters.

TABLE 13. STATEWIDE SPORT AND DEPREDATION HARVEST FY 1970 THROUGH 1982.

<u>Year</u>	<u>Taggs</u>	<u>Sport Harvest</u>	<u>Depredation Harvest</u>	<u>Total Harvest</u>
1969-70	436	42	47	89
1970-71	377	55	20	75
1971-72	259	43	20	63
1972-73	363	76	14	90
1973-74	428	91	11	102
1974-75	327	87	12	99
1975-76	261	54	20	74
1976-77	106	10	19	29
1977-78	145	22	18	40
1978-79	181	26	24	50
1979-80	272	33	24	57
1980-81	374	39	23	62
1981-82	459	67	20	89
		645 (70.4%)	272 (29.6%)	917

TABLE 14. CAUSE OF 48 MORTALITIES FROM A MARKED SAMPLE OF 97 MOUNTAIN LIONS IN NEVADA, 1972-82.

<u>Cause of Mortality</u>	<u>Sex</u>		<u>Total</u>	<u>% of Total</u>
	<u>M</u>	<u>F</u>		
Sport Hunting	10	3	13	27.1
Depredation (sheep)	22	4	26	54.2
Study Related	2	2	4	8.3
Natural	4	1	5	10.4
	—	—	—	—
TOTAL	38	10	48	100.0

In 1968, a tag requirement was imposed, and although no limits were established, it became possible to record sport hunter harvest. A major change occurred in 1970 when a limit of one lion per person was set and a six month season established. During this period, the requirement that all harvested lions be validated by a representative of the Department of Wildlife within five days after the kill was also established. This regulation presented the Department the first real opportunity to collect biological data.

In 1976, twenty-six mountain lion management areas were described statewide and a harvest quota established for each to control the sport harvest. This Controlled Quota Hunt was the most restrictive season ever established for mountain lion in Nevada.

In 1979, the Controlled Quota Hunt was modified for six of the management areas, whereby a kill objective was established which allowed the hunting of lions in the area assigned until the predetermined harvest objective was reached. In 1981 this Harvest Objective hunting season concept was applied to all 26 management areas.

Sportsman participation in lion hunting has fluctuated considerably through the decade of the 1970's as a result of the many and varied season frameworks and regulations. Despite the increase in human population the sport harvest of mountain lion has not increased during the past 10 years. The sales of resident lion tags have never exceeded 500 and averaged 275 over the 1968-81 period. The resource is presently meeting the demand for sport harvest. Table 13 presents the sport harvest data from the years 1969-70 and



Sport Harvest of Mountain Lion Is Almost Exclusively Accomplished with the Aid of Trained Hounds.

TABLE 15. MOUNTAIN LION - TAG SALES, HARVEST AND HUNTER SUCCESS.

<u>Year</u>	<u>TAG SALES</u>			<u>HARVEST*</u>			<u>HUNTER SUCCESS %</u>		
	<u>Resident</u>	<u>Non-Res</u>	<u>Total</u>	<u>Resident</u>	<u>Non-Res</u>	<u>Total</u>	<u>Resident</u>	<u>Non-Res</u>	<u>Total</u>
1969-70	414	22	436	30	12	42	7.2	54.5	9.6
1970-71	341	36	377	37	18	55	10.9	50.0	14.6
1971-72	220	39	259	29	14	43	13.2	35.9	16.6
1972-73	289	74	363	40	36	76	13.8	48.6	20.9
1973-74	314	114	428	52	39	91	16.6	34.2	21.3
1974-75	281	46	327	57	30	87	20.3	65.2	26.6
1975-76	221	40	261	37	17	54	16.7	42.5	20.7
1976-77	98	8	106	18	2	10	8.2	25.0	9.4
1977-78	129	16	145	16	6	22	12.4	37.5	15.2
1978-79	146	36	181	18	8	26	12.3	21.0	14.1
1979-80	225	47	272	20	13	33	9.0	27.6	12.2
1980-81	313	61	374	25	14	39	7.9	22.9	10.4
1981-82	421	38	459	44	23	67	10.4	60.5	14.6

*Sport Hunter Harvest Only

1981-82. A summary of the sport hunting seasons and regulations in Nevada since the lion was classified as a game animal in 1965 is presented in Appendix B.

Population Estimates

The mountain lion is a low density predator of secretive nature whose traits make it very difficult to monitor. Several methods were used to estimate mountain lion populations and after experimenting with a number of census techniques it was determined that there were three methods which, depending on local circumstances, were best suited for use in Nevada. These were: 1) Analysis of harvest data, 2) Track counts, and 3) Home range size.

Harvest Data -- The annual harvest can reflect the population level and the analysis of historical and current harvest data provides a base which can be used in making judgements concerning population trends. Hunter success measures the ease with which the sport hunter obtains his quarry and, barring unusual circumstances which must be taken into account, will reflect availability.

In examining both sport harvest and depredation harvest records from the time that they were both recorded statewide (1969-70 through 1981-82) it is obvious that the harvest rate has never been high (Table 13). The greatest influence on the sport harvest appears to have been the initiation of the hunter quota system in 1976-77. This resulted in over a 50% decrease in harvest when comparing the 7 years prior to the quota system and the 6 years following it. However, as hunters are becoming adjusted to the system, and refinements have been made to encourage them into the quota areas, the harvest is again climbing to what appears to be normal levels. Depredations harvest, for the most part, has remained relatively constant (Statewide) with a seven year harvest average of 20 lions annually before the hunter quota system and a six year average of 21 lions annually following the quota system. On an overall basis the statewide lion population trend between 1969-82 appears to be stable.

Track Counts -- Two track count methods have been used: ground surveys and aerial surveys. The ground surveys were begun 3-6 days after a fresh snowfall and were made on foot, with snowmobiles, or by driving roads with pick-up trucks. Each track was classified, if possible, as to sex and estimated age using criteria similar to that recently described by Shaw (1979). The ground count required sampling a large area in a short time frame in order to provide a representative sample. Due to man-time commitments annual ground count surveys are not possible to implement on a statewide basis.

Aerial surveys were done with a helicopter and in a manner similar to the ground surveys except that nearly every drainage in a predetermined geographic area was flown. Each drainage was flown twice, once following the bottom and again following the south exposures where lions were most likely to be found during the winter months. Once a track was sighted the helicopter was landed or hovered over the track while one observer disembarked and the track was classified and recorded. All helicopter surveys were completed in 2 days or less so accuracy could be maintained. Snow, air and light conditions had to be optimum in order to observe tracks, land, and record data. This is the preferred method and was utilized in the major mountain lion areas during the later years of the study. Since the termination of the study this method has not been used because of the high cost.

Home Range -- It was found in eastern Nevada that adult female lions had an average home range of 69.5 square miles and males 224 square miles. However, it was also noted that the home range size for individual lions varies considerably from one mountain range to another. It was recognized that the data available on home range sizes was not as comprehensive as desired; however, it was the most accurate data available for use in computing lion densities.

Mountain Lion Population Estimates by Mountain Range -- When the Harvest Quota system was implemented in 1976 (this was a Department of Wildlife recommendation to resolve controversies over lion management between protectionists, depredation harvest proponents, and sport harvest proponents) it was necessary to define mountain lion management areas, estimate the number of lions (all age classes) in each, and set a harvest quota which would not exceed the annual recruitment to the population.

It was found that track count information was simply too limited in nature to provide a statewide approach toward determining lion populations. However, long-term harvest data did provide a general idea as to the lion population status on a statewide basis. In utilizing this information, as well as the available deer density data, Regional personnel were able to form opinions as to the general quality of the lion habitat in their areas of concern. These judgements and data were then coupled with the basic lion home range parameters from the study area and utilized to formulate lion density factors for the inhabited mountain ranges in Nevada (Table 16). Field personnel then computed the square miles of occupied habitat (based on long-term distribution records) and with this information in hand they then calculated the estimated lion populations. Population estimates have been made since 1976 and in carrying these forward to 1982 it has been computed that 792 mountain lions occupy 27,811 square miles in 104 mountain ranges in Nevada (Table 16).

Harvest Quota Calculations -- The Department of Wildlife's mountain lion harvest objective is to harvest the number of lions which can safely be removed by both depredation and sport hunting and still maintain a viable breeding population (sustained yield). The estimated annual recruitment for lion populations in Nevada is believed to be about 30% (see Population Turnover). Therefore, a harvest objective for 1982 would be 0.3×792 (estimated lion population) = 237 lions. However, this objective was tempered on the conservative side by using a factor of 0.25 rather than 0.3 and instead of using the population estimate of 792 lions the number 550 (which represented the estimated lion population in areas opened to hunting) was used. This resulted in a harvest quota of $.25 \times 550 = 138$ lions. Some local adjustment was made to this quota by area biologists and the final quota for 1982 was 135 lions.

This system of arriving at a harvest quota clearly denotes the maximum number of lions which could be harvested. It then reflects a conservative attitude by slightly reducing the recruitment factor for making computations, and it makes allowances for areas of concern by individual biologists who can request further reasonable reductions or increases.

TABLE 16. MOUNTAIN LION POPULATION ESTIMATES BY MANAGEMENT AREA AND MOUNTAIN RANGE IN NEVADA, 1982.

Management Area	Mountain Range	Estimated Miles ² Occupied Habitat	Density Ratio; ² 1 Lion per Mi ² of Habitat	Average No. of Lions ² Present
1	Buffalo Hills	128	1/40	3
	Fox Mountain	104	1/40	3
	Granite	155	1/40	4
	Hays Canyon	<u>426</u>	1/40	<u>10</u>
	Subtotal	813		20
2	Virginia	-	-	0
	Fox	-	-	0
	Peavine	-	-	0
3	Sheldon Refuge	121	1/40	3
	Blackrock-Pine Forest	558	1/40	14
	Jackson	<u>215</u>	1/40	<u>4</u>
	Subtotal	894		21
4	Humboldt	369	1/40	9
	Sonoma	178	1/40	4
	Tobin	<u>139</u>	1/40	<u>3</u>
	Subtotal	686		16
5	Santa Rosa	578	1/25	23
6	Independence-Bull Run	712	1/40	18
	Tuscarora	<u>378</u>	1/40	<u>9</u>
	Subtotal	1,090		27
7	Bear Mountain - L & D	180	1/40	5
	Jarbridge	464	1/25	19
	Merritt-Mahoganies-			
	Tennessee Mountain	378	1/40	9
	Snake	265	1/40	7
	Granites	216	1/40	5
	Pequop	441	1/40	11
	Pilot	48	1/40	1
	Toana	<u>487</u>	1/40	<u>12</u>
	Subtotal	2,479		69
8	Goose Creek-Delano	495	1/40	12

¹High Density = 1 lion/25 mi², low-moderate density = 1 lion/40 mi² of occupied habitat.

²No. of lions present includes all age classes with 60% as adults and subadults and 40% as kittens still with their mothers. Estimates are for yearlong or summer ranges.

TABLE 16. MOUNTAIN LION POPULATION ESTIMATES BY MANAGEMENT AREA AND MOUNTAIN RANGE IN NEVADA, 1982. (cont.)

Management Area	Mountain Range	Estimated Miles ² Occupied Habitat	Density Ratio; ¹ 1 Lion per Mi ² of Habitat	Average No. of Lions ² Present
10	Buck & Bald	234	1/40	6
	Maverick-Medicine	218	1/40	5
	Ruby	850	1/25	34
	Dolly Varden	50	1/40	1
	Wood Hills	87	1/40	2
	Butte	219	1/40	5
	Subtotal	1,658		53
11	Kern	156	1/40	4
	Moriah	255	1/25	10
	Schell Creek-Antelope	672	1/40	27
	Snake	302	1/25	12
	Subtotal	1,385		53
12	Cherry Creek-Egan	594	1/25	24
13	Timpahute	305	1/40	8
	Grant-Quinn	618	1/40	15
	Seaman	106	1/40	3
	White Pine-Horse	614	1/40	15
	Worthington	27	1/40	1
	Subtotal	1,670		42
14	Cortez	234	1/40	6
	Diamond	359	1/40	9
	Roberts Mountain	210	1/25	8
	Fish Creek	207	1/40	5
	Subtotal	1,010		28
15	Shoshone	268	1/40	7
	Simpson Park	337	1/40	8
	Sulfur Springs	296	1/40	7
	Toiyabe	396	1/40	10
	Battle Mountains	77	1/40	2
	Fish Creek-Augusta	209	1/40	5
	Subtotal	1,583		39
16	Toquima	553	1/40	14
	Monitor-Hot Creek-Antelope	1,812	1/25	72
	Pancake	133	1/40	3
	Subtotal	2,498		89

¹High Density = 1 lion/25 mi², low-moderate density = 1 lion/40 mi² of occupied habitat.

²No. of lions present includes all age classes with 60% as adults and subadults and 40% as kittens still with their mothers. Estimates are for yearlong or summer ranges.

TABLE 16. MOUNTAIN LION POPULATION ESTIMATES BY MANAGEMENT AREA AND MOUNTAIN RANGE IN NEVADA, 1982. (cont.)

Management Area	Mountain Range	Estimated Miles ² Occupied Habitat	Density Ratio; ¹ 1 Lion per Mi ² of Habitat	Average No. of Lions Present ²
17	Paradise	210	1/40	5
	Toiyabe-Shoshone	977	1/25	39
	Subtotal	1,187		44
18	Clan Alpine	392	1/40	10
	Desatoya	346	1/40	9
	Stillwater-East Range	325	1/40	8
	Subtotal	1,063		27
19	Carson-Peavine	266	1/40	7
	Virginia	161	1/40	4
	Subtotal	427		11
20	Wellington-Pine			
	G.-Sweetwater	279	1/40	7
	Wassuk	468	1/40	12
	Excelsior-Anchorite	298	1/40	7
	Pilot Peak	91	1/40	2
	Subtotal	1,136		28
21	Monte Cristo	152	1/40	4
	Silver Peak-Montez	354	1/40	9
	Magruder-Sylvania	230	1/40	6
	White Mountains	149	1/40	4
	Subtotal	885		23
22	Egan	950	1/40	24
	Schell Creek	448	1/40	11
	Fairview-Bristol	187	1/40	5
	Highland Peak	111	1/40	3
	Subtotal	1,696		43
23	Fortification	129	1/40	3
	Wilson-White Rock	679	1/40	17
	Subtotal	808		20
24	Delamar	336	1/40	8
	Clover-Cedar	650	1/40	16
	Pahroc	97	1/40	2
	Subtotal	1,083		26

¹High Density = 1 lion/25 mi², low-moderate density = 1 lion/40 mi² of occupied habitat.

²No. of lions present includes all age classes with 60% as adults and subadults and 40% as kittens still with their mothers. Estimates are for yearlong or summer ranges.

TABLE 16. MOUNTAIN LION POPULATION ESTIMATES BY MANAGEMENT AREA
AND MOUNTAIN RANGE IN NEVADA, 1982. (cont.)

<u>Management Area</u>	<u>Mountain Range</u>	<u>Estimated Miles² Occupied Habitat</u>	<u>Density Ratio; 1 Lion per Mi² of Habitat</u>	<u>Average No. of Lions² Present</u>
25	Armagosa	20	1/40	1
	Reveille	56	1/40	1
	Stonewall	30	1/40	1
	Sheep Range	295	1/40	7
	Groom Range	63	1/40	2
	Kawich	227	1/40	6
	Belted-Paiute Mesa	342	1/40	9
	Subtotal	1,033		27
26	Spring Range	518	1/40	13
27	Virgin	47	1/40	1
	Morman	67	1/40	2
	Subtotal	114		3
29	Pine Nut	428	1/40	11
	GRAND TOTAL	27,811		792

¹High Density = 1 lion/25 mi², low-moderate density = 1 lion/40 mi² of occupied habitat.

²No. of lions present includes all age classes with 60% as adults and subadults and 40% as kittens still with their mothers. Estimates are for yearlong or summer ranges.



Goals

Goal: Maintain Nevada's mountain lion populations.

1. Problem: Changing and differing public attitudes about the mountain lion's worth and role in the ecosystem make it a difficult species to manage.
 - a. Strategy: Continue to closely monitor lion populations and the affects of sport hunting, and depredation removal. Maintain consumptive use levels consistent with the lion's ability to sustain that use.
2. Problem: Lion depredations on livestock and wildlife represents an ongoing problem.
 - a. Strategy: Continue a cooperative agreement with the U.S. Fish and Wildlife Service and insure that only offending depredating lions are removed.
 - b. Strategy: Where mountain lion depredations are found to be responsible for suppressing the segment of a wildlife population at or below the "threshold" level the mountain lion population involved may be reduced temporarily to allow the suppressed wildlife prey population to increase thereby ultimately resulting in a potential increase in the mountain lion population due to the larger prey base.
3. Problem: Human-lion conflicts can be anticipated in the future with continuing urban growth.
 - a. Strategy: Develop a program to rapidly and safely handle lion complaints in urban areas.



RECOMMENDATIONS

There are several areas where further study could provide answers and direction for mountain lion management in Nevada. Some of these are:

1. More refined population estimates are needed, especially for low to moderate lion densities.
2. Additional investigations should be made in regard to home range overlap.
3. Lion population turnover should be determined more precisely for both exploited and unexploited populations.
4. Additional data is needed on the effects of lion predation on deer. This was an area that was not adequately investigated during this study. Do lions, in fact, exert control over low-moderate density deer populations?
5. Lion aging techniques should be pursued with an effort to obtain adequate information to supplement and validate the keys presented in this publication.
6. It is felt that lion density ratios should be modified slightly in order to provide more latitude for the field biologist when developing his lion harvest quota recommendations. The following changes are recommended:

1/25 should be changed to 1/20-30
1/40 should be changed to 1/31-45
7. It is apparent to the editor that there were many lost opportunities during the conduct of this study. The plan for achieving the study objectives and the monitoring system for seeing that the annual work program was accomplished, even though in place, was not adhered to. Consequently the researcher often strayed from the study plan and at times data was not collected or was recorded incorrectly. Such failings are not uncommon in Fish and Wildlife research where the dilution of manpower, because of pressing everyday needs, often results in insufficient supervision and/or monitoring. However, since Nevada is still faced with becoming even more involved with mountain lion research, past inadequacies should be recognized and every effort made to strengthen the supervision and monitoring of future studies.

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APPENDIX A

STATE OF NEVADA BOARD OF WILDLIFE COMMISSIONERS

	Number:	14(1)
	Title:	Animal Damage Control
Commission Policy No. 14	References:	NRS 501.105, 501.110, 503.470, 503.595, 567.010 through 567.090, CGR No. 1(8) and CGR No. 4(2).
Ammendment No. 1		
	First Reading:	March 13, 1981
	Second Reading:	April 17, 1981
	Effective Date:	April 17, 1981

PURPOSE

To inform the public and guide the Department of Wildlife in actions relating to animal damage control.

In accordance with NRS 501.181, the Board of Wildlife Commissioners shall establish policies for the protection, propagation, restoration, transplanting, introduction and management of wildlife in this state. Further, the Commission shall establish policies for areas of interest including animal damage control.

POLICY

1. Major mammalian predators (coyote, mountain lion, bobcat) will be managed to minimize livestock losses from predation and minimize excessive wildlife losses from predation without endangering the existence or natural role of these predators in the ecosystem.
2. Nonpredatory wildlife will be managed to minimize their vulnerability to excessive predation. Animal damage extension efforts will be encouraged to assist private operators in husbandry practices to minimize the vulnerability of domestic livestock predation.
3. Support continued federal leadership in the Animal Damage Control program because of the national need for development and use of more efficient and humane control methods.
4. Recognize the U.S. Fish and Wildlife Service, Division of Animal Damage Control, as the authority for predator control under cooperative agreement with the Department of Wildlife, where the Department of Wildlife is an active participant in documenting the need for control programs, in planning and execution of control programs, and in enhancing public understanding of these programs.

The Department shall prepare an annual work program for predator control needed for the management of wildlife and recommend that a maximum of \$20,000 annually be forwarded from the wildlife account in the state general fund to the state predatory animal and rodent committee for predatory animal control work as provided in Chapter 567 of NRS.

5. Initiate predator control efforts on the basis of the best biological information available.
6. Direct predator control efforts including sport hunting and trapping, whenever possible to prevent damage before it occurs in specific areas known to be recurring problem areas or alleviate damage as soon as possible after it occurs.
7. Direct predator control efforts at the offending animal, in so far as possible and feasible.
8. Employ predator control methods which are selected on the basis of the species involved, utilizing currently approved methods in the proper mix according to the needs. These methods may include aerial hunting, M-44, trapping, snares, denning and predacides.
 - a. Predacides should only be used in certain preventative and corrective damage control operations using a delivery system which is selective, effective and efficient.
 - b. Aerial hunting will be conducted only under Department of Wildlife damage control permit and limited to bobcats and coyotes. Such permits shall be issued only to the U.S. Fish and Wildlife Service or to landowners or tenants of land or property that is being damaged by wildlife.
9. The Department upon issuance of a depredation permit and with the aid and cooperation of the complainant, may take all available professional and economically feasible measures to alleviate or lessen the depredation problem.

PROCEDURE

NRS 503.595 provides that after the owner or tenant of any land or property has made a report to the Department indicating that such land or property is being damaged or destroyed, or is in danger of being damaged or destroyed, by wildlife, the Department may, after thorough investigation and pursuant to such regulations as the Commission may promulgate, cause such action to be taken as it may deem necessary, desirable and practical to prevent or alleviate such damage or threatened damage to such land or property.

The Commission has adopted regulations authorizing the Director or his designee to issue wildlife depredation permits. Specific permit programs include:

1. An annual wildlife depredation permit may be issued to the State Supervisor, U.S. Fish and Wildlife Service, Division of Animal Control, to take depredating mountain lion or bobcat in the immediate vicinity of threatened livestock.
 - a. Any report of livestock depredation received by the Department of Wildlife shall be forwarded immediately to the permittee for action in accordance with subsection (b) of this section.
 - b. Upon receipt of a report from a livestock owner or the Department indicating that a mountain lion or bobcat is causing or about to cause damage to livestock, the permittee shall conduct an on-site investigation. If the results of the investigation support the complaint, the permittee may take the animal. If the permittee cannot determine if the complaint is valid, he shall notify a representative of the Department, who shall conduct a joint investigation to make the final determination.
 - c. During November through April, the permittee shall slavage and give the hide and skull of depredating mountain lion or bobcat to the Department within 72 hours. During May through October, the permittee shall completely destroy the animal, except the skull which shall be delivered to the Department.
2. An annual wildlife permit may be issued to State Supervisor, U.S. Fish and Wildlife Service, to take the minimum number of mountain lions, bobcats, foxes, cottontail rabbits, pigmy rabbits, white-tailed jack rabbits, bears and squirrels as necessary to control damage to persons and property.
3. Upon receipt of a valid mountain lion or bobcat complaint from an individual livestock owner, the Department may issue a limited permit to the owner to take an animal that is in the act of killing his livestock.
 - a. The permittee shall notify a Department representative within 72 hours after taking a mountain lion and arrangements will be made for examining the skull and sealing the hide.

- b. Mountain lion or bobcat hides, after being properly sealed, may be retained by the permittee to defray the cost of handling the depredation complaint.
4. The Department may issue permits authorizing the hunting or killing of coyotes or bobcats from an aircraft.
 5. Fur-bearing animals injuring any property may be taken or killed at any time in any manner, provided a permit is first obtained from the Department. The Department is authorized to enter upon the lands of a landowner and remove beaver or otter for the relief of other landowners and the protection of the public welfare.
 6. The Department may issue permits consistent with Federal law to take bald eagles or golden eagles whenever it determines that they have become seriously injurious to wildlife or agriculture or other interests that the injury can only be abated by taking some of the offending birds.
 7. The State Predatory Animal and Rodent Committee shall enter into agreements with the U.S. Fish and Wildlife Service covering cooperative control of crop-destroying birds in addition to predatory animals and rodents to assure maximum protection against losses of livestock, poultry, game birds, animals and crops on a statewide basis. The State Department of Agriculture in accordance with NRS 555.010 and 555.021 responds to complaints involving vertebrate pests (excluding predators) that are injurious to agriculture or public health.
 8. The Department may issue a wildlife depredation permit to a landowner if needed for the prevention or alleviation of damage to standing or stored agricultural crops.

This policy shall remain in effect until amended, repealed or superseded by the Board of Wildlife Commissioners.

BY ORDER OF THE BOARD OF WILDLIFE COMMISSIONERS IN REGULAR SESSION,
APRIL 17, 1981.

Marvin A. Einerwold, Chairman
Board of Wildlife Commissioners

APPENDIX B

MOUNTAIN LION HUNTING SEASONS 1965-1982

1965-1966

Type of Season: Either sex, statewide.
Season Length: Open year-round.
Limit or Quota: None.
License and Tag Requirement: Hunting license only.
Special Regulations: Unlawful to hunt with revolver or by use of artificial light.

1967

Type of Season: Either sex, statewide.
Season Length: Open year-round.
Limit or Quota: None.
License and Tag Requirement: Hunting license only.
Special Regulations:
 1. Unlawful to use a revolver.
 2. Unlawful to use artificial light.
 3. Unlawful to trap lions.

1968

Type of Season: Either sex, statewide.
Season Length: Open year-round.
Limit or Quota: None.
License and Tag Requirements: Hunting license and tag.
Special Regulations:
 1. Unlawful to use revolver.
 2. Unlawful to use artificial light.
 3. Livestock operator can take lions with proper permit.

1969

Type of Season: Either sex, statewide.
Season Length: Open year-round.
Limit or Quota: None.
License and Tag Requirement: Hunting license and tag.
Special Regulations:
 1. May be hunted anytime day or night.
 2. Lawful to use any weapon except crossbow.
 3. Livestock operator can take depredating lions at any time.

1970

Type of Season: Either sex, statewide.

Season Length: October 10, 1970 - March 31, 1971 (171 days).

Limit or Quota: 1 per person.

License and Tag Requirement: Hunting license and tag.

Special Regulations:

1. Mandatory check-in of lion hide, skull and stomach contents within 5 days of harvest.
2. Hide must be sealed by a Department representative within 5 days of harvest.
3. Lions may be hunted anytime day or night.
4. Lawful to use any weapon except crossbow.
5. Livestock operator can take depredating lions at any time after issuance of a permit.

1971-1975

Type of Season: Either sex, statewide.

Season Length: Open year-round (1974 & 1975, 6 month season).

Limit or Quota: 1 per person.

License and Tag Requirement: Hunting license and tag.

Special Regulations:

1. Mandatory check-in of lion hide and skull within 48 hours of harvest (1973, 72 hours of harvest).
2. Hide must be sealed by a Department representative within 48 hours of harvest.
3. Lions may be hunted anytime day or night.
4. Lawful to use any weapon except crossbow.
5. Livestock operator can take depredating lions at any time after issuance of a permit.

1976-1978

Type of Season: Either sex, statewide.

Season Length: 1976 - October 1, 1976 - March 31, 1977 (6 months).

1977, 1978 - October 1, 1977 - April 30, 1978 (7 months).

Limit or Quota:

1. One lion per person.
2. Resident and nonresident quotas by management area and through application only.

License and Tag Requirement: Hunting license and tag.

Special Regulations:

1. Mandatory check-in of lion hide and skull within 72 hours of harvest.
2. Hide must be sealed within 72 hours of harvest.
3. Lions may be hunted any time day or night.
4. Lawful to use any weapon except crossbow.
5. Livestock operator can take depredating lions any time after issuance of a permit.
6. Accidentally trapped lions are the property of the State of Nevada and shall be reported within 48 hours of capture.

1979-1980

Type of Season: Either sex, statewide.

Season Length: October 1, 1979 - April 30, 1980 (7 months).

Limit or Quota:

1. One lion per person.
2. Resident and nonresident "Trophy General Hunt" with quotas by management area, application only.
3. Resident and nonresident "Controlled Trophy Hunt" with quotas (allowable harvest) by management, application only.

License and Tag Requirements: Hunting license and tag.

Special Regulations:

1. Any person holding a valid tag for lion in management area 7, 8, 9, 10, 19, 20 or 21 (1980) obtain a 15-day controlled hunt permit at no cost before hunting.
2. Permit will be valid in a specified management area for 15 days. Unsuccessful hunters may reapply for the same or another management area if the harvest quota has not been filled. Hunters holding a 15-day permit will be notified by the Department when the harvest quota is filled for that area. The hunter may then reapply for another open area.
3. Mandatory 72 hour check-in and hide sealing required.
4. Accidentally trapped lions are the property of the State of Nevada and shall be reported within 48 hours of capture.

1981

Type of Season: Either sex, statewide.

Season Length: October 1, 1981 - April 30, 1982 (7 months).

Limit or Quota:

1. One lion per person.
2. Unlimited tag quota by application only.
3. Harvest quota by management area.

License and Tag Requirement:

1. Hunting license and tag.
2. 15-day permit.

Special Regulations:

1. Hunting permit reservations may be made by mail, telephone or appearing in person at the designated Department offices.
2. Hunting permits will be valid in a specified management area for a period of 15 days from the date of issue. If a hunter fails to harvest a lion in the specified period and management area, he may reapply as many times as he desires for a permit to hunt in any of the open management areas as long as the harvest quotas remain unfilled.
3. When the harvest quota is filled in any of the management areas, either by sport hunting or by depredation harvest, that area will be closed to mountain lion hunting, and no further permits will be issued for that area. Hunters holding a valid permit for a management area at the time that the harvest quota is filled will be notified by the Department that the area is closed, and that their permit is no longer valid. Hunters may then reapply for any other management area where the harvest quota has not been filled.

4. Department representatives will retain final judgement on issuance of permits and distribution of hunters in order to preclude a harvest quota or the over-loading of hunters in any one management area.
5. Unless otherwise specified by regulation of the Commission or Title 45 of NRS, any resident of Nevada, nonresident or alien is eligible to apply once for a mountain lion tag in any year.
6. A person who harvests a mountain lion shall, within 72 hours after harvesting it, present the skull and hide to a representative of the Department of Wildlife for inspection. The representative shall affix the seal of the Department permanently to the hide. It is unlawful for any person to transport such a hide from this state without a seal permanently affixed to the hide.
7. Except as provided in subsection 2, it is unlawful to possess the hide of a mountain lion without a seal permanently attached to it.
8. If a mountain lion is accidentally trapped or killed, the person trapping or killing it shall report the trapping or killing within 48 hours to a representative of the Department of Wildlife. The animal must be disposed of in accordance with the instructions of the representative.

1982

Limit: One.

Sex/Age Class: Either sex.

Hunting Hours: Any time of the day or night.

Season Dates:

October 1, 1982 through September 30, 1983, except as provided in sections 5 and 6 of this regulation.

Tag Quota: Unlimited.

Harvest Quota:

The harvest quota is the allowable harvest for each listed management area. When the harvest quota has been filled in any management area that area will be closed to hunting.

<u>Area</u>	<u>Objective</u>	<u>Area</u>	<u>Objective</u>
1	0	14	6
2	0	15	5
3	3	16	6
4	5	17	3
5	3	18	9
6	6	19	6
7	8	20	10
8	13	21	6
9	7	22	3
10	8	23	3
11	6	24	3
12	6	25	3
13	5	26	2
Total			135

Special Regulations

1. There is no quota on the number of tags that will be issued for the mountain lion management areas.
2. Tags will be available to residents and nonresidents by application only.
3. Hunters who are awarded tags for this mountain lion hunt must secure a hunting permit before they can hunt under the authority of this tag in any single management area. A valid lion hunting permit and tag must be in possession while hunting mountain lion.
4. Hunting permits will be authorized by mail, telephone, or by appearing in person only at the following department offices:

For Management Areas 3, 4, 12, 13, 14 and 15:
Region I Office, 380 W. "B" Street, Fallon, Nevada 89406
(702) 423-3171

For Management Areas 5, 6, 7, 8, 9, 10, 11, 19 and 20:
Region II Office, 1375 Mountain City Highway, Elko, Nevada 89801
(702) 738-5332

For Management Areas 16, 17, 18, 21, 22, 23, 24, 25 and 26:
Region III Office, 4747 Vegas Drive, Las Vegas, Nevada 89109
(702) 385-0285
5. Hunting permits will be valid in the specified management area until the harvest objective for that management area is reached, or the general season closure, whichever is first. Upon attainment of the harvest objective, the management area will be closed to lion hunting.
6. Hunters holding a valid permit for a management area at the time that the harvest objective is filled will be notified by the Department that the area is closed and that their permit is no longer valid. Hunters may then reapply for any other management area where the harvest objective has not been filled.
7. Department representatives in the Fallon, Elko and Las Vegas Offices will retain final judgement on issuance of permits and distribution of hunters.
8. A hunting permit may be invalidated by the Department and reissued for another mountain lion management area.

2011

Modeling Connectivity of Black Bears in a Desert Sky Island Archipelago

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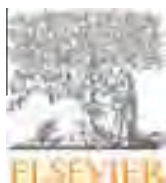
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Modeling connectivity of black bears in a desert sky island archipelago

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ABSTRACT

Landscape features such as rivers, mountains, desert basins, roads, and impermeable man-made structures may influence dispersal and gene flow among populations, thereby creating spatial structure across the landscape. In the US–Mexico borderland, urbanization and construction of the border fence have the potential to increase genetic subdivision and vulnerability to isolation in large mammal populations by bisecting movement corridors that have enabled dispersal between adjacent Sky Island mountain ranges. We examined genetic variation in black bears (*Ursus americanus*) from three regions in central and southern Arizona, US, to assess genetic and landscape connectivity in the US–Mexico border Sky Islands. We found that the three regions grouped into two subpopulations: the east-central subpopulation comprised of individuals sampled in the central highland and high desert regions, and the border subpopulation comprised of individuals sampled in the southern Sky Islands. Occupancy for the border subpopulation of black bears was influenced by cover type and distance to water, and occupancy-based corridor models identified 14 potential corridors connecting border Sky Island habitat cores with the east-central subpopulation. Biological quality of corridors, defined as length:width ratio and proportions of suitable habitat within corridors, declined with Sky Island dispersion. Our results show that black bears in the border subpopulation are moderately isolated from the east-central subpopulation, the main population segment of black bears in Arizona, and that connectivity for border bears may be vulnerable to anthropogenic activities, such as those associated with urbanization and trans-border security.

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1. Introduction

Habitat connectivity across a landscape is important to ensuring the persistence of populations through the maintenance of gene flow (Vos et al., 2001), metapopulation dynamics (With et al., 1997), and demographic rescue (Tallmon et al., 2004). Without connectivity, habitat fragmentation constrains animal dispersal and threatens biological diversity (Johnson et al., 1992; Woodroffe and Ginsberg, 1998). Through time, habitat fragmentation yields small isolated populations with elevated extinction probabilities (Lande, 1988; Hanski, 1999). This is particularly true in landscapes where geography leads to spatial structuring of populations, such as large carnivores in the Sky Island (i.e., montane mountain

ranges) region of the Sonoran and Chihuahuan deserts of southwestern US and northern Mexico.

In human-dominated landscapes, connectivity is often maintained through corridors (Beier and Noss, 1998). Yet corridors may not be sufficient to facilitate population viability if they do not maintain both structural and functional connectivity. Structural connectivity describes the degree to which habitat patches are contiguous or physically linked to one another (With et al., 1997; Tischendorf and Fahrig, 2000), while functional connectivity explicitly incorporates the behavioral responses of animals to describe how both habitat and non-habitat (i.e., matrix) patches influence movement (Taylor et al., 1993; Wiens, 2001). Decreases in patch size and increased isolation may decrease structural connectivity, but if the newly-created matrix patches do not discourage movement, then functional connectivity may remain high (Baguette and Van Dyck, 2007). By contrast, a landscape may be characterized by a high degree of structural connectivity but have diminished functional connectivity as a result of being bisected by a feature that limits movement by creating exceptional risk of

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crossing (e.g., roads, rivers) or acts as a physical impediment (e.g., a fence) (Proctor et al., 2005; Hayward and Kerley, 2009). Detailed information on structural and functional connectivity of corridors is important for predicting their efficacy to conserve wildlife (Beier and Noss, 1998), especially in areas where species already occupy fragmented habitats.

Arizona's desert Sky Island mountain ranges encompass one of the most biologically diverse regions in the United States. Suitable habitat for many of the region's large carnivores, including black bears (*Ursus americanus*), mountain lions (*Puma concolor*), and jaguars (*Panthera onca*) is found in oak woodland and montane habitats separated by lowland desert. Rapid urbanization and the construction of the US–Mexico border fence have the potential to drive genetic subdivision in large mammal populations by severing corridors that historically enabled dispersal between Arizona and Mexico Sky Island ranges (Flesch et al., 2010). Black bears in the region rely heavily on food resources found in these higher elevation montane habitats. The spatial dispersion of montane habitat has likely served to historically subdivide black bear populations, creating detectable genetic structure driven by infrequent, long-distance movements across desert basins (McRae et al., 2005; Onorato et al., 2004). Thus, desert black bears are an ideal candidate for modeling connectivity.

In this study, we integrated landscape genetics with occupancy modeling to assess landscape connectivity for black bears in southern Arizona's desert Sky Islands. Our objectives were to (i) assess genetic connectivity between black bears along the border with Sonora, Mexico, and the main population segment in east-central Arizona, and (ii) identify potential corridors linking core black bear habitats in the border Sky Island ranges. For the former objective, we hypothesized that bears along the border were genetically isolated from east-central bears. For the latter objective, we expected corridor quality to decline as the distance between linked core habitats increased.

2. Methods

2.1. Study areas

We sampled black bears from several sites in east-central and southern Arizona (Fig. 1). East-central sites were located in the central highlands north of the Mogollon Rim and the high desert immediately south of the Rim, where black bear habitat is relatively continuous (Fig. 1). The central highlands site was contained mostly within the White Mountains of the Apache-Sitgreaves National Forest, approximately 230 km east of Phoenix, Arizona (Fig. 1). The area was characterized by rugged terrain with steep slopes and deep canyons, an elevational gradient ranging from 1300 to 3000 m, and Rocky Mountain montane and subalpine habitat associations (Brown and Lowe, 1974). Areas above 1700 m were predominantly comprised of Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*). Douglas fir (*Pseudotsuga menziesii*), white fir (*Abies concolor*), and blue spruce (*Picea pungens*) associations between 2400 and 2750 m; ponderosa pine (*Pinus ponderosa*), Gambel oak (*Quercus gambelii*), and aspen (*Populus tremuloides*) occur at lower-elevations (<2400 m). The central highlands encompassed a major portion of the watershed providing water to the Phoenix metropolitan area (population 4,192,887) via the Salt and Gila rivers. Yearly precipitation averaged 192 cm, most of which came during the winter as snowfall. Average daily temperatures ranged from 28 °C in July to –12 °C in December (NOAA, Western Regional Climate Center). Predominant land use within the area included timber production, livestock grazing, and recreation. Human population density for the area was 2.39/km², and housing density was 1.08/km² (<http://quickfacts.census.gov/qfd/states/04000.html>; accessed 29 June 2011).

The site south of the Mogollon Rim (hereafter referred to as the Tonto site) was located almost entirely within the Tonto National Forest (Fig. 1). The Tonto site was approximately 81 km east of Phoenix and 18 km west of Globe (population 7532), the nearest urban center. Elevations in the area ranged from 700–2300 m, with lower elevations characterized by gently sloping terrain and higher elevations having steep, rocky topography with slopes >45° (Cunningham et al., 2003). Primary vegetation at lower elevations was desert scrub and grassland (<900 m) and interior chaparral (900–1850 m) (Brown and Lowe, 1974). Madrean evergreen woodland (e.g., Gambel oak, Emory oak [*Quercus emoryi*], and ponderosa pine) occurred at higher elevations (>1850 m; Brown and Lowe, 1974). Yearly precipitation averaged 63 cm, most of which came during the summer (July and August) monsoons. Average daily temperatures ranged from 37 °C in July to –1 °C in December (NOAA, Western Regional Climate Center). Predominant land use within the area included livestock grazing and recreation. Human population and housing densities were 4.17/km² and 2.28/km², respectively, for the greater area (<http://quickfacts.census.gov/qfd/states/04000.html>; accessed 29 June 2011).

At the southern site (hereafter referred to as the border site), samples were collected from six Sky Island mountain ranges (i.e., Patagonia and Huachuca [wildland block 3], Whetstone [wildland block 4], Rincon [wildland block 9], Galiuro [wildland block 11], and Chiricahua [wildland block 7] mountains; Fig. 2), north of the border with Sonora, Mexico, and mostly located within the Coronado National Forest. The border site was mostly southeast of the Tucson metropolitan area (population 980,263); the most intensive sample collection occurred in wildland block 3, 83 km southeast of Tucson and directly adjacent to the town of Sierra Vista (population 43,044) and Fort Huachuca military base (Fig. 1). Elevations at the border site ranged from 1300 to 3000 m, with the lowest elevations (<1370 m) characterized as desert basin primarily comprised of catclaw acacia (*Acacia greggii*), creosote (*Larrea tridentata*), and mesquite (*Prosopis glandulosa*) (Wallmo, 1955). Desert shrub and grassland associations occurred at elevations between 1370 and 1524 m, oak woodlands occurred between 1524 and 2130 m, depending on specific site characteristics, and Madrean evergreen woodland generally occurred at elevations >1800 m (Wallmo, 1955). Yearly precipitation averaged 39 cm, most of which came during the summer (July and August) monsoons. Average daily temperatures ranged from 35 °C in July to 0.5 °C in December (NOAA, Western Regional Climate Center). Predominant land use for the area includes livestock grazing and recreation. The distribution of black bear habitat at the border site was discontinuous and constrained to Sky Island mountain ranges (Fig. 1). The human population (9.62/km²) and housing densities (3.85/km²) for the greater border area were the highest of the three sampling sites (<http://quickfacts.census.gov/qfd/states/04000.html>; accessed 29 June 2011).

The Patagonia–Huachuca and Tumacacori (i.e., wildland block 1; Fig. 2) wildland blocks straddled the Arizona–Sonora border, while all other wildland blocks included in connectivity analyses occurred entirely within Arizona. The Patagonia and Huachuca mountains extended approximately 31 km and 4 km, respectively, into Sonora, with the Patagonia Mountains separated by 7 km from the northern extent of the large (≈5396 km²) Sierra Mariquita–Sierra de los Ajos mountain range complex (Fig. 2). The Tumacacori wildland block extended 5 km into Sonora and the southern-most extent was within 7 km and 19 km, respectively, of the Sierra Cibuta and Sierra de Pinitos mountains (Fig. 2). Vegetation in northern Sonora mirrored that of southern Arizona, with shrub and grassland associations at lower elevations, oak woodlands at mid-elevations, and Madrean evergreen woodlands at higher elevations (Brown, 1994; Bahre and Minnich, 2001). Predominant land use in northern Sonora was livestock grazing (Vasquez-Leon and Liverman, 2004). The international boundary between Arizona and So-

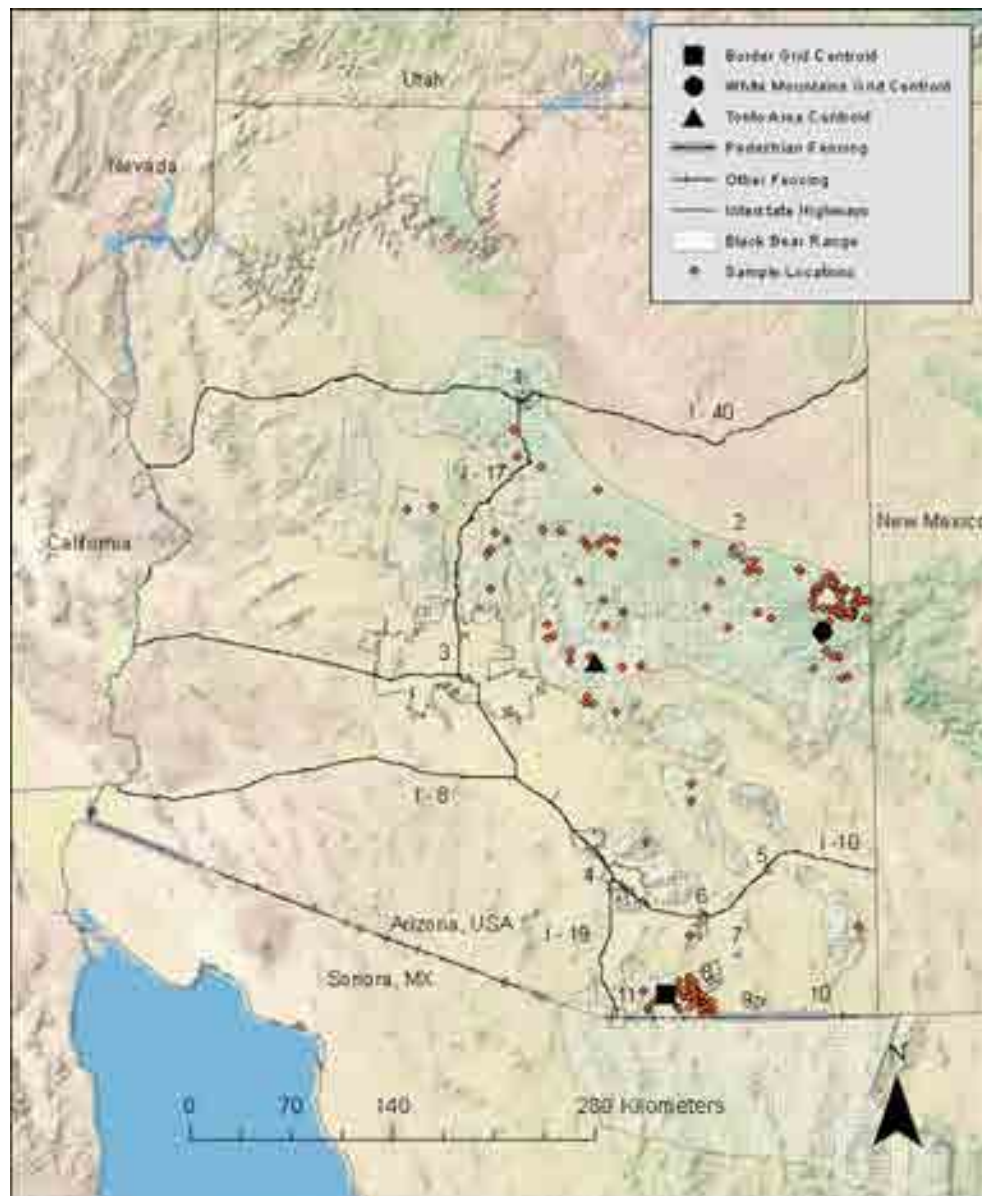


Fig. 1. Distribution of black bear samples collected opportunistically and from hair-snag grids relative to ^durban centers and major transportation corridors. The Tonto sampling area and White Mountains grid were located in the central highlands region and the border grid was located in the Huachuca and Patagonia mountains. ^dArizona cities and metropolitan areas: (1) Flagstaff, (2) Show Low, (3) Phoenix metropolitan area, (4) Tucson metropolitan area, (5) Willcox, (6) Benson, (7) Tombstone, (8) Sierra Vista and Ft. Huachuca, (9) Bisbee, (10) Douglas, and (11) Nogales.

nora, Mexico, spans nearly 600 km, approximately 70% of which was fenced. The type of fence structure varies along the border (Fig. 1). Some segments were ≥ 4 m tall with either no openings or vertical gaps 5–10 cm wide and thus impermeable to most medium- and large-bodied mammals, while other sections consisted of 4–6 strands of barbed wire coupled with “Normandy style” cross-bar vehicle barriers (United States Customs and Border Protection, 2009), and were relatively permeable.

2.2. Black bear distribution and status in Arizona and Sonora, Mexico

In Arizona, black bears were classified as a game species and were hunted during the spring and fall. Season lengths and harvest limits varied by game management unit (GMU), with all units being closed for the season when the female harvest approximated

10% of the estimated female population in the unit. For GMU in the border sampling area, harvest limits were conservative and generally range from 1–3 females/GMU/yr. Black bears in Mexico were classified as “endangered of extinction” in 1986, and hunting seasons were closed indefinitely (Doan-Crider and Hellgren, 1996). Over the last several decades, the historical distribution of black bears in Mexico is believed to have been reduced by 20% due to habitat loss, poaching, and illegal trade (Doan-Crider and Hellgren, 1996; Sierra-Corona et al., 2005). Relatively little is known about the status of black bears in Sonora. Sierra-Corona et al. (2005), working in the Sierra de San Luis in northeastern Sonora (Fig. 2; wildland block 21), found that bear density was low compared to similar areas on either side of the border (e.g., Coahuila, Mexico: Doan-Crider, 1995; east-central Arizona: LeCount, 1982), but did not comment on possible reasons.



Fig. 2. Sky Island “wildland blocks spanning from northern Sonora, Mexico, to the east-central Arizona. “Wildland Blocks: (1) Tumacacori, (2) Santa Rita, (3) Huachuca-Patagonia, (4) Whetstone, (5) Mule, (6) Drought, (7) Chiricahua, (8) Peloncillo, (9) Rincon, (10) Santa Catalina, (11) Galiuro-Winchester, (12) Pinaleno, (13) Gila, (14) Pinal, (15) Sierra Cibola, (16) Sierra Pinito, (17) Sierra Chivato, (18) Sierra Elenita, (19) Sierra San Jose, (20) Sierra Los Ajos, and (21) Sierra San Luis.

2.3. Sample collection and genetic analyses

We collected hair samples from black bears using hair-snags and hair and tissue from mandatory hunter check-in. We deployed two hair-snag sampling grids, one at the border site in the Huachuca and Patagonia mountains (i.e., Huachuca–Patagonia grid; wildland block 3), and one in the central highlands (i.e., White Mountains grid) (Fig. 1). The Huachuca–Patagonia and White Mountains grids consisted of 67 and 74 grid cells (4×4 km), respectively. Sixty-three percent of the Huachuca–Patagonia grid was comprised of evergreen habitat associations, 23% was desert shrub and grassland, and the remaining 9% was oak woodland. For the White Mountains grid, 79% was comprised of evergreen habitat associations, 13% was montane shrub and grassland, and the remaining 8% was deciduous woodland. In each cell, we built a hair-snag “corral” by running a single strand of barbed wire at a height of approximately 45 cm around several trees (Woods et al., 1999). We chose hair-snag locations based on black bear

sign, natural travel routes, and forage availability, and maintained a minimum distance of 2 km between hair-snags located in adjacent cells. We baited the center of corrals with 1L of aged fish oil, and ran 3, 10–14 d capture sessions from May through September. The use of a single lure and a standard volume should control for lure-induced heterogeneity in habitat-specific detection probabilities (MacKenzie et al., 2006). We used forceps to collect hair samples from barbs, stored individual samples in tooth envelopes, and flamed barbs to prevent cross-contamination. Samples also were obtained at the high desert site from hair-snags located in the Tonto National Forest that were independently deployed and operated by Arizona Game and Fish Department (AGFD) personnel (Fig. 1). The Tonto hair-snags were deployed opportunistically rather than in a grid-design, which precluded their use in estimating a site density.

We extracted DNA from samples using a Qiagen DNeasy Blood and Tissue Kit (Qiagen) employing an ammonium acetate protocol (modified from the PUREGENE kit; Gentra Systems). We used a set

of 11 microsatellite loci known to amplify in black bears (G10J, G10M, G10X, G10B, G10H, G10C, G10L, G1D, G1a, UarMu50, UarMu59; Paetkau et al., 1995, 1998) grouped into three sets based on product size and primer label. Each set of loci was amplified together in the same Polymerase Chain Reaction (PCR) in 10 μ L PCRs using a Master-cycler ep gradient (Eppendorf) and 3 μ L of template DNA, 0.2 mM of each dNTP, 0.2 M to 0.4 M of each primer pair, 1 U of *Taq* DNA polymerase (NEB), 1.25 mM $MgCl_2$ and 2 \times reaction buffer (10 mM Tris–HCl, 50 mM KCl, 0.05 mg/mL BSA). Amplification conditions were 94 °C for 2 min, then 94 °C for 30 s, 60 °C for 30 s, 72 °C for 30 s for 35 cycles, then 72 °C for 10 min and a final extension at 60 °C for 45 min. Multiplexed reactions were combined with an internal lane size standard and electrophoresed through a capillary gel matrix using an ABI 3730 Automated DNA Sequencer. Allele sizes were determined for each locus using GeneMapper software v3.7 (Applied Biosystems).

We ran positive and negative controls within each genotyping set and included an individual of known genotype at each locus within every sample set analyzed to maximize quality and consistency of genotyping. Each sample was amplified repeatedly until 3 matching genotypes were obtained at each locus within each individual, or until we ran out of DNA, to avoid errors associated with DNA collected with non-invasive methods (Taberlet et al., 1996, 1999; Kohn and Wayne, 1997). This resulted in the generation of at least three multilocus genotypes for each sample.

For sex determination, a fragment of the amelogenin gene was amplified using the primers SE47 and SE48 (Ennis and Gallagher, 1994). The amplification conditions were similar to those used for the microsatellites except the annealing temperature was 64 °C and the annealing and extension times were decreased to 15 s per cycle. PCR products were run on a 2% agarose gel stained with ethidium bromide. Samples were scored as female if they exhibited one band and males if there were two bands. DNA samples extracted from the tissues of known-sex harvested black bears were used as controls for our sexing assessments.

The program GIMLET (Valiere, 2002) was used to generate a consensus multilocus genotype for each sample and to identify matching multilocus genotypes among samples. Samples with genotypes for at least 6 loci were retained in the dataset; loci that did not have three matching genotypes were scored as “missing data.” Only unique multilocus genotypes were included in subsequent analyses of basic population genetic parameters for the overall dataset. We calculated the number of alleles per locus, observed heterozygosity (H_O), and expected heterozygosity (H_E) for each locus using GDA (version 1.1, Lewis and Zaykin, 1999). Tests for linkage disequilibrium and deficiencies of heterozygotes relative to Hardy–Weinberg expectations for each locus and globally were performed using the program GENEPOP (version 3.4; Raymond and Rousset, 2000). We employed two Bayesian clustering software programs, STRUCTURE (version 2.2, Pritchard et al., 2000) with the ΔK method (Evanno et al., 2005) and GENELAND (version 3.1.4, Guillot et al., 2005b), to infer the number of subpopulations in our dataset and assign individuals to those subpopulations. All samples with unique multilocus genotypes were used in the STRUCTURE analysis, whereas only those samples with both unique multilocus genotypes and spatial coordinates were used in the GENELAND analysis.

In STRUCTURE we performed five runs at each value of K (the number of subpopulations) from $K = 1$ to $K = 10$. Each run consisted of 100,000 replicates of the MCMC after a burn-in of 30,000 replicates. We used the admixture model and allowed the allele frequencies to be correlated among subpopulations. To assign individuals to subpopulations, a final run (100,000 burn-in and 500,000 replicates) at the inferred K was performed. The values of q , which are indicative of the proportion of an individual's genome characteristic of each subpopulation, were used to assign indi-

viduals. Individuals were considered unambiguously assigned to a subpopulation when q values were greater than 0.75. When q values were less than 0.75, assignments of individuals were distributed among multiple subpopulations. To infer the number of subpopulations (K) in GENELAND, we first varied the number of subpopulations from 1 to 5 using 5000 stored MCMC iterations (200,000 iterations, thinning = 40). We set the maximum rate of the Poisson process to 100 (a value close to the number of individuals in our data set) and the maximum number of nuclei to 300 ($3 \times$ maximum rate as suggested by Guillot et al., 2005a). We ran the GENELAND MCMC 10 times with the level of uncertainty attached to our spatial coordinates set to 2 km. We used the mode of the distribution of K as a point estimate of K . The assignment of individuals to subpopulations was performed in a separate run as suggested by Guillot et al. (2005a). For this run, K was set to the inferred number of subpopulations and all other parameters were similar to those runs with variable K . The posterior probability of subpopulation membership was computed for each pixel of the spatial domain (50×50 pixels), using a burn-in of 1000 iterations. Individuals with a posterior probability of population membership of greater than 0.75 were unambiguously assigned to that subpopulation.

For each subpopulation inferred in either STRUCTURE or in GENELAND, levels of genetic diversity were estimated by calculating the average number of alleles per locus, observed heterozygosity (H_O), expected heterozygosity (H_E), fixation index, and the number and frequency of unique alleles using GDA. We estimated the levels of genetic differentiation among the inferred subpopulations by calculating F_{ST} in GDA. Significance of each F_{ST} value was based on 95% confidence intervals determined by bootstrapping across all loci, where confidence intervals bracketing zero indicate no evidence of genetic variance partitioning between sample set pairs. Average relatedness of individuals within each subpopulation was assessed using Wang's (2002) estimator in SPAGeDi (Hardy and Vekemans, 2002).

The program CAPWIRE (Miller et al., 2005) was used to estimate population size within the Huachuca–Patagonia and White Mountains grids. We set the maximum population size to 100 for the Huachuca–Patagonia grid and 400 for the White Mountains grid, and used the likelihood ratio test (LRT) to determine which capture probability model was most accurate. Two capture models are available: the even capture probability model (ECM) where every individual is equally likely to be captured and the two innate rates model (TIRM) where individuals do not display equal capture probabilities. The appropriate model, based on LRT, was then used to estimate population size for each of the two grids.

2.4. Occupancy and landscape modeling

For occupancy analyses, our objective was to determine if bear occupancy (ψ) at the border hair-snap grid (i.e., Huachuca and Patagonia mountains) differed relative to habitat type and landscape covariates. We used the occupancy model option in program MARK (White and Burnham, 1999) to estimate occupancy relative to land cover (Madrean evergreen woodland [MEW], mixed conifer woodland [MXC], semi-desert grassland [DG], plains and Great Basin grassland [GBG], and oak woodland [OW]), slope ($^\circ$), aspect, elevation (m), and distances to permanent water and roads (m). We used point extraction and Euclidean distance routines in a 30-m resolution (i.e., USGS Seamless Server NED data) GIS to collect information on land cover and landscape covariates for hair-snap locations. We tested for collinearity among potential variables by examining tolerance and variance inflation factors (VIF) using weighted least squares regression, and excluded variables with tolerance scores <0.4 from analyses (Allison, 1999).

We formulated 12 models and kept the detection probability (p) constant, assuming it did not vary across time or habitat types and was not influenced by individual covariates. We modeled occupancy (ψ) with and without a habitat effect (i.e., group effect) or individual covariates. We used the variance inflation factor (i.e., c -hat in MARK) to guard against overdispersion and the small sample size correction of Akaike's Information Criterion (QAICc). C -hat was calculated using the median c -hat procedure in program MARK. In addition to reporting model selection results, we also reported the beta parameter and 95% confidence interval for the covariates and evaluated whether or not the beta parameter overlapped zero and used this as further evidence of the significance of each individual covariate for modeling occurrence of bears. We calculated model-averaged occupancy values and 95% confidence intervals for the model averaged parameters following procedures in program MARK.

Corridor modeling involved four steps: (i) creating a habitat suitability model; (ii) identifying breeding- and population-size patches within Sky Island wildland blocks (i.e., polygons estimating the areal extent for each Sky Island range; Fig. 1); (iii) creating a cost surface representing the grid cell resistance to movement; and (iv) applying a cost-distance routine to identify pixel swaths (i.e., corridors) linking wildland blocks. We used the results of the border occupancy model to parameterize a habitat suitability model (HSM) for the composite sampling region (i.e., 15 mountain ranges [four of which were combined into two wildland blocks] comprising the sky island complex and 1 mountain range [Pinal Mountains; wildland block 14] representing the southern extent of the high desert sampling region; Fig. 2). The HSM was comprised of grid layers representing land cover, elevation, aspect, slope, distance to water, and distance to road. For all grids we reclassified pixel values using the results from the occupancy models. Distances to road and water were weakly correlated (i.e., tolerance <0.4), but because it has been documented that bears avoid roads (e.g., Brody and Pelton, 1989), we included a reclassified road grid in our HSM.

We reclassified the land cover grid by collapsing 35 landcover classes from the 2001 National Landcover Data (NLCD) set (e.g., Encinal oak woodland) into five broader categories (e.g., oak woodland) and assigning the latter a value from 0 (absolute non-habitat) to 100 (optimal habitat) based on detection probabilities scaled from occupancy models (Table 1). For the elevation, aspect, and distances to water and roads grids, we created 5, 4, 3, and 3 evenly-spaced bins, respectively, and assigned values (0–100) based on probabilities of occurrence at hair-snag stations (Table 1). Slope often is modeled as a discrete value for individual grid pixels. While convenient, that practice may fail to capture neighborhood permeability thresholds that can occur in a rugged landscape, such as the Sky Island region. Accordingly, we used a moving window analysis in a GIS where we characterized the topographic position of a given pixel relative to adjacent pixels found within a 200-m radius. Using this method, we classified pixels as canyon bottom if the focal pixel elevation was at least 12 m less than the neighborhood average, a ridge-top if the pixel elevation was at least 12 m greater than the neighborhood average, a gentle slope if the pixel was neither a canyon bottom nor a ridge-top and had a slope $<6^\circ$, and a steep slope if the pixel was neither a canyon bottom nor a ridge-top and had a slope $>6^\circ$. The resulting topographic position index (TPI) grid was then reclassified following the method used for the elevation grid but using three bins. Finally, we combined the six individual grids using a weighted geometric mean algorithm (Table 1) where individual grid weighting factors were scaled to their proportional contribution based on the model-averaged Akaike weights.

We used the HSM to identify contiguous areas of suitable habitat that could function as breeding- and population-size patches

Table 1

Grid layers and variables, reclassified grid cell values, weighting factors used to assemble the habitat suitability model for the Arizona border Sky Islands.

Variable	Reclassified cell value	Weighting factor
<i>Land cover type</i>		0.50
Madrean evergreen	100	
Mixed conifer	68	
Oak woodland	84	
Semi-desert grassland	56	
Plains and Great Basingrassland	1	
<i>Distance to water</i>		0.35
<500 m	100	
500–1000 m	50	
>1000 m	25	
<i>Distance to roads</i>		0.05
<500 m	25	
500–1250 m	50	
>1250 m	100	
<i>Aspect</i>		0.04
North	80	
East	35	
South	100	
West	25	
<i>Elevation</i>		0.03
>763 m	20	
163–1219 m	37	
1220–1981 m	100	
1982–2591 m	81	
2592–4000 m	63	
<i>Topographic position</i>		0.03
Canyon bottom	50	
Gentle slope	100	
Ridge top	25	

within wildland blocks. Based on previous black bear work conducted in Arizona, we selected a minimum breeding patch size of 50 km² and extrapolated a minimum population patch ($n = 50$ bears) size of 300 km² (LeCount, 1982). We used a moving window analysis (200-m radius) in a GIS to group together pixels with a suitability value of ≥ 60 into the breeding and population patches. We chose the 200-m radius to depict suitability relative to the landscape pattern and the spatial requirements and perceptual ability of black bears (Vos et al., 2001). The Sky Island landscape is relatively patchy in nature, owing to the basin and range topography, and the window analysis must be fine enough to detect changes in patch quality at a scale that bears are likely to perceive (Lima and Zollner, 1996). Cunningham and Ballard (2004) found that the home ranges of female black bears in central Arizona's Sky Islands averaged 13 km². Our 200-m radius equates to a 12.6 ha neighborhood, which is approximately one-tenth the area of the average female home range, and should represent a patch size that bears can detect.

We converted the HSM into a cost surface by calculating cell resistance (i.e., travel cost; cell resistance = 100 – pixel suitability) for the entire grid. The resulting cost surface grid was comprised of pixel values that reflected the cost of (or resistance to) movement through each individual grid cell, with increasing cell values representing increasing resistance to movement. We then applied a moving window analysis (200-m radius) to generate corridor models (pixel swaths) that connected habitat cores while minimizing resistance to movement. We selected the best biological corridors (e.g., Bennett et al., 1994) based on the pixel swath that minimized within-swath gaps, maximized within-swath habitat suitability, and reduced edge effects by maintaining a minimum width equal to the radius of an estimated home range (LeCount, 1982; Cunningham and Ballard, 2004). All habitat and corridor modeling was done using the CorridorDesigner package for ArcGIS (Majka et al., 2007).

Table 2

Characterization of the 11 microsatellite loci used in genetic analyses of black bears sampled at central highlands and border sites in Arizona, 2007–2008. Number of samples genotyped (*N*), number of alleles per locus (*A*), expected (H_E) and observed (H_O) heterozygosities and the fixation index are reported.

Locus	<i>N</i>	<i>A</i>	H_E	H_O	<i>f</i>
G10J	157	7	0.679	0.637	0.062
G10M	155	5	0.692	0.587	0.152 ^a
G10X	157	6	0.548	0.580	−0.057
G10B	151	7	0.559	0.556	0.072
G10H	157	10	0.484	0.510	−0.052
G1D	158	7	0.743	0.684	0.081 ^a
UarMu50	157	3	0.126	0.083	0.343 ^a
G10C	156	4	0.329	0.346	−0.051
G10L	157	8	0.815	0.790	0.031
G1A	156	6	0.192	0.186	0.034
UarMu59	148	6	0.663	0.635	0.042
All	155.36	6.27	0.534	0.508	0.048

^a Significant heterozygote deficiency ($\alpha = 0.05$).

3. Results

3.1. Genetic connectivity

Samples for genetic analyses were distributed over $\approx 31,250 \text{ km}^2$ in the east-central region and collected from six Sky Island mountain ranges (Fig. 1). For the White Mountains hair-snag grid, samples were collected from 43% of grid cells, with 35% of those hair-snags yielding samples from ≥ 2 capture sessions. Similarly, samples were collected from 40% of grid cells at the border hair-snag grid, with 46% of those hair-snags yielding samples from ≥ 2 capture sessions. We were able to obtain usable

multilocus genotypes for 189 of the 258 samples. Of these 189 multilocus genotypes, 158 were identified by GIMLET as being unique. Of these 158 individuals, 52 were female and 96 were male (10 of unknown sex). For the pooled sample, the overall number of alleles per locus ranged from 3 (UarMu50) to 10 (G10H) and observed single locus heterozygosities ranged from 0.083 (UarMu50) to 0.790 (G10L) (Table 2). Global tests of the pooled dataset revealed an overall significant deviation from Hardy–Weinberg equilibrium ($P = 0.003$) and significant deficiencies of heterozygotes at three individual loci were observed, which is not unexpected if there is underlying population subdivision within the pooled dataset (Table 2). Linkage disequilibrium was observed between three pairs of loci (G1D–G10B, G1D–G10L and G1D–G10J) after a sequential Bonferroni correction ($\alpha = 0.00019$). Assuming matching multilocus genotypes indicate re-captures, 138 bears were captured only once, 13 bears were captured twice, four were captured three times, two were captured four times, and one was captured five times. In each instance where the data indicated that a bear was recaptured multiple times, all recaptures for that individual occurred within the same grid used for population estimation or within the set of individuals that could not be assigned to a grid. In only four instances did the multilocus genotypes of pairs of unique individuals differ at less than three loci.

STRUCTURE and the ΔK measure indicated the most likely number of subpopulations (K) was 3 (Fig. 3a); however at $K = 3$ few individuals were assigned to any of the three subpopulations with high certainty. When $K = 2$, most individuals were unambiguously assigned to one of two subpopulations (Fig. 3b). These two subpopulation groupings roughly corresponded to the east-central ($n = 102$; 62 males, 38 females, 2 unknown sex) and border ($n = 33$; 17 males, 11 females, 5 unknown sex) regions. Twenty-

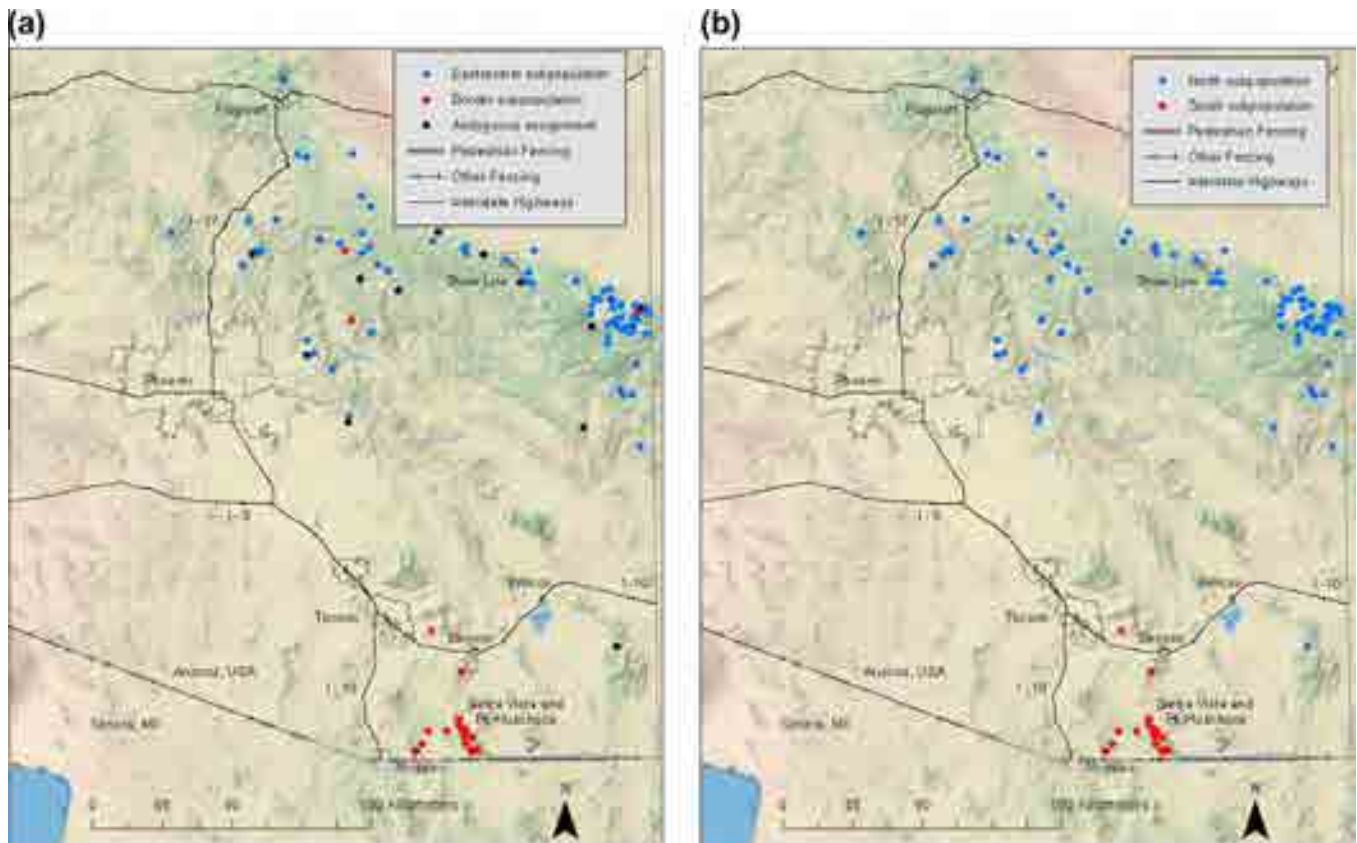


Fig. 3. (a and b) Subpopulation assignments of black bears sampled in Arizona. Assignments were based on genetic information using the programs structure (a) and Geneland (b).

Table 3

Estimates of genetic diversity for the two subpopulations identified from black bears sampled at central highlands and border sites in Arizona, 2007–2008. Number of samples genotyped (N), average number of alleles per locus (A), expected (H_E) and observed (H_O) heterozygosities, fixation index (f) values, and (F_{ST}) are reported.

Population	N	A	H_E	H_O	f	F_{ST}
Overall	158	6.3	0.534	0.508	0.048	NA
East-central ^a	102	5.8	0.541	0.538	0.006	0.111
Border ^a	33	4.3	0.432	0.422	0.023	
East-central ^b	113	6.2	0.540	0.534	0.011	0.113
Border ^b	28	3.9	0.411	0.401	0.024	

^a Subpopulations assigned by STRUCTURE. Twenty-three bears with ambiguous assignments were removed from the dataset.

^b Subpopulations assigned by GENELAND.

three individuals (17 males, 3 females, 3 unknown sex) were assigned to both subpopulations (q values less than 0.75): 19 of the individuals were from the central highlands area, 3 were from the high desert area, and one was from the border area. These ambiguously assigned individuals were not included in the subsequent genetic or demographic analyses of the inferred subpopulations. Similar levels of genetic diversity were observed within each of the two subpopulations defined by STRUCTURE (Table 3). There were large numbers of unique alleles in the east-central subpopulation ($n = 22$) compared to the border subpopulation ($n = 5$). Most unique alleles were at low frequency, however at 1 locus (G1D in the border subpopulation) a unique allele was observed at a frequency of 41%. Significant genetic differentiation was observed between the two inferred subpopulations ($F_{ST} = 0.111$; 95% CI: 0.056–0.156; $n = 135$; Table 3). Average relatedness estimates of individuals within subpopulations were 0.16 and 0.37 in the central highlands and border subpopulations, respectively.

The GENELAND analysis indicated that the most likely number of subpopulations was 2. Through the incorporation of spatial coordinates, GENELAND was able to identify a northern subpopulation ($n = 113$, 70 males, 37 females, 6 unknown sex) and a southern subpopulation ($n = 28$, 15 males, 10 females, 3 unknown sex) which corresponded to the east-central and border regions of our study. All individuals were unambiguously assigned to one of the two subpopulations. Similar levels of genetic diversity were observed within each of the two subpopulations defined by GENELAND (Table 3). There were large numbers of unique alleles in the east-central subpopulation ($n = 26$) compared to the border subpopulation ($n = 1$), however most unique alleles were at low frequency. Significant genetic differentiation was observed between the two inferred subpopulations ($F_{ST} = 0.113$; 95% CI: 0.051–0.167; Table 3). Average relatedness estimates of individuals within subpopulations were 0.16 and 0.41 in the east-central and border subpopulations, respectively.

Table 4

Models of black bear occupancy for the Border grid (Huachuca and Patagonia mountains) in southern Arizona. We held detection probability constant [$p(\cdot)$] and modeled occupancy (ψ) with and without a group effect (i.e., differences between habitat types) and with five site specific covariates (aspect, distances to water [disw] and roads [disroad], elevation [elev], and slope). We present all models, QAICc, model weight, number of parameters (k), and beta values of individual covariates with corresponding 95% confidence intervals. Cells shaded gray had beta values with 95% confidence intervals not overlapping zero, providing evidence of significance.

Model	QAICc	Model weight	k	Covariate beta value	Lower95% CI	Upper95% CI
$p(\cdot) \psi[(\text{group}) + (\text{water})]$	198.7	0.45	7	−0.003	−0.006	−0.0001
$p(\cdot) \psi[(\cdot) + (\text{water})]$	200.8	0.16	3	−0.004	−0.006	−0.001
$p(\cdot) \psi(\text{group})$	200.9	0.15	6	n/a		
$p(\cdot) \psi[(\text{group}) + (\text{road})]$	202.3	0.08	7	0.001	−0.001	0.002
$p(\cdot) \psi[(\text{group}) + (\text{aspect})]$	202.5	0.07	7	0.003	−0.003	0.009
$p(\cdot) \psi[(\text{group}) + (\text{slope})]$	203.3	0.05	7	−0.005	−0.086	0.075
$p(\cdot) \psi[(\text{group}) + (\text{elev})]$	203.3	0.05	7	−0.00002	−0.002	0.002
$p(\cdot) \psi(\cdot)$	210.2	0.00	2	n/a		
$p(\cdot) \psi[(\cdot) + (\text{road})]$	210.4	0.00	3	0.0006	−0.0003	0.002
$p(\cdot) \psi[(\cdot) + (\text{elev})]$	211.3	0.00	3	−0.0004	−0.0004	0.001
$p(\cdot) \psi[(\cdot) + (\text{aspect})]$	212.2	0.00	3	0.001	−0.004	0.006
$p(\cdot) \psi[(\cdot) + (\text{slope})]$	212.2	0.00	3	0.013	−0.051	0.076

Table 5

Occupancy (ψ) estimates of black bears in different habitat types at Border study site in Arizona. Estimates were generated in program MARK by model averaging values of ψ over the suite of candidate models presented in Table 4.

Habitat type	ψ	SE	Lower95% CI	Upper95% CI
Madrean evergreen (MEW)	0.72	0.10	0.50	0.87
Mixed conifer (MXC)	0.55	0.17	0.25	0.83
Desert grassland (DG)	0.45	0.25	0.10	0.86
Great Basin grassland (GBG)	0.10	0.23	0.001	0.94
Oak woodland (OW)	0.71	0.14	0.39	0.90

The LRT in CAPWIRE identified the TIRM as most appropriate capture probability model for data from the White Mountains grid and estimated the population size to be 252 bears (95% CI: 137–396). The ECM was identified as most appropriate capture probability model for data from the Huachuca–Patagonia grid and population size was estimated to be 69 bears (95% CI: 39–82).

3.2. Occupancy and connectivity modeling

For the border data set we estimated probability of detection to be 0.79 (SE = 0.04) and found strong evidence that occupancy differed between habitat types and that distance to water (disw) from hair-snags influenced estimates of occupancy (ψ). Models with a habitat effect (group effect) accounted for 85% of the weight (Table 4) and the individual covariate “disw” was in the top two models (accounting for 61% of the model weight), and was the only covariate whose 95% confidence interval around the beta value did not overlap zero (Table 4). Occupancy estimates ranged between 0.72 and 0.10 between habitat types with occupancy highest in MEW followed by OW, MXC, DG and GBG (Table 5). Variance was highest for DG and GBG indicating high levels of uncertainty in our estimates of occupancy for these habitat types. The relationship between distance to water and occupancy was negative.

The habitat suitability model identified population- and breeding-size patches of suitable and optimal habitat in all Sky Island wildland blocks (Fig. 4). Along the border, the greatest area of population- and breeding-size patches was found in the Chiricahua block (block 7; 923 km²), followed by the Huachuca–Patagonia (block 3; 831 km²), and Santa Rita (block 2; 481 km²) blocks (Fig. 4). The Dragoon Mountains block was the smallest and had the least amount of suitable habitat (Fig. 4, block 6; 307 km²). Isolation of wildland blocks generally increased from west to east, with the shortest nearest neighbor distances occurring between the Huachuca–Patagonia and Santa Rita blocks followed closely by the Huachuca–Patagonia and Tumacacori blocks. The structural and qualitative characteristics of potential corridors connecting

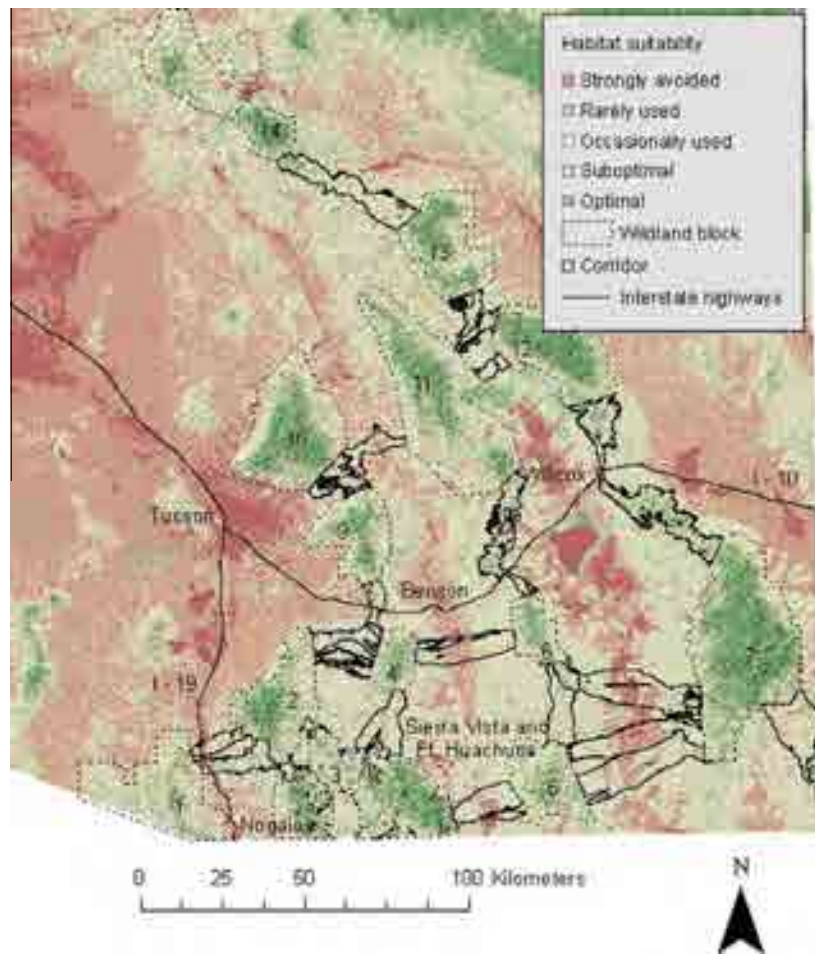


Fig. 4. Habitat suitability map for the area encompassing the Arizona Sky Island wildland blocks and corridors.

the eight border Sky Islands (wildland blocks 1–8; Fig. 5) differed greatly, but generally the western-most wildland blocks (i.e., Tumacacori [1], Santa Rita [2], Huachuca–Patagonia [3], and Whetstone [4] blocks) were connected by higher quality corridors. For these corridors, length to narrowest width ratios averaged $\leq 4.4:1$ (range: 1.11:1–9.0:1; SE = 0.95), with ≥ 1 corridor within each of the individual linkages containing $\geq 57\%$ suitable (either optimal or suboptimal) habitat (Fig. 4). By contrast, the mean length to width ratios of the corridors connecting the eastern-most wildland blocks (i.e., Mule [5], Dragoon [6], Chiricahua [7], and Peloncillo [8] blocks) was 6.8:1 (range: 1.2:1–12.1:1; SE = 1.11), and only 1 linkage (Dragoon–Mule mountains corridor) contained $>57\%$ suitable habitat (Fig. 4). The linkages connecting the Huachuca–Patagonia and Mule, Whetstone and Mule, Dragoon and Chiricahua, and Mule and Chiricahua blocks all contained $<57\%$ suitable habitat and spanned 23–44 km over desert basin habitat (Fig. 5). Corridors connecting the northernmost wildland blocks (blocks 9–14; Fig. 5) were generally of similar suitability to the western-most border wildland blocks in that all contained $>57\%$ of optimal or suboptimal habitat (Fig. 4), but length to width ratios were more variable ($\bar{x} = 4.7:1$; range: 1.0:1–17.0:1; SE = 2.08).

4. Discussion and conclusions

Our study revealed several important findings regarding black bear genetic and landscape connectivity in Arizona. First, we detected significant genetic differentiation between black bears sampled in the border region and those sampled in the high desert and

central highlands regions. Second, based on density estimates derived from the White Mountains and Huachuca–Patagonia hair-snag grids, the border subpopulation density (0.06 bear/km^2) was substantially lower than the east-central subpopulation (0.21 bear/km^2). Although our grid-based density estimates relate only to the area covered by the grids, the bio-physical characteristics of grids were very similar to their respective regions (Brown, 1994). Accordingly, we believe the estimated grid densities approximate densities across sampling regions. Finally, while the border Sky Island mountain ranges do provide adequate amounts of suitable habitat to support black bears, there is wide variation in the biological quality of corridors that connect them. While black bears are not a species of concern in US, they are in Mexico, which represents the southern extent of their historic and current range (Pelton et al., 1998). Given the above, black bear persistence in the US–Mexico border Sky Islands may be particularly vulnerable to further loss of habitat due to urbanization and border security activities.

Black bear populations in Arizona exhibit a north–south spatial structure in which the border sub-population is isolated from, and less genetically diverse than, the main population segment in east-central Arizona. These patterns are likely the result of both historic and contemporary impediments to individual movement and thus gene flow (McRae et al., 2005). For example, the harsh environment and dispersion of suitable montane habitat patches in a desert basin matrix have previously been implicated as historic impediments to large mammal gene flow (Onorato et al., 2004; McRae et al., 2005), and likely are complicit in the isolation we detected between the border and east-central subpopulations. Addi-



Fig. 5. Linkage design for the southern Arizona Sky Islands. The design represents land that, if conserved, should enhance the ability of black bears to move between wildland blocks.

tionally, it is feasible that Interstate Highways 10 and 19, the expanding human footprint near Tucson and other urban areas in southeastern Arizona, and the US–Mexico border fence represent contemporary impediments to movement and function to hasten genetic isolation of black bears in the border region. Indeed, there is a growing body of research indicating that urbanization and linear anthropogenic barriers can drive spatial structure in bear and other large carnivore populations (e.g., Kyle and Strobeck, 2001; Proctor et al., 2005; Burdett et al., 2010). Thus, while the desert basin has likely historically limited bear gene flow between the high desert and border regions, it is also likely that landscape fragmentation due to anthropogenic activities, including border security, has further limited gene flow.

Large carnivores are highly vagile, require a large amount of area to maintain a viable population and, as a result, are often highly vulnerable to habitat fragmentation (Weaver et al., 1996; Burdett et al., 2010) and loss of connectivity (Beckmann et al., 2010). Over the last few decades, central and southern Arizona

has experienced rapid human population growth (Primack, 2006); urban expansion in the Tucson metropolitan area alone is expected to increase by 22% over the next decade (Pima Association of Governments: www.pagnet.org/regionaldata/population/populationestimates/tabid/582/default.aspx). Our linkage design (Fig. 5) for Arizona's border Sky Islands provides a template for land-use managers and planners to prioritize conservation efforts where future development is most immediate and likely to adversely affect landscape connectivity. For example, we believe that conservation efforts aimed at protecting corridors within the Nogales–Sierra Vista–Tucson triangle should be prioritized. This area contains relatively high quality corridors linking wildland blocks (e.g., Tumacacori, Santa Rita, and Patagonia–Huachuca; Fig. 2) that either extend into Sonora, Mexico, or are immediately adjacent to Sonora wildland blocks (e.g., Sierra Cibuta, Sierra Pinito, and Sierra Chivato), thus providing the best opportunity for trans-border movement. Urbanization and additional stretches of the impermeable pedestrian fence along the international border have the po-

tential to threaten connectivity in an area that may be critically important in facilitating trans-border dispersal, ultimately predisposing segments (i.e., the more isolated Sky Island mountain ranges) of the low density border black bear subpopulation to localized extinction.

Populations of black bears in the southwestern US and northern Mexico appear to display a metapopulation structure (Onorato et al., 2004), thus a significant step in ameliorating effects of habitat fragmentation will be to maintain or restore landscape connectivity within the system. The results of our analyses identified opportunities and challenges to maintaining connectivity among border Sky Islands and to the high desert region. A central challenge is that structural connectivity (based on length:width and % suitable habitat metrics: Bennett et al., 1994) between border region wildland blocks varied considerably. Moreover, several adjacent wildland blocks that appear to benefit from sound structural connectivity also appear to be vulnerable to compromised functional connectivity due to increasing infrastructure. For example, the Tumacacori-Santa Rita corridor is bisected by Interstate Highway 19 (Fig. 5), which may degrade functional connectivity and reduce the likelihood of migrants from Sonora moving into the Sky Islands east of the interstate. Similarly, three other corridors (Whetstone-Rincon, Dragoon-Pinaleno, and Chiricahua-Pinaleno) potentially important in facilitating gene flow between the border and high desert regions, are bisected by Interstate Highway 10 (Fig. 5). These highway-corridor intersections would be ideal areas to target for road mitigation projects (e.g. road crossing structures designed specifically for black bears and other large mammals, see Beckmann et al., 2010) that enhance functional connectivity.

The US–Mexico borderland is one of the most biologically diverse and ecologically vulnerable regions in the United States (Cordova and de la Parra, 2007). Because rapid urbanization and border security activities threaten to alter the spatial structure of trans-border wildlife populations (Flesch et al., 2010), it is important to identify opportunities to maintain or restore borderland connectivity. We identified suitable habitat and movement corridors for black bears in the Sky Island mountain ranges of southern Arizona, information that can help inform systems-level approaches to land-use planning and conservation (Moilanen et al., 2005). Currently, in the western US, there is opportunity to integrate connectivity conservation with land-planning (Western Governor's Association, 2008). For example, land-use planners in the Tucson metropolitan area have developed a regional conservation plan with a specific focus on maintaining wildlife linkages and increasing the permeability of transportation corridors (see Campbell and Kennedy, 2010). The information we present here, if incorporated into land-use planning, may aid in ameliorating the adverse effects of inevitable urbanization and border security activities. If connectivity can be maintained, there is greater likelihood of the long-term persistence of species such as black bears, mountain lions, and jaguars along the US–Mexico border.

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Research to Regulation: Cougar Social Behavior as a Guide for Management

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*In My Opinion*

Research to Regulation: Cougar Social Behavior as a Guide for Management

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ABSTRACT Cougar (*Puma concolor*) populations are a challenge to estimate because of low densities and the difficulty marking and monitoring individuals. As a result, their management is often based on imperfect data. Current strategies rely on a source–sink concept, which tends to result in spatially clumped harvest within management zones that are typically approximately 10,000 km². Agencies often implement quotas within these zones and designate management objectives to reduce or maintain cougar populations. We propose an approach for cougar management founded on their behavior and social organization, designed to maintain an older age structure that should promote population stability. To achieve these objectives, hunter harvest would be administered within zones approximately 1,000 km² in size to distribute harvest more evenly across the landscape. We also propose replacing the term “quota” with “harvest threshold” because quotas often connote a harvest target or goal rather than a threshold not to exceed. In Washington, USA, where the source–sink concept is implemented, research shows that high harvest rates may not accomplish the intended population reduction objectives due to immigration, resulting in an altered population age structure and social organization. We recommend a harvest strategy based on a population growth rate of 14% and a resident adult density of 1.7 cougars/100 km² that represent probable average values for western populations of cougars. Our proposal offers managers an opportunity to preserve behavioral and demographic attributes of cougar populations, provide recreational harvest, and accomplish a variety of management objectives. We believe this science-based approach to cougar management is easy to implement, incurs few if any added costs, satisfies agency and stakeholder interests, assures professional credibility, and may be applied throughout their range in western North America. © 2013 The Wildlife Society.

KEY WORDS cougar, harvest management, harvest quota, intrinsic growth rate, management zone, *Puma concolor*, regulation, social structure, source–sink, Washington.

The history of cougar (*Puma concolor*) management in Washington and for the western United States as a whole has been dominated by political and special interest agendas creating a challenge for wildlife managers (Kertson 2005, Beausoleil and Martorello 2008, Mattson and Clark 2010, Jenks 2011, Peek et al. 2012). This is magnified by the lack of reliable information on cougar population size, density, and outcomes of management strategies (Cougar Management Guidelines Working Group 2005). In recent decades, satellite and Global Positioning System telemetry and long-term field investigations in 6 different areas in Washington (Lambert et al. 2006; Robinson et al. 2008; Cooley et al. 2008, 2009a, b; Maletzke 2010; Kertson et al. 2011a, b; R. A. Beausoleil, unpublished data), and throughout the West (Logan and Sweanor 2001, Cougar Management Guidelines Working Group 2005, Stoner et al.

2006, Hornocker and Negri 2010, Robinson and DeSimone 2011) have elucidated cougar ecology, providing managers a new scientific basis to help guide management.

Behavior and social organization are important aspects of many species' biology and should be considered for management, particularly for low-density territorial carnivores occupying the apex of the trophic hierarchy (Wielgus and Bunnell 1994, Caro et al. 2009, Packer et al. 2009, Treves 2009, Estes et al. 2011). Maintaining mature cougars is important because they influence rates of immigration and emigration, spatial distribution, reproduction, and kitten survival (Cougar Management Guidelines Working Group 2005, Hornocker and Negri 2010; Cooley et al. 2009a, b).

We propose a science-based approach to regulated harvest management founded on cougar behavior and social organization, in which harvest is regulated to maintain an older age structure to promote population and social stability. This model for cougar management addresses concerns of various constituencies to 1) provide a sustainable harvest, 2) provide quality recreational experience to the hunting public, 3) maintain viable cougar populations, and 4) more explicitly

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recognize the values of the non-consumptive public by maintaining the behavioral integrity of cougar populations.

We base our recommendations on research from Washington demonstrating that a high harvest rate may not accomplish local population reductions and may result in altering the age structure and social organization of the population. This may have unplanned consequences for cougar-prey dynamics and cougar-human conflict (Knopff et al. 2010, White et al. 2011, Kertson et al. 2013). More than US\$ 5 million and >13 years (1998–2011) have been invested in cougar research in Washington at 6 study sites across a diverse landscape (Fig. 1). We distill findings from these investigations and propose strategies to help managers navigate the myriad of agendas that encompass carnivore management for a more predictable management outcome, especially in the unpredictable atmosphere of politics and advocacy. Our objective for this review is to provide a data-driven management system that can be applied consistently among management units that incorporates both species behavior and human interests.

CURRENT COUGAR MANAGEMENT STRATEGIES

Management agencies throughout the west use a variety of strategies and techniques to regulate cougar harvest, including general-season hunts with no harvest limit or season restrictions, limiting the number of hunters through permits, and limiting harvest through quotas or bag limits. The use of trailing hounds to hunt cougars is permitted in the majority of states and provinces (Beausoleil et al. 2008). In this manuscript, we propose replacing the term “quota” with

“harvest threshold” because quotas often connote a harvest target or goal rather than a threshold not to exceed, and we propose that harvest should not exceed the intrinsic rate of population growth.

Current management strategies rely on a source-sink concept (Laundré and Clark 2003) and are administered within cougar management zones (CMZs), that are typically about 10,000 km² and often have management objectives to reduce or maintain cougar populations (Logan and Sweanor 2001). However, dispersal by cougars from adjacent areas may thwart efforts to locally reduce cougar populations (Lambert et al. 2006, Robinson et al. 2008; Cooley et al. 2009a). Conversely, where managers want to maintain cougar populations and apply harvest thresholds to zones, harvest may still be locally excessive when CMZs are >1,000 km² and the majority of the harvest occurs in clusters where hunter accessibility is relatively great (Ross et al. 1996). Although local population sinks may be re-populated by immigration of subadults, disruption may occur to the intrinsic social and spatial organization of the population, which may result in a demographic composition dominated by subadults (Lambert et al. 2006; Robinson et al. 2008; Cooley et al. 2009b). This situation may create unanticipated consequences, including an increase in the use of residential areas by cougars and in human-cougar complaints (Maletzke 2010, Kertson et al. 2011b).

HISTORY OF COUGAR MANAGEMENT IN WASHINGTON

Cougar management in Washington began in 1966 when their status changed from a bounty animal to a big-game species with hunting seasons and harvest limits (Washington

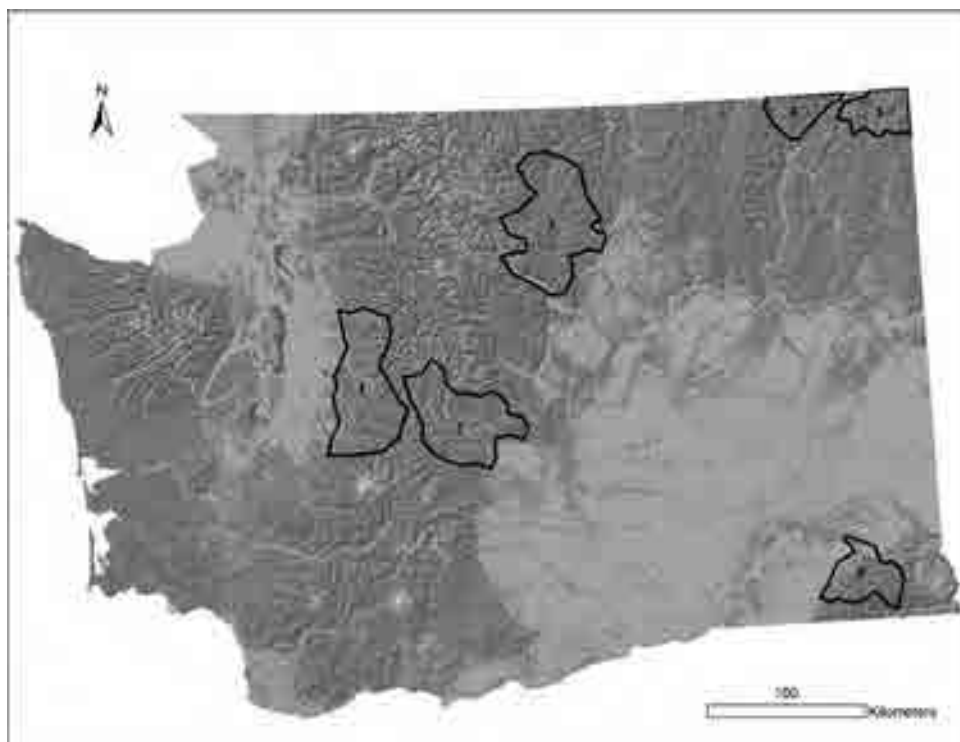


Figure 1. Six cougar research areas in Washington, USA, 2001–2012: (1) western WA; (2) central WA; (3) north-central WA; (4 and 5) northeast WA; (6) southeast WA.

Department of Fish and Wildlife [WDFW] 2008). This change came with a series of regulations, including mandatory reporting (1970), inspection and sealing of cougar pelts for demographic data (1979), and submitting a tooth from harvested animals for age analysis (mid-1980s). From 1980 to 1995, cougar harvest seasons remained static with a 6–8-week season.

Politics began to direct cougar management in 1996 when Washington voters approved Initiative 655 (I-655). Initiative 655 banned the use of dogs for hunting cougar and has been pivotal in framing the debate over cougar management in Washington since then (Kertson 2005, Beausoleil and Martorello 2008). With the use of dogs banned and anticipated decrease in cougar harvest, WDFW 1) replaced limited permit-only seasons with general seasons, 2) increased season length from 7.5 weeks to 7.5 months, 3) increased bag limits from 1 to 2 cougar/year, and 4) decreased the price of transport tags from US\$ 24 to \$ 5. The response to these changes resulted in increased tag sales from an annual average of 1,000 prior to I-655 to approximately 59,000/year since 1996, and this action increased harvest from an average of 121 (SD = 54, 1980–1995) to an average of 160 (SD = 44, 1996–2011)/year. Hunting opportunities and harvest were not evenly distributed, primarily increasing in areas where social tolerance for cougars was low, deer hunter density was high, and human access was high; during this time, cougar densities were unknown but assumed to be increasing (Jenks 2011, Lambert et al. 2006).

Since I-655 was approved, 16 legislative bills addressing cougar management have been introduced into the Washington legislature (<http://apps.leg.wa.gov/billinfo>). In 2000, Washington instituted a management concept to reduce cougar numbers in areas where complaints were high (Engrossed Substitute Senate Bill 5001-ESSB 5001). This bill and 3 others since 2003 (Substitute Senate Bill 6118-SSB 6118, Engrossed Substitute House Bill 2438-HB 2438, and Engrossed Substitute House Bill 1756-HB 1756) permitted the use of dogs in 6 counties, effectively overturning I-655 in many areas throughout Washington. In 2011, House Bill 1124 was introduced to continue hunting with hounds but failed to pass, and since the use of dogs has been prohibited statewide. However, ESSB 5001 allows the WDFW to authorize a hunt with the use of dogs when reports of conflicts with humans or their livestock exceed the previous 3-year running average.

In the midst of the political activity between 1996 and 2010, which included legislative mandates, WDFW began integrating insights from harvest monitoring (Martorello and Beausoleil 2003), and research projects (Robinson et al. 2008; Lambert et al. 2006; Cooley et al. 2009a, b; Kertson 2010; Maletzke 2010). In 2003, harvest thresholds in conjunction with a 24-hour hunter reporting hotline allowed for prompt closure of zones where the use of dogs was permitted. In 2009, the WDFW reduced the bag limit to 1 cougar/hunter/year, shortened season length to avoid some overlap with deer and elk seasons, and restricted harvest with female- and total-harvest thresholds. In 2011, WDFW managers and researchers compiled research findings and

began drafting a new management strategy, an aspect of which was publicly reviewed and ultimately adopted by the Washington Fish and Wildlife Commission in spring 2012. Here, we present a synthesis of this research and develop these concepts into a management strategy.

COUGAR ABUNDANCE AND DENSITY: BEHAVIORAL CONSIDERATIONS

Estimating cougar abundance and density, as with most species, represents one of the most challenging aspects of their management. Currently, reliable estimation of cougar abundance requires expensive, field-intensive, long-term research (Hornocker and Negri 2010). Consequently, agencies use numbers of cougar complaints, cougar–human conflicts, and harvest as proxies for population size and trend (Martorello et al. 2006). However, cougar complaint reports can be unreliable (Kertson et al. 2013), and it has been shown that increasing numbers of complaints and increasing predation on mule deer (*Odocoileus hemionus*), and endangered mountain caribou (*Rangifer tarandus caribou*) in a large (10,000-km²) heavily hunted CMZ in the Selkirk Mountains Ecosystem in northeastern Washington, northern Idaho, and southern British Columbia did not correspond to increasing densities of cougars (Katnik 2002, Robinson et al. 2002, Lambert et al. 2006). Thus, the indirect proxies of population size appeared to be plausible but were inaccurate in that heavily hunted CMZ that had approximately 38% annual removal rate of cougars.

Subsequent research in Washington was designed to examine the previous hypothesis (Lambert et al. 2006) of no direct positive correlation between harvest numbers and complaints and population densities of cougars. Working in the heavily hunted (24% of population harvested/yr), area of Kettle Falls in northern Washington, a declining female cougar population was documented as the male segment increased due to compensatory juvenile male immigration (Robinson et al. 2008). In another study area in central Washington, (Cle Elum), an opposite scenario was confirmed in that relatively low hunting mortality (11%/yr) resulted in a net emigration of younger males (Cooley et al. 2009a). In all cases, the population densities were remarkably similar, ranging from 1.5 to 1.7 adult (>2-yr-old), cougars/100 km² with total densities of about 3.5 cougars/100 km², including kittens and subadults. Details on estimating population densities and immigration–emigration rates have been described (Robinson et al. 2008; Cooley et al. 2009a, b; Robinson and DeSimone 2011). Additional research on 2 other study areas in western and north-central Washington showed an average resident adult density of about 1.6/100 km² and a total density of about 3.4/100 km² (R. A. Beausoleil and B. N. Kertson, unpublished data). In 3 separate study areas in Washington and Montana, increased hunting (11–38% population harvest rates) did not result in compensatory increases in cub production, cub survival, or adult survival (Robinson et al. 2008; Cooley et al. 2009a, b; Robinson and DeSimone 2011). However, variation in hunting mortality did result in compensatory immigration–emigration by primarily young males, with no net differences

in total cougar numbers. Such compensatory immigration has been observed in many other highly mobile species as well (Beecham and Rohlman 1994, Merrill et al. 2006, Turgeon and Kramer 2012, Mills 2013). Therefore, increased hunting may not always result in reduced local densities of cougars, but not due to traditional density-dependent effects such as compensatory reproduction and survival; instead, increased hunting may result in compensatory immigration by mainly young males (Cooley et al. 2009*b*).

Presenting and comparing density estimates between studies is challenging because standardization is lacking (Quigley and Hornocker 2010). For example, whereas total density could temporarily fluctuate in response to immigration and emigration of subadults, density of resident breeding adults tends toward stability over time. Density estimates can also be misinterpreted from incomplete data due to differences in seasonal spatial use patterns where individuals concentrate on low-elevation ungulate winter ranges, often comprising only a portion of the population's annual distribution (Maletzke 2010). When annual boundaries of individual cougar territories are unknown, density estimates may result in inflated values and substantial overestimation of population size (Maletzke 2010). However, there is remarkable consistency in the western United States and Canada where long-term research has been conducted; resident adult densities average 1.6 cougar/100 km², while total densities including kittens and subadults average 2.6 cougar/100 km² (Quigley and Hornocker 2010). Our research in Washington corroborates these findings because adult densities averaged 1.7/100 km² (Cooley et al. 2009*b*; R. A. Beausoleil and B. N. Kertson, unpublished data). Therefore we encourage a more explicit, standardized approach of using estimates of adult densities for population management objectives and caution against using total densities, because they do not provide for reliable estimation of population parameters and harvest impacts (Robinson et al. 2008; Cooley et al. 2009*b*).

In Washington, where prey biomass was consistent and cougar harvest ranged from 11% to 38% of the cougar population per year, the age structure, survival, sex ratio, reproductive rate, and spatial use patterns of cougars differed (Lambert et al. 2006; Cooley et al. 2009*b*; Maletzke 2010). Where annual harvest was 24%, mean age at harvest was 27 months compared with 38 months where annual harvest was 11%. In addition, in areas of greater relative harvest, male home-range sizes were larger (753 km² vs. 348 km²), and home-range overlap between males was greater (41% vs. 17%). Cougars, especially males, evolved with a social dynamic to patrol and defend a territory regardless of whether their home-range size is determined by prey density or social tolerance (Hornocker 1969, Pierce et al. 2000, Logan and Sweanor 2010). As adult mortality increases, territorial boundaries diminish. Immigrating subadults may establish home ranges readily, and their home ranges may overlap significantly, which may influence rates of predation and the distribution of prey and potentially increase probabilities for interactions with humans (K. A. Peebles, Washington State University, unpublished data).

The social system and territoriality observed for cougars is similar among many species of solitary felids, although it may manifest itself differently for males and females (Sunquist and Sunquist 2002). Although the role of social ecology for cougars will continue to be debated in the future, it is important to acknowledge that harvest intensity can affect spatial use patterns of cougars as well as their population demographics, as demonstrated for other hunted carnivore populations (Packer et al. 2009).

HARVEST MORTALITY VERSUS TOTAL MORTALITY

Although knowledge of population abundance and density is critical for sound management of cougars, it is also important that managers be aware that harvest mortality can be additive to natural mortality (Robinson et al. 2008; Cooley et al. 2009*b*; Robinson and DeSimone 2011). Failing to account for and include all mortality sources may obscure estimates of population trajectory and underestimate the impact of harvest on demographics and cougar social structure (Cooley et al. 2009*b*; Morrison 2010; Robinson and DeSimone 2011). Unfortunately, reliable knowledge of non-harvest mortality is difficult to quantify (Cougar Management Guidelines Working Group 2005), because harvest may not necessarily be representative of age structure of the population (R. A. Beausoleil, B. N. Kertson, and G. M. Koehler, unpublished data).

To illustrate the importance of considering non-harvest mortality, we documented 79 mortalities of radiomarked cougars during 4 concurrent research efforts in Washington. Of these, 49% were non-hunter harvest mortalities; 14% from agency control, 6% from intraspecific strife, 6% due to motor-vehicle collisions, 4% from disease, 4% attributed to Native American predator-control efforts, 3% due to injuries sustained during pursuit of prey, 3% from poaching or illegal harvest, and 10% from undetermined sources. In the western Washington study area, hunter harvest mortality averaged ≤ 2 animals/year from 2003 to 2008 and annual survival rate of the study population was 55% (SD = 7.8, $n = 5$ yr; B. N. Kertson, unpublished data). A significant mortality factor for this population was from feline leukemia virus exposure along the wildland-urban interface, resulting in an observed average annual survival rate of 55%, less than that for a heavily hunted population in Washington with 79% annual survivorship (Cooley et al. 2009*b*). These examples demonstrate the importance that non-harvest mortality can have in cougar population dynamics.

POPULATION GROWTH AND MAXIMUM SUSTAINED YIELD

The growth rate for an unhunted population, or intrinsic rate of population growth, can be described as the rate we expect the population to grow if it did not experience additive hunting mortality. Because kitten mortality and non-harvest mortality can be additive to hunting mortality, we calculated the intrinsic growth rate by censoring all harvest mortalities. In Washington, the unhunted growth rate was 1.14 (SD = ± 0.023) for 3 different populations (Selkirk Moun-

tains, Kettle Falls, and Cle Elum; Morrison 2010). The intrinsic growth rate in northwest Montana was estimated by removing hunting that resulted in a population growth rate of 1.15–1.17 (Robinson and DeSimone 2011). Although growth rate may be considered equivalent to the maximum sustainable yield, the rate of growth for an unhunted population should not be the goal for harvest but rather a maximum not to exceed if a stable population is to be achieved. Using maximum sustainable yield as a management target has been cautioned against, because it does not incorporate the uncertainty of stochastic events on population abundance and may present a potential for over-harvest (Caughley and Sinclair 1994). Setting adult harvest limits to the intrinsic rate of growth of 14% should help to balance immigration and emigration among harvest units and result in greater stability of cougar densities and age structure.

HARVEST UNITS AND HARVEST THRESHOLDS

Cougars are often managed in administrative zones (Logan and Sweanor 2001), which represent an amalgam of smaller Game Management Units (GMUs). Commonly these CMZs are designated as population “sources” and “sinks” where management objectives are to maintain or decrease population levels, respectively (Laundré and Clark 2003). In Washington, 139 GMUs are partitioned throughout the state and are used to manage harvest and habitat for a variety of game species (Fig. 2). In 2011, these GMUs were combined into 13 CMZs, each comprised from 3 to 22 GMUs and encompassing 1,873–14,947 km² of forested and

shrub-steppe habitat (total = 90,783 km²; Fig. 3). Five CMZs had a harvest limit of 6–20 cougars, and 8 did not have limits. Individual GMUs with high hunter access and suitable snow conditions accounted for 25–50% of the total harvest within the CMZs, which has been repeated over multiple years (WDFW 2011). This uneven distribution of harvest, or harvest clustering, may create local population sinks in areas within CMZs designated as sources and may disrupt the social organization of cougars as previously explained. Additionally, this uneven distribution of harvest may result in some GMUs with little or no harvest, creating angst among hunters who feel harvest opportunity was inequitable.

Setting harvest thresholds can help to distribute harvest, minimize risk of overharvest (Ross et al. 1996), and help maintain recreational opportunity and quality of hunter experience. However, it is important to note that harvest thresholds may become less effective for distributing harvest as CMZ size increases, and harvest may be concentrated within areas where access is high (i.e., harvest clustering). Harvest thresholds to limit harvest may be more effective where harvest is distributed evenly among GMUs rather than applied to the larger CMZs. Where GMUs are small, habitat is limited, or a quota of ≤ 1 cougar is allocated, combining adjacent GMUs to reach a size of approximately 1,000 km² may be recommended.

HUNTER CONSIDERATIONS

Age and sex of harvest can be an important factor influencing population dynamics of big-game species. Unlike ungulates

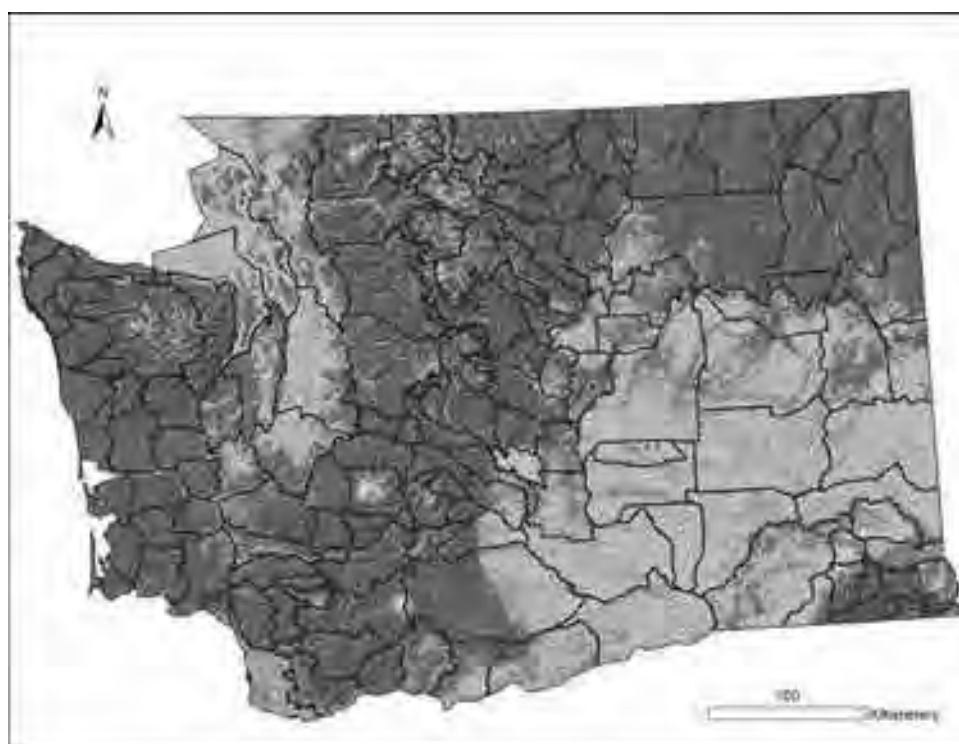


Figure 2. Distribution of cougar habitat (shaded dark) and current game-management units (outlined in black) in Washington, USA, Washington Department of Fish and Wildlife, 2012.

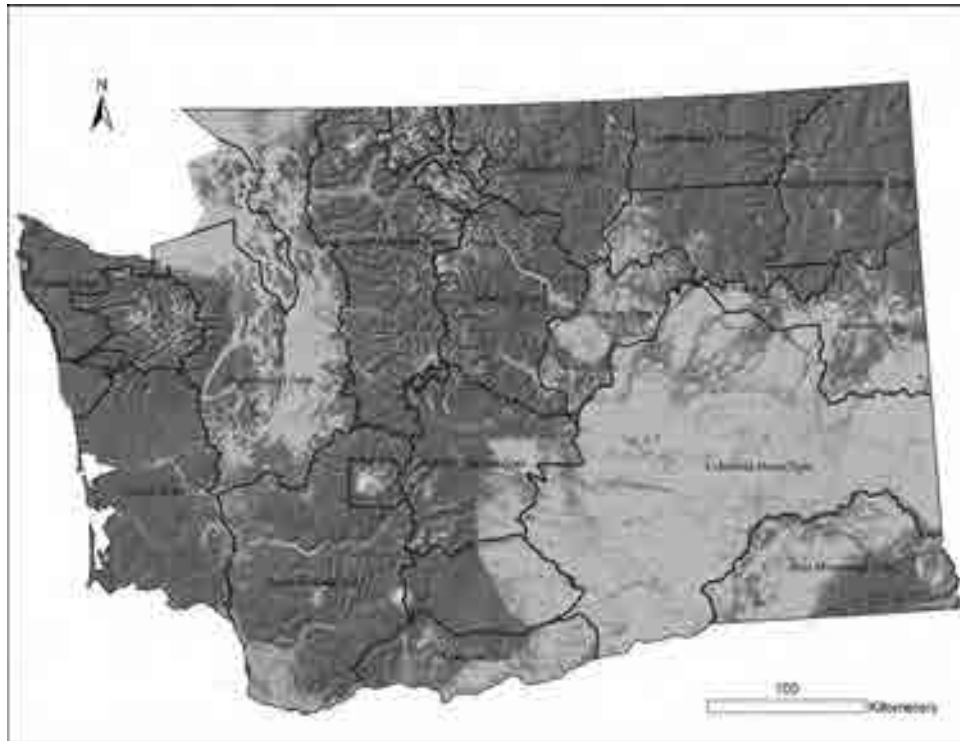


Figure 3. 2011 cougar management zones in Washington, USA, Washington Department of Fish and Wildlife, 2012.

for which juvenile status and sex are readily identifiable, most hunters are unable to distinguish female cougars from males and adults from subadults until after the animal is killed. Where the use of dogs is permitted, sex, and age determination may be more reliable but not certain due to restricted visibility of treed animals.

Many agencies employ a general open season and a permit-only season for cougar. Two concerns for hunters who participate in permit-only hunts (either limited-entry or quota hunts) are 1) when harvest threshold tallies begin during a general open season (which often overlaps with deer and elk season), and that, when filled, nullify the permit-only season; and 2) when the number of permits issued is greater than harvest threshold, thus creating a competitive atmosphere (the use it or lose it conundrum). In Washington, for example, 10–35 permits were issued for CMZs with harvest objectives for 6–20 cougars.

IMPLEMENTATION

The first step for applying our proposed management framework is to estimate the amount of cougar habitat. For Washington, we plotted 85,866 Global Positioning System and satellite telemetry locations from 117 radiocollared cougars in 5 study areas into U.S. Fish and Wildlife Service–U.S. Geological Survey Landfire habitat coverage (LANDFIRE 2007) using ArcMap 9.3. We quantified the number of Global Positioning System locations in each habitat type, created a Geographic Information System data layer identifying habitats used by marked cougars, and extrapolated these habitats throughout the state. The result included 90,783 km² of the 104,000 km² of habitat for areas where

WDFW has management authority (Fig. 1). For states and provinces lacking empirical estimation of suitable habitat for cougars, reliable and quantifiable estimates of forest cover, topographic variability, limited residential development (not to exceed exurban densities), and persistent ungulate prey may provide reasonable measure of suitable habitat for cougars (Burdett et al. 2010; Maletzke 2010; Kertson et al. 2011b). However, where existing Geographic Information System coverages may not reflect current landscape conditions, we advocate they be ground-truthed to avoid overestimating habitat. Including district or regional biologists and officers can also be advantageous.

We then overlaid current GMU boundaries onto this habitat coverage to calculate the available habitat within each GMU, and we applied adult densities of 1.7 cougars/100 km² to estimate the number of adult residents per GMU. Where GMUs were small (<750 km²), or the habitat sparse, we combined adjacent GMUs; this resulted in 62 CMZs for Washington (Fig. 4). In jurisdictions where densities are not estimable, we suggest that the scientifically defensible average of 1.6 adults/100 km² be applied (Quigley and Hornocker 2010).

We applied a mean intrinsic rate of growth of 14% (Morrison 2010) to allocate harvest of adult cougar per unit of area (0.24 cougars/100 km² of habitat). For Washington, this resulted in a statewide annual harvest of 220 cougars, more than the average annual harvest from previous years. Although the proposed harvest would be greater, this harvest would be distributed more evenly across management units in the state, resulting in a more uniformly distributed hunter effort, less harvest clustering and population sinks, and

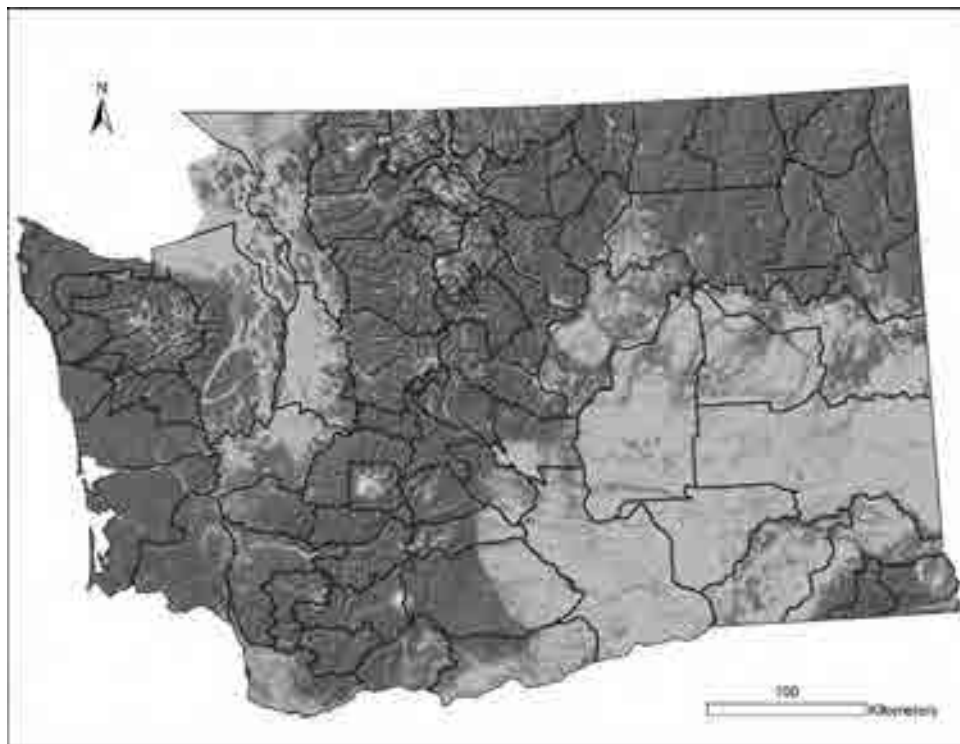


Figure 4. Proposed cougar management zones for Washington, USA, 2012.

greater stability in the cougar population. This strategy may prevent the need for harvest thresholds based on sex and could simplify harvest regulations and administration. We recommend using the harvest threshold of 14%. In addition, because subadult age classes are dynamic and difficult to estimate, and difficult to identify in the field, we recommend that harvest of this age class be counted against the allocated harvest so that recruitment is not affected in the future. Finally, we advocate administering the hunt using a 24-hour reporting and information hotline because it allows for prompt reporting of kills and CMZ closure and provides hunters the opportunity to plan hunt activity.

Administering harvest thresholds for GMUs or smaller CMZs has multiple benefits. It helps to 1) preserve the cougar's social organization by distributing harvest more evenly and avoiding creation of population sinks, 2) eliminate the need for harvest thresholds based on sex and for field identification of sex, 3) distribute hunter opportunity across the landscape, and 4) define a biological and meaningful spatial scale similar to that of their prey (ungulates), bringing management for predator and prey into alignment.

MANAGEMENT IMPLICATIONS

We acknowledge that these recommendations are based on research in Washington, but similar findings have been documented elsewhere in western North America (Quigley and Hornocker 2010). For the most part, current cougar management programs do not address the effects of harvest on social structure of cougar populations, a concept that was introduced >40 years ago (Hornocker 1969, 1970) and is supported by current research. We believe this science-based

approach to cougar management is easy to implement, incurs no added costs, satisfies agency and stakeholder interests, and assures professional credibility. The current review of carnivore management has demonstrated a paradigm shift from lethal control to one of ecosystem management, and one that considers the values of multiple stakeholders and aspects of human dimensions (Treves 2009, Hornocker and Negri 2010, Van Ballenberghe 2011, Way and Bruskotter 2012, Peek et al. 2012). Our recommendations incorporating cougar behavior and social organization into a management framework addresses concerns of various constituencies, provides for quality hunter experience, and recognizes values of the non-consumptive public while maintaining viable cougar populations and the behavioral integrity of their populations.

A simple, consistent, science-based approach to cougar management can be of benefit to agencies during intervals of administrative and political uncertainty. In addition to fulfilling agency mandates for hunter opportunity, our proposal adheres to our state agency's mission to "promote development and responsible use of sound, objective science to inform decision making" (WDFW 2008). In our opinion, of equal importance is recognizing the ecological and evolutionary role of cougar in the trophic hierarchy (Estes et al. 2011); and incorporating this concept into management and education elevates the cougar's status beyond a mere predator.

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Research Article

Variation in Life History and Demography of the American Black Bear

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ABSTRACT Variation in life history and demography across a species' range informs researchers about regional adaptations and affects whether managers can borrow information from other populations in decision-making. The American black bear (*Ursus americanus*) is a long-lived game species whose continued persistence depends on management of harvest and removal of habituated bears that come into conflict with humans. Understanding the demography of black bears guides efforts at management and conservation, yet detailed knowledge of many populations is typically lacking. I performed a hierarchical Bayesian meta-analysis of black bear demographic studies across the geographic range of the species to explore how vital rates vary across the range, what information they give us about population growth, and whether managers can justify borrowing information from other studies to inform management decisions. Cub, yearling, and adult survival and fecundity varied between eastern and western North America, whereas subadult survival did not show geographic structuring. Adult survival and fecundity appeared to trade off, with higher survival in the western portions of bears' range and higher fecundity in the east. Although adult survival had the highest elasticity, differences in reproduction drove differences in population growth rate. Mean population growth rate was higher in the east (0.99; 95% credible interval [CrI]: 0.96, 1.03) than the west (0.97; 95%CrI: 0.93, 1.01). Despite declining trends in the west, 34% of the distribution of population growth rate was >1, compared to 55% in the east. Further work needs to be done to address the cause of the apparent trade-off between adult survival and fecundity and explore how the estimated growth rates are likely to affect population status of black bears. Because population growth rates are close to 1 and small deviations could impact whether a population is considered increasing or decreasing, managers need to employ caution in borrowing vital rates from other populations. © 2011 The Wildlife Society.

KEY WORDS Bayesian meta-analysis, black bear, demography, life history, populations, *Ursus americanus*.

Conservation and management decisions often rely on information about a species' life history and demographic rates, and variation in these traits informs us about pressures populations face and potential impacts of management decisions. Variation in life history among populations of a particular species has been demonstrated in a variety of taxa, from fish (Johnson and Zuniga-Vega 2009) to deer (Nilsen et al. 2009). These differences affect population growth, persistence, and responses to management (Brown 1985, Dobson and Murie 1987, Nilsen et al. 2009). Just as species that reproduce quickly recover more easily from disturbance and exploitation than long-lived species with slower reproduction, so too, populations within a species may differ in their response to management due to faster or slower life histories. These differences also affect whether we can generalize studies of individual populations to reduce costs of new studies and target gaps in the current knowledge base.

Many large carnivores have wide distributions in varied environments that may induce variation in life history. They are also frequently targets of harvest, control, or conservation actions whose cost and effectiveness vary with life history and demography of individual populations. For example, brown bears (*Ursus arctos*) are more productive in their coastal North American range than in continental areas due to availability of spawning salmon (Hilderbrand et al. 1999). Coastal populations may sustain a higher harvest rate than inland populations due to greater reproduction. Likewise, the effect of extra wild dog (*Lycaon pictus*) helpers on reproduction varies spatially with ecological conditions, and this affects the appropriate pack size for an enclosed reserve (Gusset and Macdonald 2010).

Management can also induce important spatial variation. Cougars (*Puma concolor*) show strong source-sink dynamics when heavily harvested areas are adjacent to undisturbed populations (Robinson et al. 2008, Cooley et al. 2009). Efforts at reduction of cougars in target areas were fruitless unless survival was suppressed over a wide area (Cooley et al. 2009). Similarly, sanctuaries appear to provide some refuge for harvested black bear (*U. americanus*) populations in the southeast United States (Powell et al. 1996), and maintaining unhunted areas may bolster hunted populations on neighboring lands. Spatiotemporal variation in historic

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overexploitation has also induced life history variation among sea otter (*Enhydra lutris*) populations in the North Pacific (Monson et al. 2000). Populations that have not fully recovered exhibit higher weaning success than those that have reached carrying capacity (Monson et al. 2000). It is clear that spatial variation in vital rates and life history through natural variations or anthropogenic differences should affect management decisions. However, there have been few attempts to describe geographic structure in life history across the range of a large carnivore.

Black bears are widely distributed in a variety of ecosystems in North America, which could lead to variation in life history. Black bears rely heavily on seasonally available hard and soft mast as well as prey, and variation in food has been shown to correlate with differences in reproduction and survival of young (Schwartz and Franzmann 1991). Because they depend on primary productivity that varies among the biomes they inhabit, life history and vital rates of black bears may also vary among populations in different biomes. Variation in harvest pressure could also affect life history by depressing adult survival (Czetwertynski et al. 2007, Obbard and Howe 2008), which generally has a strong impact on population growth of long-lived species (Heppell et al. 2000, Sæther and Bakke 2000). At a broad scale, black bears in eastern North America were isolated from those in western North America during the Pleistocene (Wooding and Ward 1997), and there is a long-standing perception that populations in the 2 halves differ in population dynamics. Researchers sometimes refer to the vital rates of “eastern” or “western” black bears in papers without explaining why such a distinction has been made (e.g., Rossell and Litvaitis 1994, Garrison et al. 2007, Baldwin and Bender 2009). Others have observed contrasts between estimates of vital rates, especially reproduction, from the 2 halves of their range (Kasworm and Thier 1994), but to my knowledge there has been no systematic examination of how their life history varies across their range.

Regional differences in life history may determine the efficacy of management and conservation strategies for this charismatic carnivore. Black bears are hunted throughout much of their range and can become pests near agricultural and urban food sources (Lariviere 2001, Hristienko and McDonald 2007). Managers are faced with the challenge of ensuring persistence while allowing for harvest and nuisance removals. Demographic differences can affect what management strategies are acceptable. Hristienko and McDonald (2007) suggest that western and northern populations should be managed more conservatively because food is less abundant, presumably resulting in lower reproductive output. Alternatively, little variation in life history may mean information can easily be generalized to help guide management across the range.

Many demographic studies have been conducted on black bears, and this information may provide useful insights for managers and researchers. I synthesized work on black bear demography in a Bayesian meta-analysis to assess how their life history varies across space and whether managers can borrow information from other populations in making man-

agement decisions. I constructed a simple matrix population model to estimate population growth rate, compared population growth across their range, and evaluated realized consequences of differences in vital rates (Wisdom et al. 2000). I explored whether the general pattern of high adult survival with high elasticity found in several studies of individual bear populations (Eberhardt 1990, Wielgus et al. 2001, Freedman et al. 2003) holds throughout the range of black bears. I also used model selection to test whether geographic structure is apparent among vegetation and climatic communities using ecoregions (Bailey 1998) and between eastern and western North America.

METHODS

I conducted a literature search for black bear demography and used a citation search to identify further studies. I searched Web of Science (Thomson Reuters, apps.isiknowledge.com, accessed 2008–2010) and Google Scholar (Google, scholar.google.com, accessed 2008–2010) for “black bear and demography or life history or vital rate or survival or reproduction.” I sent information requests to every state and provincial agency mandated to manage black bears. I also included vital rates reported in papers or tables by third party authors where I could not acquire the original source. I recorded cub, yearling, subadult and adult survival, fecundity, age at primiparity, litter size, interbirth interval, sample sizes, and standard errors, as well as location, time period, and whether the population was harvested. If 2 studies were based on the same data, I excluded the older study because the newer study usually either added data or improved the analysis. I also excluded estimates of vital rates when they relied on covariates other than region, such as food supply (e.g., Obbard and Howe 2008, adult survival), and were therefore not comparable with estimates from other studies. Bears are polygamous, and females drive population growth because a single male can impregnate several females (Lariviere 2001). Therefore, when different survival rates were reported for each sex, I used only information from female bears.

To combine estimates of vital rates from different studies in the meta-analysis, I used measures of precision to incorporate differing levels of uncertainty. I used the squared standard error to produce a measure of uncertainty associated with each vital rate estimate. When standard error of survival (s) was not reported, I calculated it using the sample size (n ; Sokal and Rohlf 1995):

$$SE(s) = \sqrt{\frac{s(1-s)}{n}}$$

When fecundity (f) or its standard error were not reported, I used $f = 1/(2 \times b)$ to calculate fecundity, where l is litter size and b is interbirth interval. This assumes a 1:1 sex ratio at birth. I then found the standard error by propagating the errors of litter size and interbirth interval:

$$SE(f) = \sqrt{\left(\frac{\partial f}{\partial l} SE(l)\right)^2 + \left(\frac{\partial f}{\partial b} SE(b)\right)^2}$$

If I could not employ these methods, usually because sample size was missing, I set the standard error equal to the greatest standard error recorded for the other estimates of that vital rate. I used the squared standard error to weight studies in the meta-analysis by adding it to the variance at the lowest level of the hierarchy. Studies with more precise estimates of vital rates therefore had greater weight in the model fitting and studies with large or unknown standard error had least weight.

I modeled age at primiparity with a stretched and translated beta distribution, which is flexible and has upper and lower bounds that can be manipulated to suit the data. The youngest observed mean primiparity was 3 and the oldest was 8, so I set the limits at 2.5 and 8.5. To estimate the distribution, I converted the estimates to a standard beta scale, which is bounded by 0 and 1, by subtracting the lower limit, 2.5, and dividing by the range, 6. I assumed the probability of the mean age at primiparity being i was equal to the probability under the estimated stretched beta from $i - 0.5$ to $i + 0.5$.

I combined estimates of survival, fecundity, and age at primiparity using a set of 6 hierarchical models to identify the appropriate geographic structure for each vital rate (Tables 1 and 2). I considered combinations of 3 intermediate geographic levels between the study level and the entire range: ecoregion provinces and ecoregion divisions (Bailey 1998), and eastern and western halves of the continent. Ecoregions group areas with similar climate and vegetative communities, and each division is comprised

Table 1. Suite of models^a used to estimate cub, yearling, subadult, and adult survival, fecundity, and age at primiparity in a meta-analysis of black bear demographic studies from across North America, 1959–2007.

Model	Survival and primiparity ^b	Fecundity ^b
Non-hierarchical	$s_i \sim \beta[A(\mu_i, \sigma_i^2), B(\mu_i, \sigma_i^2)]$ $\sigma_i^2 = \sigma^2 + SE_i^2$	$s_i \sim LN(\mu_i, \sigma_i^2)$ $\sigma_i^2 = \sigma^2 + SE_i^2$
Halves or divisions or provinces	$s_{ij} \sim \beta[A(\mu_j, \sigma_{ij}^2), B(\mu_j, \sigma_{ij}^2)]$ $\sigma_{ij}^2 = \sigma_j^2 + SE_{ij}^2$ $\mu_j \sim \beta(a, b)$ $\mu = \frac{a}{a+b}$ $\sigma^2 = \frac{a \times b}{(a+b)^2(a+b+1)}$	$s_{ij} \sim LN(\mu_j, \sigma_{ij}^2)$ $\sigma_{ij}^2 = \sigma_j^2 + SE_{ij}^2$ $\mu_j \sim N(\mu, \sigma^2)$
Divisions—halves or provinces—halves	$s_{ijm} \sim \beta[A(\mu_{jm}, \sigma_{ijm}^2), B(\mu_{jm}, \sigma_{ijm}^2)]$ $\sigma_{ijm}^2 = \sigma_{jm}^2 + SE_{ijm}^2$ $\mu_{jm} \sim \beta[A(\mu_m, \sigma_m^2), B(\mu_m, \sigma_m^2)]$ $\mu_m \sim \beta(a, b)$ $\mu = \frac{a}{a+b}$ $\sigma^2 = \frac{a \times b}{(a+b)^2(a+b+1)}$	$s_{ijm} \sim LN(\mu_{jm}, \sigma_{ijm}^2)$ $\sigma_{ijm}^2 = \sigma_{jm}^2 + SE_{ijm}^2$ $\mu_{jm} \sim N(\mu_m, \sigma_m^2)$ $\mu_m \sim N(\mu, \sigma^2)$

^a Where β , N , and LN refer to the beta, normal, and lognormal distributions, respectively, and $A(x, y) = x\{[(x-x^2)/y]-1\}$, $B(x, y) = (1-x)\{[(x-x^2)/y]-1\}$ are the shape parameters of the beta distribution with mean x and variance y .

^b See Table 2 for variable definitions

Table 2. Parameter definitions for hierarchical models of black bear vital rates from North America, 1959–2007.

Variable	Meaning
s_i	Vital rate estimate for the i th study
s_{ij}	Vital rate estimate for the i th study in the j th province, division, or half
s_{ijm}	Vital rate estimate for the i th study in the j th province or division in the m th half
μ_j	Mean vital rate value for the j th province, division, or half
μ_{jm}	Mean vital rate value for the j th province or division in the m th half
μ_m	Mean vital rate value for the m th half
μ	Overall mean vital rate value
σ_i^2	Variance among studies
σ_{ij}^2	Variance among study estimates within the j th province, division, or half
σ_j^2	Variance among populations within the j th province, division, or half
σ_{ijm}^2	Variance among study estimates within the j th province or division in the m th half
σ_{jm}^2	Variance among populations within the j th province or division in the m th half
σ_m^2	Variance among provinces or divisions within the m th half
σ^2	Variance among studies, provinces, divisions, or halves
SE_i	Standard error estimate for the i th study
SE_{ij}	Standard error estimate for the i th study in the j th province, division, or half
SE_{ijm}	Standard error estimate for the i th study in the j th province or division in the m th half

of 1–4 provinces. For example, most of the southeastern United States is in the Subtropical Division, which contains 3 provinces: Mississippi riverine forests in the western part of the division, southeastern mixed forests in the center, and coastal plain forests in the east. There was a natural break in study locations, with none occurring between -95° and -105° longitude (Fig. 1), roughly corresponding to the Great Plains, which served as the divider between east and west. I made an exception for Obbard and Howe (2008) because the ecoregion it was in stretches across Canada and into Alaska, the other studies in the ecoregion were in the west, and the climate and human population density more closely resemble the west than the east. The null model included no hierarchy. Three models incorporated a single level hierarchy; the studies were grouped by province, division, or half. Two further models had 2 levels, either province and half or division and half. I also included a set of models that incorporated harvest as an indicator variable, but these did not perform well, probably because harvest management varies widely among studies and thus harvest does not have a consistent effect across populations.

I fit models using package R2WinBUGS to call WinBUGS (WinBUGS Version 1.4.3, www.mrc-bsu.cam.ac.uk/bugs/winbugs, accessed 13 Jan 2009) from R (R Version 2.8.1, www.r-project.org, accessed 13 Jan 2009). I monitored convergence with the potential scale reduction factor, \hat{R} (Gelman et al. 2004, Sturtz et al. 2005). I compared models using the deviance information criterion (DIC) calculated with pV (Gelman et al. 2004). I conducted subsequent analyses using the best supported model for each vital rate.



Figure 1. Locations of black bear demographic studies across North America, 1959–2007, reporting at least one vital rate; cub, yearling, subadult, or adult survival, reproduction, or age at primiparity; included in the hierarchical Bayesian meta-analysis.

I used the vital rates from the meta-analysis to parameterize a density-independent post-birth pulse matrix model (Caswell 2001):

$$\begin{bmatrix} 0 & 0 & m_{2f} & m_{3f} & \cdots & m_{8f} & m_{9f} \\ s_0 & 0 & 0 & 0 & \cdots & 0 & 0 \\ 0 & s_1 & 0 & 0 & \cdots & 0 & 0 \\ 0 & 0 & s_2 & 0 & \cdots & 0 & 0 \\ \vdots & \vdots & \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & 0 & 0 & \cdots & 0 & 0 \\ 0 & 0 & 0 & 0 & \cdots & s_8 & s_9 \end{bmatrix}$$

where

$$s_i = \begin{cases} s_c & \text{for } i = 0 \\ s_y & \text{for } i = 1 \\ s_s & \text{for } i = 2 \\ s_s(1-p_i) + s_a p_i & \text{for } i = 3, \dots, 8 \\ s_a & \text{for } i = 9 \end{cases}$$

is the survival of bears from age i to age $i + 1$ given stage specific survival of cubs (c), yearlings (y), subadults (s), and adults (a),

$$m_i = \begin{cases} s_s p_{i+1} & \text{for } i = 2 \\ s_s(p_{i+1} - p_i) s_a p_i & \text{for } i = 3, \dots, 8 \\ s_a & \text{for } i = 9 \end{cases}$$

is the proportion of i aged bears that will survive and be mature at age $i + 1$, f is fecundity (number of female cubs per female per year), and p_i is the probability that the mean age at primiparity is i or younger. I assumed the age at which bears reach sexual maturity is constant within a given region, but unknown. I also performed analyses using an age-structured matrix in which all bears had the same age at primiparity, set to the mean of the region rounded to the nearest integer, and had a maximum age of 25 years (Hebblewhite et al. 2003).

This analysis led to essentially identical conclusions, so I do not discuss it here.

I used the matrix model to calculate the asymptotic population growth rate (λ) and the sensitivities and elasticities of the survival and fecundity vital rates (Caswell 2001). I bootstrapped survival and fecundity using their standard errors and variances among studies to find the posterior distributions of mean population growth rate and individual population growth rates, respectively. Whereas sensitivity describes the change in lambda with an incremental change in the vital rate, elasticity describes the change in lambda with a proportional change in a vital rate (Caswell 2001). However, because the effects of vital rates on lambda also depend on the amount of variation in each vital rate (Wisdom et al. 2000), I also compared the pattern of variation in vital rates among areas with estimated population growth rates.

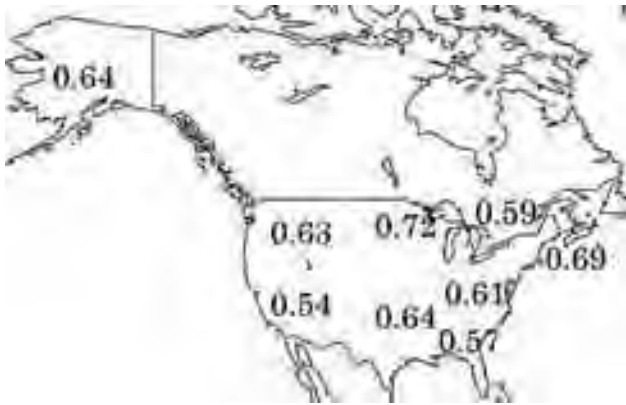
RESULTS

I collected data on 86 black bear populations from 76 studies (see Table S1, available online at www.onlinelibrary.wiley.com). Fifty-nine populations were in eastern North America and 27 were classified as western (see Table S2, available online at www.onlinelibrary.wiley.com). Studies spanned the geographic range of black bears (Fig. 1). The final dataset included 55 estimates of cub survival, 23 estimates of yearling survival, 23 estimates of subadult survival, 52 estimates of adult survival, 32 estimates of fecundity, and 35 estimates of age at primiparity.

Most vital rates appeared to vary most between the east and west halves of the continent (Table 3). For fecundity, yearling and adult survival, and age at primiparity, the best model was structured by eastern and western North America. The best supported model for cub survival included division structuring. The highest cub survival values (0.64–0.72) were found in more northerly divisions, and the lowest value

Table 3. Differences in deviance information criterion (Δ DIC) for hierarchical geographic models of black bear vital rates across North America, 1959–2007.

Model	Cub survival	Yearling survival	Subadult survival	Adult survival	Fecundity	Age at primiparity
Null	12.84	0.51 ^b	0.00 ^a	0.10 ^b	12.12	7.64
Halves	1.46 ^b	0.00 ^a	2.36	0.00 ^a	0.00 ^a	0.00 ^a
Divisions	0.00 ^a	2.84	11.12	20.24	6.33	2.07
Provinces	9.60	11.21	17.28	27.69	7.35	1.28 ^b
Divisions—halves	1.94 ^b	4.33	14.18	14.79	7.51	4.92
Provinces—halves	7.89	12.16	19.86	24.33	8.92	3.50

^a Best model for each vital rate.^b Models with substantial support for each vital rate.**Figure 2.** Mean black bear cub survival values across North America estimated for each ecosystem division in the hierarchical Bayesian meta-analysis based on demographic studies spanning 1959 to 2007.

(0.54) was, not surprisingly, from the desert southwest (Fig. 2). To estimate population growth rates, I chose to use the halves model for cub survival, which was also well supported (Δ DIC = 1.455). This model allows for more direct comparisons and maintains comparable levels of variation in the different vital rates. Researchers or managers interested in a specific ecosystem division can use the cub survival estimates from that particular area as a starting point or informative prior. Subadult survival data showed some support for the halves model (Δ DIC = 2.357), but the posterior distributions of the eastern and western means in the halves model overlapped greatly with one another. I therefore chose to use the nonhierarchical model for subadult survival rate, which was the best supported model.

In the east, average adult female survival was 0.82 (95% credible interval [CrI]: 0.77, 0.86) and fecundity was 0.58 (0.54, 0.62). In the west, adult survival was higher than in the east (0.88; 95%CrI: 0.83, 0.92), but fecundity was lower

(0.46; 95%CrI: 0.36, 0.54). Mean age at primiparity in the east (4.46; 95%CrI: 4.02, 4.96) was also lower than that in the west (5.58; 95%CrI: 5.06, 6.07). There was an apparent negative relationship between adult survival and fecundity (Table 4). The pattern was also evident in the sensitivities and elasticities, with the sensitivity and elasticity of adult survival higher in the west than east and that of fecundity higher in the east than west (Table 5).

Analysis of the mean population growth rate (λ) for each half showed that population growth was positively correlated with both survival and fecundity (matrices, Fig. 3; correlations, Fig. 4). Eastern populations tended to have higher population growth despite their generally lower adult survival (Fig. 4A), indicating that larger differences in fecundity (a vital rate with lower sensitivity) between east and west outweighed smaller differences in survival (a vital rate with higher sensitivity). Black bears in eastern North America had a mean population growth rate of 0.99 (95%CrI: 0.96, 1.03), and mean population growth rate in western North America was 0.97 (95%CrI: 0.93, 1.01). However, growth rates of individual populations also varied considerably among studies within each half of the continent. Using among-study variance in vital rates as an estimate of among-population variation, the posterior density for individual population growth rates suggests that 55% of populations in the east and 34% of populations in the west have deterministic population growth rates >1 (Fig. 5).

DISCUSSION

At a large scale across North America, adult survival of black bears appears to trade off with reproductive rate. The eastern half of the continent showed increased reproductive rate, decreased adult survival, and younger age at maturity than the western half. The apparent east-west tradeoff may be accompanied by or confounded with a north-south cline because studies in the west were generally farther north

Table 4. Posterior mean vital rates and 95% credible intervals (CrI) for black bears in eastern and western North America, 1959–2007. From a Bayesian meta-analysis of demographic studies.

	Cub survival	Yearling survival	Subadult survival	Adult survival	Fecundity	Age at primiparity
East						
Mean	0.65	0.74	0.77	0.82	0.58	4.46
95%CrI	0.60, 0.70	0.65, 0.81	0.69, 0.83	0.77, 0.86	0.54, 0.62	4.02, 4.96
West						
Sensitivity	0.54	0.72	0.77	0.88	0.45	5.58
95%CrI	0.43, 0.65	0.57, 0.83	0.69, 0.83	0.83, 0.92	0.36, 0.54	5.07, 6.07

Table 5. Sensitivities and elasticities of female black bear vital rates for eastern and western North America, 1959–2007, and their 95% credible intervals (CrI), estimated using a post-birth-pulse matrix model generated using the posterior probability distributions of vital rates from a Bayesian meta-analysis.

	Cub survival	Yearling survival	Subadult survival	Adult survival	Fecundity
East					
Sensitivity	0.17	0.15	0.29	0.66	0.19
95%CrI	0.15, 0.19	0.13, 0.17	0.27, 0.32	0.62, 0.70	0.17, 0.22
Elasticity	0.11	0.11	0.22	0.55	0.11
95%CrI	0.10, 0.13	0.10, 0.13	0.20, 0.25	0.50, 0.60	0.10, 0.13
West					
Sensitivity	0.12	0.09	0.25	0.73	0.14
95%CrI	0.09, 0.15	0.07, 0.11	0.20, 0.31	0.67, 0.79	0.11, 0.18
Elasticity	0.07	0.07	0.20	0.67	0.07
95%CrI	0.05, 0.08	0.05, 0.08	0.15, 0.25	0.59, 0.74	0.05, 0.08

than studies in the east. Trade-offs between reproduction and adult survival have been documented within other species as well as among species (Roff 2002). If most studies measured all vital rates, joint posterior distributions could be estimated to elucidate relationships among vital rates. However, few studies measured both reproductive rate and adult survival, and no correlation was apparent between them among those studies. It is possible that trade-offs occur in response to large-scale conditions, whereas other factors determine reproductive rate and survival at the population level. The apparent negative correlation at the continental scale could reflect differing habitat quality or differing mortality between eastern and western North America.

For example, following very poor hard or soft mast years, black bear reproduction often fails because mothers are in poorer condition going into winter dens (Eiler et al. 1989, Elowe and Dodge 1989). The differences between east and west could result from increased abortion of reproductive attempts or death of neonates due to poorer nutrition in the west. For differences in reproductive output to cause the observed tradeoff, the more frequent reproduction in the east

must extract a cost in terms of adult survival. Researchers have documented survival costs of reproduction for several mammals, including carnivores such as wolverines (*Gulo gulo*) and badgers (*Meles meles*; Clutton-Brock et al. 1983, Boyd et al. 1995, Woodroffe and Macdonald 1995, Persson 2005). However, other studies have failed to find measurable costs

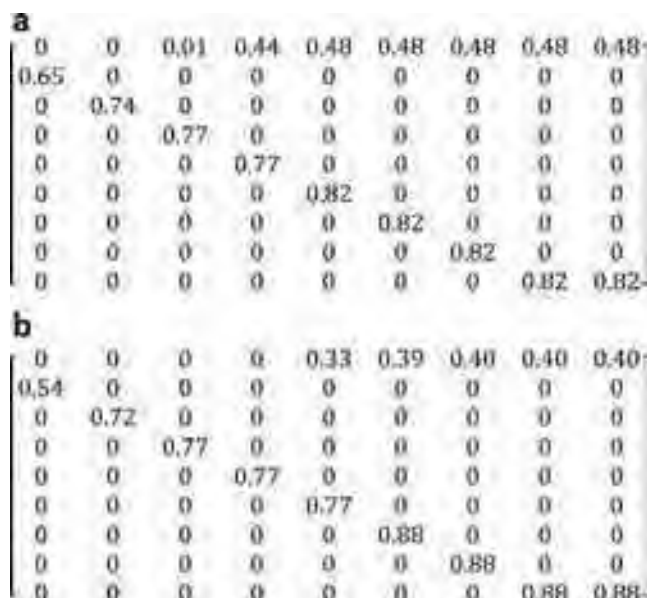


Figure 3. Mean post-birth-pulse matrix models for female black bears in (a) eastern North America and (b) western North America with estimated vital rates from the Bayesian meta-analysis of demographic studies from North America, 1959–2007.

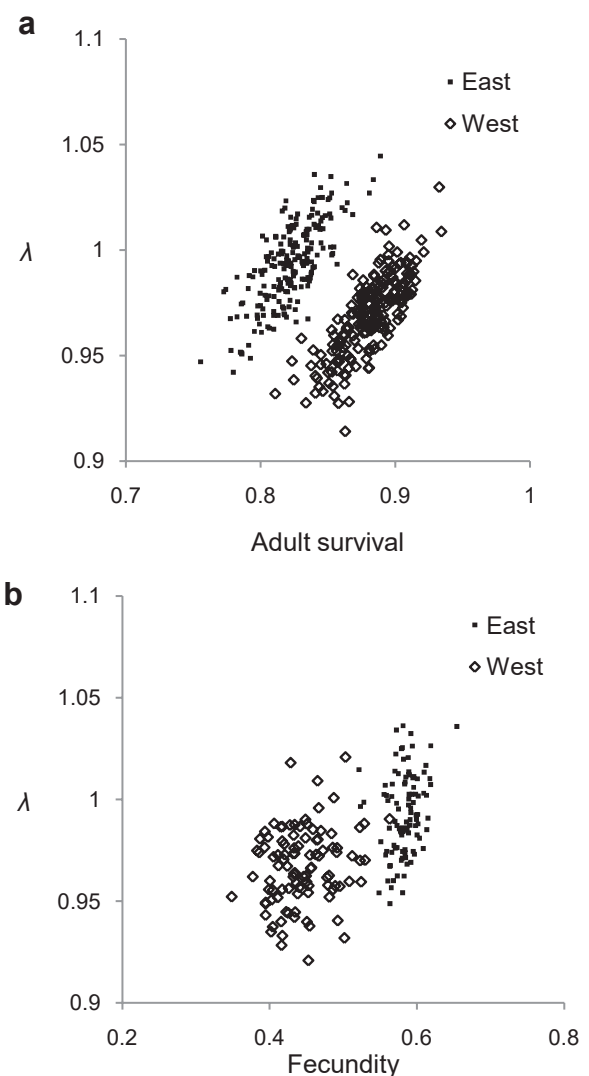


Figure 4. The relationship between estimated mean population growth rate and (a) mean adult survival and (b) mean fecundity from a Bayesian meta-analysis of female black bear vital rates in eastern and western North America, 1959–2007.

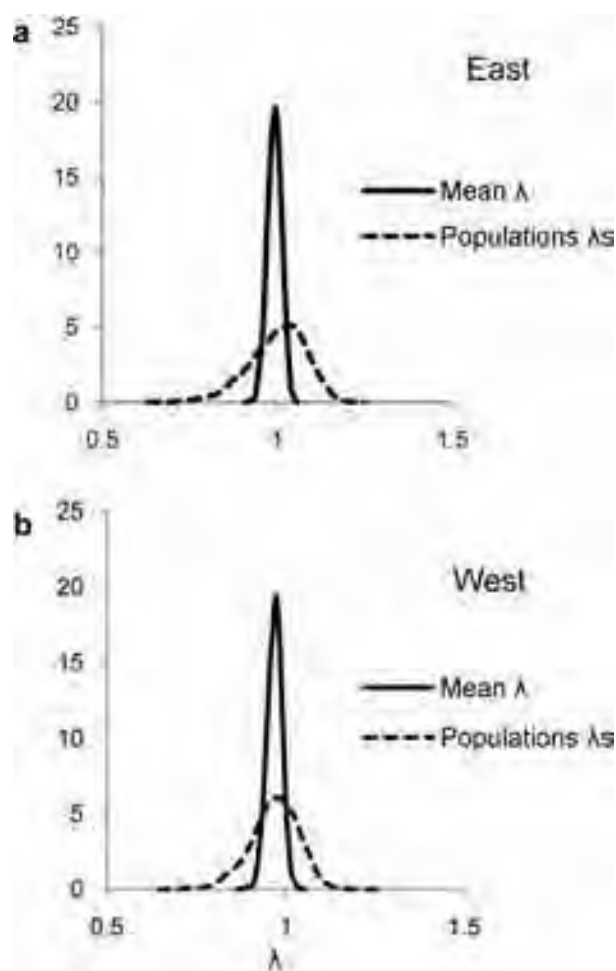


Figure 5. Posterior probability distributions of the mean population growth rate and the expected population growth rates of individual populations in (a) eastern and (b) western North America estimated from a post-birth-pulse matrix model using posterior probability distributions of vital rates from a Bayesian meta-analysis of black bear demographic studies across North America, 1959–2007.

of reproduction (Murie and Dobson 1987, Millar et al. 1992). Although to my knowledge no one has examined the costs of reproduction on adult survival in black bears, Atkinson and Ramsay (1995) found no apparent cost of reproduction on female polar bear (*U. maritimus*) survival.

Alternatively, increases in reproduction may be a response to decreased survival of adults. When life expectancy is shorter, animals should invest more in reproduction and less in survival. In hunted populations, harvest is the primary cause of mortality for adult black bears (Hellgren and Vaughan 1989, Schwartz and Franzmann 1991, Beringer et al. 1998, Koehler and Pierce 2005, Czetwertynski et al. 2007). Lower survival rates in the east suggest that these bears experience higher harvest and human-caused mortality, which would be expected from higher human population density in the east. Therefore, humans may be causing a shift in life history towards more and earlier reproduction by suppressing adult survival, both through harvest and non-harvest human-caused mortality like road kills and the removal of conflict bears. Shifts in life history and related

traits due to harvest have been observed in species with stage- or sex-selective harvests (Ericsson 2001, Coltman et al. 2003, Jorgensen et al. 2009), and increasing harvest mortality selects for younger age at maturity regardless of the selectivity of harvests (Allendorf and Hard 2009, Darimont et al. 2009). Evidence for compensation in individual populations of black bears is equivocal (Beecham 1980, Czetwertynski et al. 2007, Obbard and Howe 2008), and responses may be confounded with effects of habitat and density (Czetwertynski et al. 2007). Further work needs to be done to assess whether the observed pattern between adult survival and reproduction is mainly the result of differences in habitat, harvest and human-caused mortality, or not an actual trade-off but a combination of these factors.

Black bears are long-lived with low reproductive rates, and as expected, adult survival had the highest elasticity. However, population growth rate was higher in the east, suggesting that differences in fecundity outweighed differences in adult survival. Generally, the vital rate with highest elasticity is expected to have low variation (Gaillard et al. 1998, Pfister 1998, Wisdom et al. 2000), and in this case the low spatial variation of adult survival decreases its importance for population growth rate. Elasticity rankings do not necessarily correspond to a vital rate's role in determining population growth rate (Wisdom et al. 2000). Importance of higher fecundity for higher population growth rates in the east mirrors other black bear studies showing that higher temporal variation in reproduction renders it most important in determining population growth rate (Beecham 1983, Mitchell et al. 2009). Unlike my results, Beckmann and Lackey (2008) found that an urban black bear population with higher fecundity and lower survival had a lower population growth rate than a wildland population. However, adult survival in the urban population was suppressed beyond its normal range due to human activities, essentially artificially increasing the spatial variation in the most elastic vital rate.

The mean population growth rates indicate that bear populations are probably stable in the east and may be slightly declining in the west, counter to the general perception of managers that populations are increasing (Garshelis and Hristienko 2006, Hristienko and McDonald 2007). Out of 11 provinces and 33 states, only two reported population decreases between 1988 and 2001 (Hristienko and McDonald 2007). It may be that actual growth rates are in the right sides of the credible intervals, at or above 1, and there is no real discrepancy between perceptions and reality. Bias in the areas studied could also affect estimates because studies are not spread evenly across bear range or representative of the proportion of bears living in any given habitat. Moreover, many of the studies are decades old and may be outdated. Alternatively, increasing public sightings and complaints driven by an expanding human population could be masking stability or slow declines in bear populations (Garshelis and Hristienko 2006, Lambert et al. 2006). Researchers in several areas have indeed found that local black bear populations appear to be overharvested (Kasworm and Thier 1994, Powell et al. 1996, Brongo et al. 2005, Clark

and Eastridge 2006). Finally, it is also possible that movement from populations that are increasing may be subsidizing populations that would otherwise be declining (Hebblewhite et al. 2003). Even in the west, where the mean population growth rate is <1 , 34% of populations were estimated to be growing and could act as sources. Beckmann and Lackey (2008) propose that wildland bears are acting as a source for urban bear populations in Nevada, and bear sanctuaries like Pisgah in the southeast have been established with the intention of providing source populations for surrounding hunted populations (Powell et al. 1996).

MANAGEMENT IMPLICATIONS

Black bears are a charismatic species, and managers and conservationists face conflicting goals of ensuring population persistence and minimizing human–bear conflict. Achieving both of these goals requires information on population growth. Because growth rates are close to 1, small inaccuracies in vital rate estimates could lead to incorrect conclusions about whether the population of interest is increasing or declining. Due to the apparent spatial variation, borrowing demographic information from other studies, especially from the opposite half of the continent, will introduce bias. However, my results provide probability distributions of vital rates that allow managers to incorporate uncertainty explicitly, perform sensitivity analyses, and target future work at the most important gaps.

General patterns are apparent in black bear life history at a broad scale, and despite black bears' slow life history, their fecundity appears to be critical in determining population status. Vital rate variation among populations easily straddles the boundary between persistence and decline. Discrepancies between these data on black bears and our perceptions of population trend raise a red flag. Other data sources, including traditional mark–recapture and radio–telemetry, non-invasive DNA mark–recapture, and harvest information, can help assure us that our indices of population status are accurate. Moreover, the tradeoff between reproduction and adult survival deserves further exploration to determine the mechanism and implications for population persistence. Research examining the costs of reproduction on survival may help elucidate physiological tradeoffs, and further work clarifying compensatory responses of harvested populations may reveal the role of increasing adult mortality in the relationship, which would allow managers to more accurately predict the effects of harvest and protected areas on populations.

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What can harvest data tell us about Montana's black bears?

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Abstract: Harvest data provide readily available and relatively inexpensive information about populations of game species. However, these data are not necessarily representative of standing populations and may have limited applicability in management. We applied a method of harvest data analysis based on the changing sex ratio of the harvest with age to American black bear (*Ursus americanus*) harvest data from 1985–2005 in Montana. We assessed the ability of this method to identify assumption violations and the extent of resulting bias. A change in the relative vulnerability of females at primiparity due to protection of mothers with cubs from harvest was observable as a drop in the proportion of females in the harvest at the age of maturity. A changing harvest rate produced changing harvest rate estimates, but the estimates lagged up to 10 years behind the actual rate. Other assumption violations, such as unequal non-harvest mortality between sexes and stochasticity in the harvest rate, are not apparent in the harvest data themselves. If total harvest is known and the harvest rate is estimable, it may be possible to use harvest to identify population declines. However, we found with simulations that, in many cases, 10–15 years of harvest data are needed to identify a statistically significant decline. If all assumptions are met, we estimated harvest rates in Montana as 4.6% for females and 10.4% for males; these are overestimates if males have higher non-harvest mortality than females. Montana's harvest data did not show an apparent decline in the relative vulnerability of females at maturity, despite nominal protection of mothers accompanied by cubs. Analyses of harvest data also contradicted the hypothesis, based on meta-analysis of demographic data, that black bears were declining in Montana.

Key words: American black bear, catch-at-age, harvest, Montana, population trend, relative vulnerability, sustainable harvest, *Ursus americanus*

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Wildlife managers are often charged with managing populations of game species that are rare or secretive, such as many furbearers and carnivores, using very limited resources. Many jurisdictions require hunters to bring harvested individuals through check stations where age and sex data are collected (Rupp et al. 2000), and in many cases, harvest data are the best or only source of information about the status of these populations. A variety of techniques, relying on different assumptions about population and harvest processes, can be used to estimate both harvest rates and population status or vital rates from these harvest data (Skalski et al. 2005). However, it is surprisingly common for

harvest data to be collected and not used or applied to management. For instance, in eastern North America, just 13 out of 26 jurisdictions that have a legal American black bear hunt used harvest data to estimate population size in 2011 (Noyce 2011). Likewise, Rupp et al. (2000) found that while almost all surveyed jurisdictions collected white-tailed deer (*Odocoileus virginianus*) harvest data, fewer than half of them used the harvest data for population models. Four respondents stated that harvest data were collected but not actually used in decision-making, and most of the agencies used harvest data to estimate the total harvest but not harvest rate or population size and trend (Rupp et al. 2000). More generally, harvest management is often developed from a patchwork of interests and implemented piecemeal over a sometimes long time

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frame (Milner-Gulland and Rowcliffe 2007), making application of harvest data in decision-making that much more idiosyncratic. Basing decisions on harvest data may also not be a top priority when managers must consider budget priorities and constraints and incorporate public interests and input.

One reason harvest data are not used more thoroughly may be the limitations of available harvest data analysis methods. Methods with various assumptions and requirements have been used to estimate harvest rate and population status from harvest data (Roseberry and Woolf 1991). Methods such as population reconstruction and change-in-ratio use the age and sex structure of the harvest to infer information about the population. Others, such as index removal and catch per unit effort, rely on combinations of surveys and harvest data. Roseberry and Woolf (1991) reviewed 9 methods and reported that half require data in addition to information on the harvested animals, such as harvest effort or a concurrent field study. Managers often lack such auxiliary information. Of methods that do not require auxiliary data, several use the age structure of the harvest to infer information about survival rates or population trend (Skalski et al. 2005). However, the composition of the harvest may not be representative of the living population (Litvaitis and Kane 1994), and the relative numbers of different ages may reflect hunter selectivity, age- and sex-specific vulnerabilities to harvest, or the effect of harvest regulations more so than the population trend (Bunnell and Tait 1980, Noyce and Garshelis 1997). Estimates of harvest rates derived from harvest data are also more reliable when a large proportion of the population is removed each year (Harris and Metzgar 1987, Roseberry and Woolf 1991), which is thought not to be the case for many carnivores.

In this paper, we examined the robustness of a combination of the methods presented by Paloheimo and Fraser (1981) and Fraser (1984) for estimating harvest rate of black bears. The method we applied avoids some problems of other methods, such as the need for additional data, and explicitly models the differential vulnerability to harvest across groups. However, information on hunter effort is needed if it has not been constant, and the method we used relies on a number of assumptions: the initial sex ratio is even, the differential vulnerability of the sexes is constant across ages, the harvest rate is constant

across time, and the natural mortality rates are equal for both sexes. Assuming these are met, if one sex is more vulnerable to harvest than the other, the ratio of males to females in sequential harvests of a cohort will change as that cohort ages. Fraser (1984) showed that the inverse of the age at which the sex ratio of the harvest is even will approximate the average harvest rate. This simple estimate works best when the harvest rate is near 0.5 or the differential vulnerability is much less than the harvest rate. Paloheimo and Fraser (1981) used the same principle, but relaxed these requirements by using generalized least squares to estimate harvest rate and relative vulnerability using a model of harvest sex ratio at each age. Harris and Metzgar (1987) explored the utility of these methods for bears in general and especially grizzly bears (*Ursus arctos*), and found that violations of the assumptions biased estimates of harvest rate more when the harvest rate, differential vulnerability, or both were low and when harvest samples are small.

In many jurisdictions, black bear harvests exceed the samples simulated by Harris and Metzgar (1987) by an order of magnitude or more, meaning the method may be more appropriate for black bears than initially suggested. We used stochastic simulations to not only explore how assumption violations bias harvest estimates, but also to assess qualitatively whether the harvest data can indicate when assumptions are violated. We then applied the method to harvest data for black bears in Montana and examined the expectation that adult female black bears experience lower harvest than immature females because it is illegal to harvest a female when she is accompanied by young. Our expectation was that the vulnerability of female black bears in Montana decreased by 50% at primiparity because adult females spend about half their time accompanied by cubs (Mace and Chilton-Radandt 2011).

When total harvest is known, it is possible to estimate the population size based on harvest rate estimates. We used simulations to determine whether we would be likely to detect population declines under constant harvest rate using total harvest and estimated population size. We then applied this concept to Montana's black bear harvest data to evaluate the hypothesis that black bears were declining in Montana, an unexpected result from a meta-analysis of demographic studies (Beston 2011). The meta-analysis indicated that, on average, black bears were declining in the western United States, at

a rate of ~1–4%/year. This contradicted the general perception of managers that black bears were stable or slowly increasing throughout their range (Garshelis and Hristienko 2006). The conclusion that populations were declining could result from biases in data available for meta-analysis, but it could also mean that our impressions of growth were incorrect (Garshelis and Hristienko 2006, Lambert et al. 2006). Harvest methods and tag sales have been consistent in Montana for the past 20 years (R. Mace, unpublished data). Therefore, if the black bear population was declining we predicted that the harvest rate was increasing and the total harvest was stable, that the harvest rate was stable and the total harvest was decreasing, or some combination of increasing harvest rate and decreasing total harvest.

Black bear hunting in Montana

In Montana, black bear range is restricted to the mountainous western portion of the state, and hunting is permitted in all 5 Montana Fish, Wildlife and Parks (MFWP) regions where black bears occur. Bears were hunted in 2 seasons: in spring from April 15 through mid-May–mid-June, and in fall from September 15–late November. Black bear licenses for residents cost \$15–19 and permit the take of 1 black bear/calendar year. Hunting bears using bait or dogs has been illegal in Montana since the first half of the twentieth century. It was also illegal to harvest cubs (black bears <1 year old) and mothers with young. Because family break-up occurs during the summer, a female with yearlings was illegal to harvest in the spring but legal to harvest in the fall of the same year. In addition to direct protection when accompanied by cubs, females tend to enter hibernation earlier and remain in hibernation later than males, especially when pregnant or nursing (Beecham et al. 1983). They may be in dens by mid-October and remain until late May (Jonkel and Cowan 1971, Beecham 1983), missing most of both hunting seasons. Tag sales in Montana were relatively constant for the 20 years prior to this analysis (MFWP, Helena, Montana, USA, unpublished data), and evidence from hunter surveys suggests the harvest effort, measured in hunter days, was consistent for the period for which data are available (MFWP, Helena, Montana, USA, unpublished data, 1996–2003). Therefore, we did not include hunter effort in our estimation approach. Hunters were required to bring harvested black bears

through check stations, where each bear was sexed and a tooth collected for aging. Based on the call-back survey, check station compliance was believed to be nearly complete, and thus we used the numbers of bears brought through check stations as the total harvest size.

Methods

Estimation of harvest rate

Given an average harvest rate of k and a difference in vulnerability $2v$, such that the harvest rate of males is $k+v$ and the harvest rate of females is $k-v$, then the ratio of males in the harvest, H_m , to females in the harvest, H_f , at age i can be written as

$$\frac{H_{m,i}}{H_{f,i}} = \frac{M_1(1-(k+v))^{i-1}s_m^{i-1}(k+v)}{F_1(1-(k-v))^{i-1}s_f^{i-1}(k-v)},$$

where M_1 and F_1 are the numbers of males and females, respectively, in the cohort when it enters the harvestable population, and s_m and s_f are the natural survival rates of males and females. This is essentially the same equation used by Paloheimo and Fraser (1981), replacing their vulnerabilities and hunter efforts with constant harvest rates.

Two methods can be used to estimate k and v based on this equation. We took the natural logarithm of both sides and used generalized least squares estimation to find k and v , following Paloheimo and Fraser (1981). Alternatively, we used regression to estimate the age when the harvest sex ratio is 1 and coupled this with information from the youngest harvest age to create a system of 2 equations. We then solved these equations for the 2 variables, which was essentially the approach used by Fraser (1984). At the youngest age of harvest (1 year old for black bears), the sex ratio of harvest can be written:

$$\frac{H_{m,1}}{H_{f,1}} = \frac{M_1(k+v)}{F_1(k-v)},$$

and at age y , the male and female harvests are equal, yielding:

$$1 = \frac{M_1(1-(k+v))^{y-1}s_m^{y-1}(k+v)}{F_1(1-(k-v))^{y-1}s_f^{y-1}(k-v)}.$$

Note that we assumed $M_i = F_i$ and $s_m = s_f$ in order to solve for y . We found that both methods produced

similar results, so we present results from the latter method.

Analysis of assumption violations

We used simulations to assess the effects of assumption violations on the structure of the harvest data and the resulting estimates of harvest rate. For each analysis, we simulated 2,500 replicate stochastic populations for 20 years using a 60 x 60, pre-birth pulse, sex and age-based matrix model (Caswell 2000). Bears were divided into 4 stages: cubs (0 years old), yearlings (1-yr), subadults (2–5 yr), and adults (6–30 yr). Males and females had the same survival rates, except in simulations that specifically considered deviations from equal natural mortality. Adult females produced cubs in a 1:1 sex ratio. We parameterized the model with survival rates and variances from the western half of North America (Beston 2011). Harvest rates for each sex, fecundity, and their variances, as well as age at primiparity, were based on data from Montana. Each year a harvest rate for each sex was selected from beta distributions with mean equal to the initial estimates from Montana's harvest data and variance based on the variance seen in the total harvest assuming constant population size. After simulating harvest, vital rates were selected from beta distributions for survival, and a lognormal distribution for fecundity and the population was multiplied by that year's matrix model.

One assumption made when using the method described above to estimate harvest rate is that the relative vulnerability of the sexes does not change as a cohort ages. In Montana, however, we expected the relative vulnerability of female black bears to decrease at primiparity because mothers accompanied by cubs are illegal to harvest. To assess biases due to varying relative vulnerability, we simulated populations with adult females harvested at half the rate of subadult females. We assessed whether the resulting harvest data could indicate that the assumption had been violated and compared estimated rates of harvest with the actual total female harvest rate.

Application of this method of harvest rate estimation also assumes that the natural mortality is the same for both sexes. Male black bears may have higher natural mortality than female black bears, especially as subadults (Hellgren and Vaughan 1989, Koehler and Pierce 2005). However, some studies have failed to find a significant difference

between the mortality rates of males and females (Kasworm and Thier 1994, Wooding and Hardisky 1994). Results are also confounded because harvest mortality is included in most mortality estimates (Hellgren and Vaughan 1989, Kasworm and Thier 1994, Wooding and Hardisky 1994, Koehler and Pierce 2005). We simulated populations as above, with male natural mortality equal to up to 130% of female natural mortality, and assessed bias in harvest estimates and changes in harvest sex- and age-structure to determine whether violations of this assumption are apparent in the harvest data themselves.

Another assumption that many harvest data sets may violate is that harvest remains constant across the years analyzed. Two types of violations, stochasticity and trends in survival and harvest rates, can affect results. If there are no temporal trends, combining several years of harvest information should ameliorate the annual variability and increase the precision of estimates. To assess how the length of harvest dataset affects the precision of estimates of harvest rate, we conducted stochastic simulations of harvested populations using the model described above. We estimated harvest rate from the harvest age and sex structure beginning in year one. For each consecutive year, we estimated harvest rate using the sums of all bears harvested to date in each age and sex class.

When harvest rates changed, Harris and Metzgar (1987) pointed out that annual harvest estimates lagged several years behind. Their analysis explored a change from a stable population harvested at 5% to a 10% harvest rate, or vice versa. To explore the effect of a more continuous trend on the data structure and the resulting bias in harvest estimates, we conducted simulations with an increasing trend in the harvest rate over a 20-year timeline. We assessed the resulting harvest age and sex structure and the length of lag in the harvest rate estimates.

Using harvest to detect declines

If the harvest rate can be estimated and the total harvest is known, this information can be used to calculate population size through time. However, due to stochasticity and variation in harvest rate estimate, the power to detect changes in population size may be low. To assess the ability of abundance estimates derived from harvest data to reflect population declines, we used the above simulation harvested at 4% for females and 8% for males to

assess the power to detect a statistically significant decline in total population size as the length of the harvest dataset increased. Additionally, because managers sometimes lack information on the sex and age structure of the harvest, we also assessed the power to detect a statistically significant decline in total harvest from these simulations as an index for population size.

Initial population sizes were 10,000, 30,000, and 50,000 bears, which covers the likely range for Montana's actual black bear population size based on the estimated harvest rates (see Results) as well as the best guess of managers as of 2001 (Hristienko and McDonald 2007). For each simulation, we fit a linear regression to either the estimated total population size or the total number of bears harvested each year, starting with 3 years of harvests and adding consecutive years through the end of the dataset. Each year, we checked for a statistically significant decline by assessing whether the coefficient of year was <0 ($P = 0.05$). This is likely a conservative scenario because the spatial variation incorporated in population growth rate (via vital rate distributions from Beston [2011]) probably overestimated the temporal variation in any one population (because management and habitat varied widely among populations across western North America).

Montana black bear data

We estimated the harvest rates for male and female black bears in Montana using the method described above. We estimated y , the harvest in which the sex ratio is 1:1, using black bear harvest data collected in Montana from 1985–2005. We assumed low natural mortality over the winter (Hebblewhite et al. 2003) and combined the fall harvest with the following spring harvest to calculate the total harvest for each age class. To find y , we first summed each age class over the entire 20 year harvest dataset, and regressed y_i (proportion of females in the harvest) against i (age). We weighted the regression by total bears harvested at each age to account for smaller sample sizes at older ages. We solved the regression equation for 50% females in the harvest to estimate y and used y to estimate harvest rate.

We used qualitative comparisons of the structure of the harvest data to determine whether the assumption of constant relative vulnerability between sexes was violated. We also assessed the

potential bias in differences in natural mortality by calculating male and female harvest rates using the Montana estimate of y and varying the ratio of male mortality to female mortality, $(1-s_m)/(1-s_f)$, from 1 to 1.1. We were specifically interested in the case where male mortality was higher than female mortality, the most likely situation for black bears, and quantified the bias separately for male and female harvest rates.

To assess possible trends in Montana's harvest rate, we estimated annual harvest rates using the age and sex structure of each year's harvest. We also estimated harvest rates using non-overlapping 5-year sets to increase precision of estimates. We used the estimated harvest rates through time to estimate population size. Finally, we examined the total population size estimates and the total harvest to determine whether the population appeared to be decreasing.

Results

Analysis of assumption violations

Simulations in which adult females were harvested at half the rate of subadult females produced a noticeable break in both the proportion of females harvested and in the number of females harvested at each age (Fig. 1). If the relative vulnerability of females decreased at age of primiparity, the proportion of females in the harvest at that age dropped, and if total vulnerability decreased, the total number harvested dropped. In this scenario, the average estimated female harvest rate (2.72%) underestimated the actual simulated harvest rate of adult females (3.05%) by about 10%. Other simulations were explored with varying violations of this assumption, with the same general result.

The sex and age structure of the harvest when male natural mortality was greater than female natural mortality was not distinguishable from a scenario with a greater harvest rate and equal adult survival for both sexes. Increased male mortality resulted in an overestimation of both male and female harvest rates (Fig. 2).

An increase in the number of years incorporated in the estimation yielded more precise estimates of the harvest rate. Given the levels of variance seen in black bear vital rates across the western half of their range, much improvement was gained in the first 5 years of data gathering (Fig. 3). The

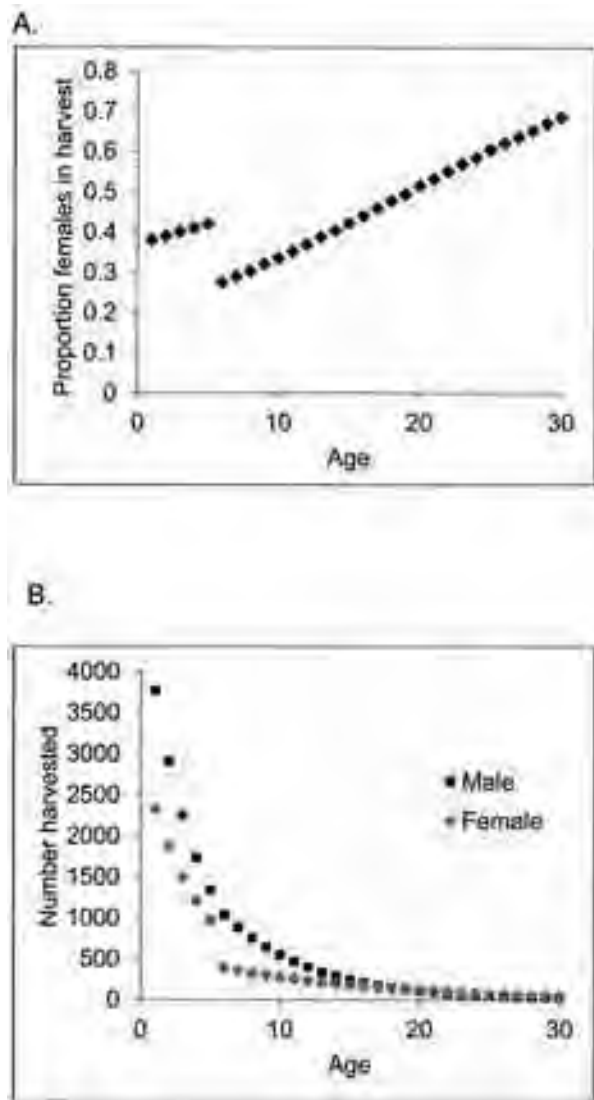


Fig. 1. Proportion of females in the harvest by age (A) and total harvest by age (B) in a simulated western American black bear population in which adult female vulnerability to harvest decreases by 50% at the age of primiparity.

inter-percentile ranges in the estimate of harvest rate leveled out after about 15 years. Populations experiencing lower levels of variance would require fewer years to gain similar precision in harvest rate estimates.

Simulations indicated that estimates of harvest rate lagged as much as 10 years behind actual changes in rates (Fig. 4). The age structure of the harvest data, however, did not change over time as harvest rate changed, and was therefore not helpful in indicating a violation of this assumption. The sex

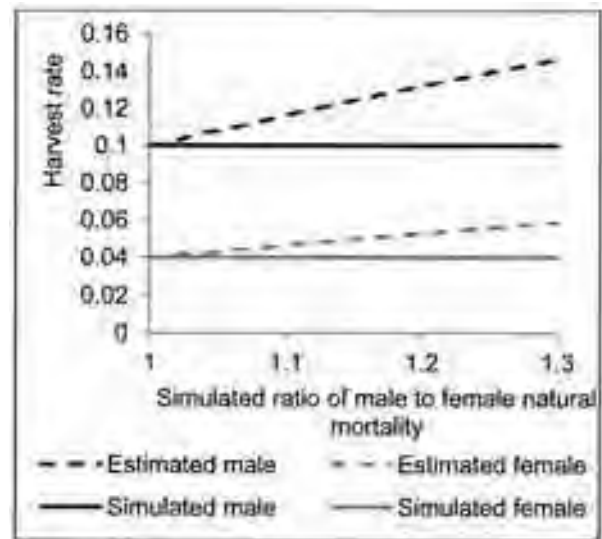


Fig. 2. Average estimates of male and female American black bear harvest rates and the actual simulated rates as the simulated ratio of male to female natural mortality increases for a western American black bear population.

ratio of the harvest at young ages (1–4 yrs) did not change over the 20-year timeline, but the proportion of females in the harvest at older ages, especially 10–20 years, changed by about 1%/year. This change was much smaller than the variation among the

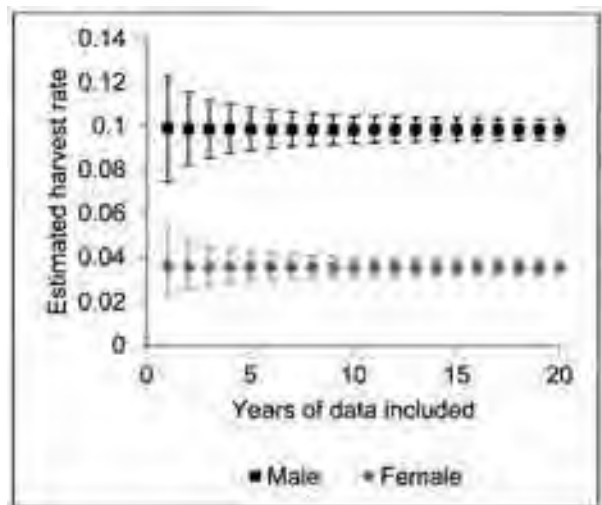


Fig. 3. Average estimates of male and female American black bear harvest rates and associated inter-percentile range from 2.5–97.5% in 2,500 simulated western populations as an increasing number of years of simulated data were combined in the harvest rate estimations.

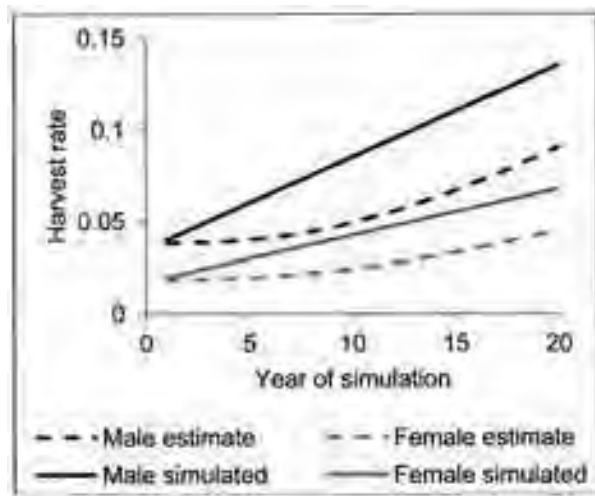


Fig. 4. Estimates of annual American black bear harvest rates in 2,500 simulated western populations as the harvest rates increased linearly from 4–14% for males and from 2–7% for females over a 20-year time horizon.

simulated populations and was therefore also not helpful in indicating a violation of this assumption.

Using harvest to detect declines

Given the estimated harvest rate and variation in Montana (described below) and the population growth rate and variance for western North America, a decline in the population was observed in the harvest in 80–86% of simulations after 15 years of harvest data collection (Fig. 5). Only 44–80% of the population estimate series showed statistically significant declines after 15 years of harvest data collection (Fig. 5). Larger population sizes produced larger harvests, better estimates of total population size, and greater power to detect declines.

As the population growth rate approached 1, the number of years required to reach 90% power in detecting declines using only the harvest numbers increased dramatically (Fig. 5B). Populations decreasing at 1–5% a year were reliably identified with 10–20 years of harvest data; annual decreases of less than 1% a year took considerably longer to detect. After 5 years, only 20% of the most rapidly declining populations, $\lambda = 0.95$, displayed statistically significant declines in the harvest numbers.

Montana black bear data

The R^2 of the regression of proportion females in Montana's harvest from 1985–2005 against age was

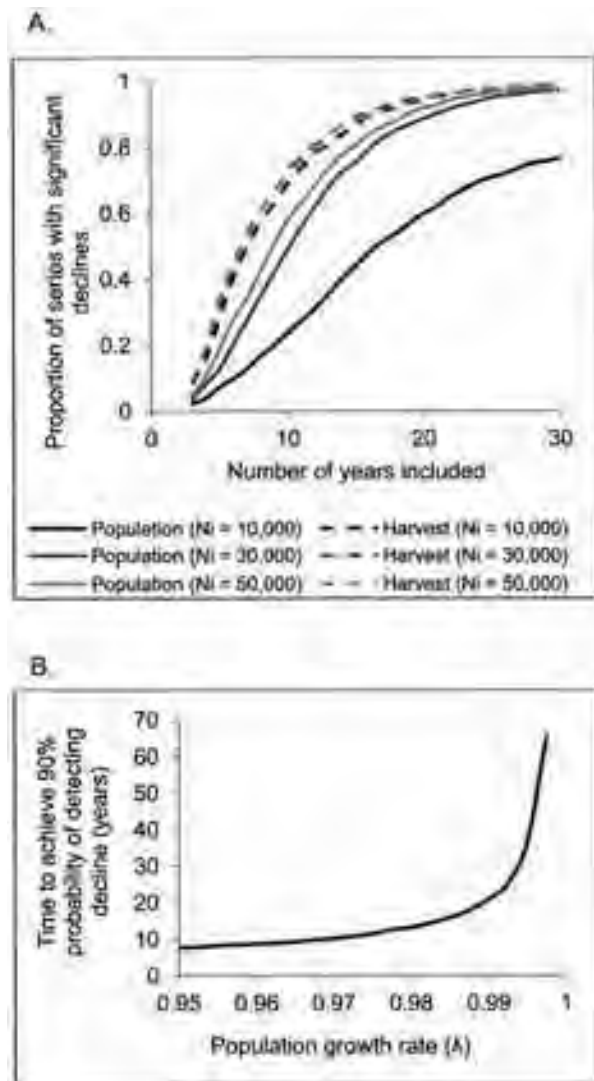


Fig. 5. Estimate of the proportion of simulated American black bear populations in which a statistically significant negative trend was identified in the estimated population size or the total number of bears harvested through time (A) and the time it took to achieve 90% power to detect decline using total harvest numbers of simulated unstructured populations (B).

0.94, and the estimated value of y , the age at which males and females are equally represented in the harvest, was 14.2 years (Fig. 6). The high R^2 value implies either that the basic tenets of this model were borne out by Montana's data, or that biases created by assumption violations were in opposite directions and canceled each other out. The estimated annual harvest rates for male and female black bears in Montana were 10.6% and 4.3%, respectively, given

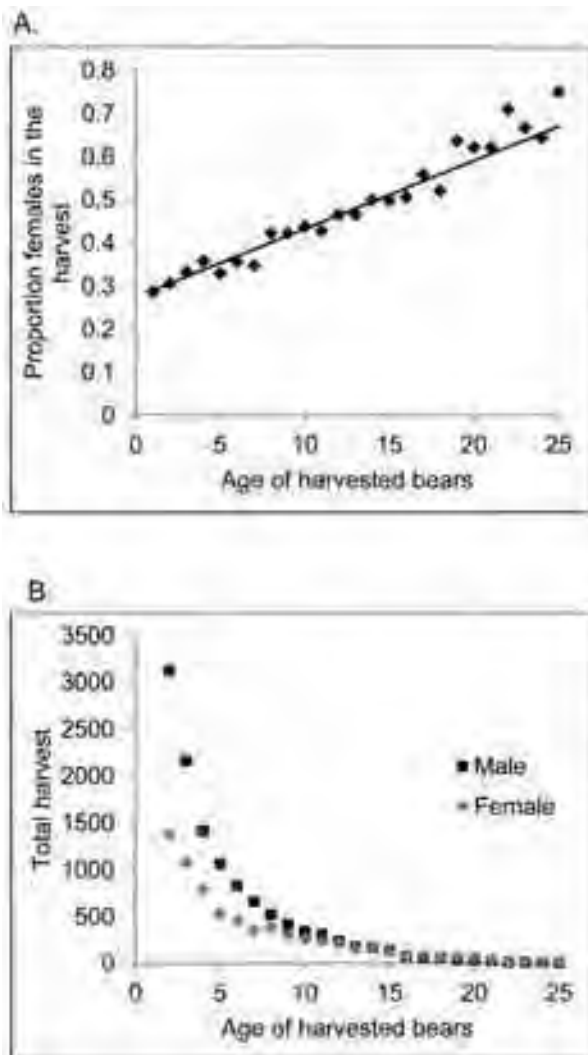


Fig. 6. The proportion of female American black bears by age (A) and total harvest of female black bears by age in Montana's harvests (B), 1985–2005.

an initial sex ratio of 1, constant relative vulnerability of the sexes, equal natural mortality rates for males and females, and constant harvest rate through time. These estimated rates are an average across the state and most representative of the harvest rates in western Montana, where the largest harvests occur, rather than the harvest rates in the sparser populations in central Montana.

Montana's proportion of females in the harvest was not consistent with expectations based on reduced relative vulnerability at primiparity (Fig. 6). At the age when vulnerability changed in the simulations, a break was noticeable in both the proportion of

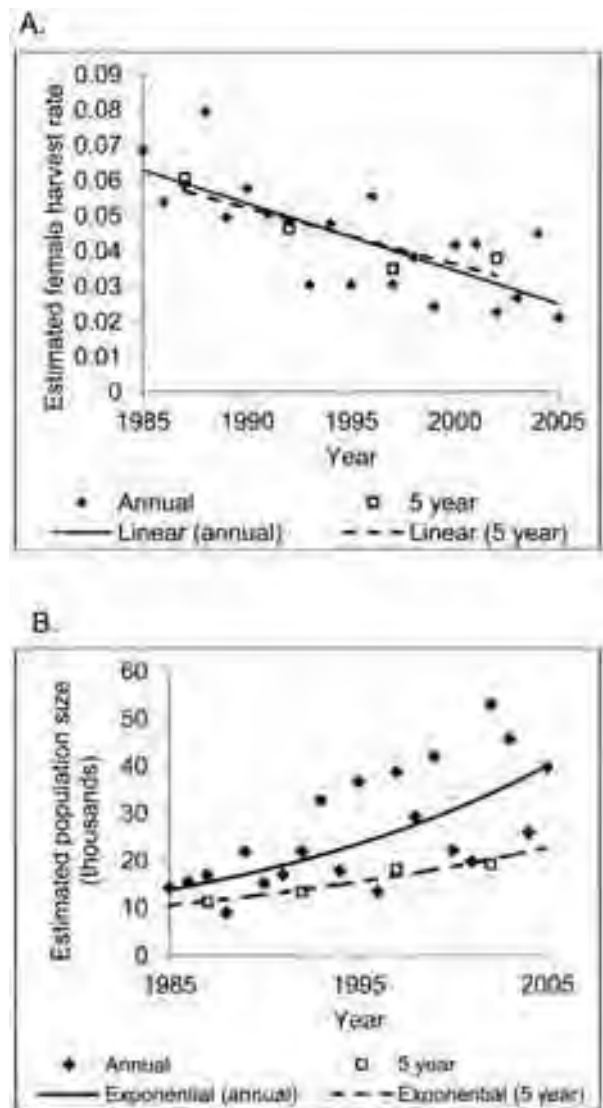


Fig. 7. Annual and 5-year pooled estimates of female American black bear harvest rate (A) and black bear population size (calculated as total male harvest/estimated male harvest rate + total female harvest/estimated female harvest rate) in Montana (B), 1985–2005.

females harvested and in the number of females harvested at each age (Fig. 1).

Annual estimates of harvest rate and estimates using 5-year periods suggested a declining trend in Montana's harvest rate, with some autocorrelation evident in the annual estimates (Fig. 7). Estimates of population size calculated from annual harvest rates and pooled 5-year harvest rates and the reported total number of bears harvested each year

depicted a population that had risen from approximately 12,000 bears in 1985 to between 20,000 and 40,000 bears in 2005 (Fig. 7B), for an average annual population growth rate of approximately $\lambda = 1.05$.

Discussion

Though estimation of harvest rate from the sex and age of harvested individuals has several limitations, the method we applied can produce usable harvest rate estimates and information on population status or trend that can be applied in decision making. The confidence in these estimates is higher given more years of harvest data and lower temporal stochasticity. Our results supported the hypothesis that at least some assumption violations of Fraser's (1984) and Paloheimo and Fraser's (1981) methods can be identified by the harvest data themselves. Additionally, biases due to violations of assumptions in our simulations were generally less dramatic than those found by Harris and Metzgar (1987), likely due to much larger harvest samples. Furthermore, the expectations that Montana's black bear population was declining and that the relative vulnerability of females compared to males changed as bears reach adulthood due to the protection of mothers with cubs were not borne out by the data.

Examination of harvest data can reveal whether some of the assumptions needed for this method are violated. If the relative vulnerability of the sexes changes with age, a discontinuity will be present in the proportion of females in the harvest at the transition ages. If the absolute vulnerability of either sex changes with age, a discontinuity will be present in the total harvest of that sex at the transition ages. It is important that this violation is identified because it can lead to non-conservative underestimation of harvest rate if the relative vulnerability of females decreases at primiparity (our results, also Harris and Metzgar 1987).

We were unable to identify whether the assumption of equal natural mortality for both sexes was violated using harvest data. However, harvest rate estimates based on this assumption will be conservative when male mortality is higher than female mortality, which is likely true in a variety of mammalian and avian species (Promislow 1992, Promislow et al. 1992), because they will overestimate harvest rate. If these harvest rates are used to

estimate population size, they will underestimate population size.

Changing harvest rates will be apparent if annual sex and age structures are used to estimate yearly harvest rates, although the estimates will lag behind the actual value of harvest rate until it stabilizes. This generally agrees with the results of Harris and Metzgar (1987), which were based on scenarios where harvest rates changed between 2 seasons then remained constant rather than changing across all seasons in the time horizon. It is important to note that the age structure of the harvest data did not show an obvious trend, and the sex structure changed slowly in the adult age classes and not at all in the young age classes. It has been shown that age and sex composition of the harvest reflected relative vulnerability rather than population size or structure (Harris and Metzgar 1987, Garshelis 1990). Likewise, monitoring harvest via mean age or sex ratio alone is inappropriate. Despite this, Miller et al. (2011) point out that these sex and age ratios are still used inappropriately by managers to monitor populations.

It appeared unlikely that the vulnerability of female black bears to harvest in Montana changed dramatically at the presumed age of primiparity, and this contradicted our expectation that protection of females accompanied by cubs reduces the vulnerability of adult females (McLoughlin et al. 2005). Estimates based on reproductive tracts suggest adult females spend half their time accompanied by cubs (Mace and Chilton-Radandt 2011), which implies that vulnerability of adult females should be half that of subadults because females with young are illegal to take. Females are more likely to be accompanied by young in the spring than in the fall because family break-up occurs over the summer; thus, it is possible that the vulnerability to the spring harvest changes but the unchanged vulnerability and larger total harvest during the fall obscure that change. Alternatively, a greater proportion of young female bears could be producing their own cubs or accompanying their mothers or siblings than we expect, giving them as much protection as adults, or hunters could be taking females with cubs more often than previously assumed. If cubs are in trees or hiding as a hunter approaches, it may not be obvious to the hunter that the mother has young. Because bears are not baited or hunted with dogs, hunters may have less opportunity to observe young nearby than in jurisdictions where these methods are

allowed. Hristienko et al. (2004) estimated only a 2% orphaning rate for black bear cubs during spring hunts in Manitoba, but Montana's may be near 4% if protection of mothers with young is completely ineffective.

In Montana, harvest data show annual negative autocorrelation in harvest rate as well as a declining trend in the harvest rate, and this trend remained when 5-year periods were pooled to increase precision. Autocorrelation can be induced even by weak responses by managers to change quotas each year and can make populations more variable and susceptible to decline (Fryxell et al. 2010). Unless new information is available about the population status, it may be unwise to tinker with harvest quotas based solely on the number of individuals harvested the previous year. Because Montana's estimated harvest rate leveled out from 1997 onward, more recent estimates are probably more accurate.

The total number of individuals harvested may reflect changes in population size more accurately than estimates of total population produced by dividing the total harvest by the estimated harvest rate. This is likely due to the amplification of error that occurs when going from an estimated rate to an estimated population size. In either case, identification of declines lagged well behind changes in simulated population size, even when the population was declining relatively rapidly. Annual changes in environmental conditions, such as natural food availability, can affect the vulnerability of individuals to hunters (Fieberg et al. 2010), and the ability to detect changes in population size will depend on how variable that vulnerability is and how consistent harvest effort and methods are. Hristienko and McDonald (2007) suggested that occasional over-harvest of black bears will not be a problem because managers will respond rapidly to reduce harvest in subsequent years. The time lags apparent in both the decline of harvest numbers and the estimates of harvest rate indicate that managers may not be able to respond rapidly because they cannot discover the problem quickly enough.

It is encouraging that with more than 20 years of harvest data for Montana, we do not have evidence of a negative trend, let alone a statistically significant one. Indeed, annual estimates of harvest show that harvest rates have declined while the total harvest has been fairly stable. Because the same number of bears harvested represents a smaller proportion

of the population (the harvest rate), these results suggest the population has increased. This is consistent with the fact that our estimated rates (4.3% for females and 10.6% for males) are well below reported estimates of sustainable harvest rates for black bears (14.2% [Miller 1990], 15% [McLaughlin 1998], 21% [Klenzendorf 2002], 12.6% [Dobey et al. 2005]).

On its face, this contradicts our hypothesis, based on the meta-analysis of demography (Beston 2011), that black bears have been decreasing in western North America. The average population growth rate based on the demographic work was less than 1, but our present harvest analyses indicate that, if anything, the population was increasing. The actual growth rate may be in the right tail of the distribution (at or above 1), the demographic work could be biased, or there may be other processes occurring for which we have not accounted. Although demographic studies are often considered the gold standard, they are more limited in space and time and therefore may not be representative of the true population status across large geographic areas. Demographic studies included in the meta-analysis had a median sample size of about 30 bear-years (Beston 2011), and because adult female survival rates are close to 1 (0.88 in the west; Beston 2011), researchers might only observe 3 or 4 deaths over the course of such a study. The small sample sizes typical of bear demographic work reduce precision of resulting estimates and make added information from harvests even more valuable. Harvest data can provide another means of estimating population trends at large scales to check against intensive demographic studies at smaller scales. If the demographic work is concurrent with harvest data collection, it can be used as auxiliary information in a statistical catch-at-age analysis that uses the age structure of harvest and prior knowledge about demography to estimate harvest rate and population size (Gove et al. 2002).

Another possibility is that spatial structuring and source-sink dynamics allow growing populations to support those that would otherwise decline. Some regions rely on wildlife refuges and sanctuaries to boost populations subjected to harvest in surrounding habitats (Powell et al. 1996). The meta-analysis suggested about 34% of western populations were growing (Beston 2011), and these could serve as sources that allow bears to persist despite low population growth rates elsewhere. In Montana,

Glacier National Park provides protection from harvest, and black bears living deep in the Bob Marshall and other wilderness areas may be essentially inaccessible to most hunters. Further work needs to be done to determine the effect of these and other potential source habitats on surrounding populations.

In theory, the harvest rate estimation method we used can be applied to any game species with differential selectivity in the harvest for which we can collect sex and age data. Male-biased harvesting occurs in mammals with multi-annual parental care, such as bears and elephants (*Loxodonta africana*), when females with young are protected and when adult males are targeted as trophies (McLoughlin et al. 2005). It is also intentionally applied in some ungulate systems because females are considered the limiting component of the population (Ginsberg and Milner-Gulland 1994). In reality, harvests need to be large enough to overwhelm demographic stochasticity, and the nature and degree of assumption violations need to be explored. The largest biases and sensitivities to assumption violations for the method we used occur when harvests are small (Harris and Metzgar 1987). This method could also be extended to incorporate differing harvest rates and relative vulnerabilities for spring and fall harvest seasons and geographic structuring to analyze different regions or management units. Because we analyzed the state as a whole, our estimated harvest rates are probably most representative of the western part of Montana, where most black bears live and are harvested. Extensions would require harvest sample sizes in each season or geographic area to be large. Although this method can be applied in principle to many game species, other methods may be more appropriate in some situations. For example, if it is possible to couple field studies with harvest data in approaches such as statistical catch-at-age analysis, researchers can obtain more accurate information in fewer years (Gove et al. 2002). When management is consistent across years, the target species has a short life-span and simple age structure, or the harvests are relatively large (in the hundreds), the method we employed could be a valuable way to garner information about the target population.

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Population Dynamics of Bears —Implications

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INTRODUCTION

Ursinus elmensis, the small "dawn bear" of about 20 million years ago, occurred in the (then) subtropical climate of southern Germany. Its living descendants are members of the *Ursus* line: the brown and grizzly bears (*Ursus arctos* Linne), black bears *U. americanus* (Pallas) and *U. thibetanus* (Cuvier), and polar bears *U. maritimus* (Phipps). Over the intervening millennia, these bears have evolved different shapes and sets of tactics. Many forms failed, most recently the cave bear (*U. spelaeus*) only a few thousand years ago. The living forms now extend over the northern hemisphere from about 25° to 88°N.

Here we examine the tactics of current members of the genus *Ursus* as employed in their pursuit of survival. Of the living forms, only *U. thibetanus*, for which data are very sparse, is not considered. We examine first the size of living forms, for body weight shows close relationships with reproductive behavior. We then consider observed patterns in reproductive rates and mortality. Phenomena influencing these patterns are considered in association with population regulation. Finally, implications of these patterns are addressed.

SIZE OF BEARS

Common conceptions of the size of bears are inaccurate (Burghardt et al., 1972). Black bears (*U. americanus*) are the smallest, mean weights of adult males range from about 80 to 150 kg, depending on location, and are usually 60 to 70% heavier than adult females (Table 1). The largest recorded weights are from the eastern United States [e.g., 272 kg from New York (Black, 1958), 264 kg from New York (Harlow, 1961)]. Brown and grizzly bear weights are most inflated in "conventional wisdom." Typically, adult males average about 200 kg and may be 20 to 80% heavier than females in the same population (Table 1). Most older records of massive brown bears are suspect (see e.g., Holzworth, 1930). Recent records of very large grizzly or brown bears are 386 kg from coastal British Columbia (D. Hebert, personal communication, 1975), 443 kg from the Alaskan Peninsula (Glenn, 1975), and 500-685 kg from Kamchatka

Table 1 Weights of Bears of the Genus *Ursus*

Location	Source	Weights (kg) ^a						
		Adult			Yearlings		Cubs	
		Male	Female	Ratio	Male	Female	Male	Female
<i>Ursus americanus</i>								
Western populations								
Alberta	Nagy and Russell, 1958	88 (26) ^b	74 (10)	1.11				
Saskatchewan	Miller, 1963				19 (3)			
Washington	Foraker and Hartwell, 1953	87 (16)	54 (17)	1.61	54 (5)	17 (6)	8 (2)	1 (1)
California	Pickelstein and Burton, 1975	99 (39)	58 (11)	1.68	28 (3)	16 (2)		11
Montana	Jorket and Cowan, 1972	102 (1)	68 (8)	1.50				11 (22)
Eastern populations								
New York	Harlow, 1961	141 (19)	91 (19)	1.52				
New York	Black, 1958	145 (10)	99 (16)	1.47	44 (17)	40 (19)	17 (15)	18 (17)
New York	Saunders, 1973	136 (43)	85 (24)	1.60	49 (10)	58 (19)	15 (5)	22 (3)
New Hampshire	Harlow, 1961	150 (19)	83 (11)	1.45				
Florida	Harlow, 1961	155 (10)	86 (12)	1.82				
Michigan	Erickson and Nelson, 1964	124 (4)	95 (9)	1.31	41 (2)		21 (15)	
Pennsylvania	Martin, 1954							22-41
Wisconsin	Koschman, 1961							45
Wisconsin	Bering, 1956				46 (2)			
Minnesota	Rogers, 1927				58 (13)			11 (17)
<i>Ursus thibetanus japonicus</i>	Horioka, 1954	50-120	45-70					
<i>Ursus arctos</i>								
Interior populations								
Yukon	Peterson, 1973	189 (40)	90 (21)	1.46	40 (1)	28 (1)	10 (3)	
Finland	Pulliamen, 1972	165 (84)	125 (23)	1.29	61 (1)	33 (1)	22 (8)	8
Alaska	Reynolds, 1978	186 (17)	109 (16)	1.43				
Alaska	Cook, 1971	217 (12)	142 (11)	1.48	82 (2)	47 (3)		
Alaska	Nagy and Russell, 1978	218 (2)	174 (5)	1.25				
Alaska	Mundy and Brook, 1973	227 (3)	128 (3)	1.80	57 (3)	41 (3)		22 (3)
Coastal populations								
Alaska	Wood, 1976	154 (9)						
Alaska	Glen, 1973	225-405	204					31-46 (3)
Kamchatka	Kirichinski, 1972	150-250						30
British Columbia	Lloyd, 1978	250-386 (7)	122 (3)					
<i>Ursus maritimus</i>								
Minnesota	Stirling et al., 1977a	276 (19)	176 (23)	1.57	114 (15)	98 (24)	54 (11)	46 (10)
Western Canadian Arctic	Stirling et al., 1973	410-550	180-270	2.0-2.5				
Isle of Newfoundland	Lane, 1970	343 (3)	180 (3)	1.90				118-161 (5)
Frank Jervis Island	Panabicki, 1964 ('large bears')	408	254					
Greenland	Pedersen, 1945 ('large bears')	400-420	350-380					
<i>Ursus spelaeus</i>								
France	Kurten, 1967	410-440 ^c						

^a Fall (September-November) weights measured by facilitator compensation. ^b Numbers in parentheses are sample sizes. ^c Estimated from one section of the femur.

(Novikov 1969). Uncommonly heavy and well-fatted polar bears attain similar weights [464 kg from the Franz Joseph Archipelago (Parovchshikov 1964), 550 kg from Svalbard and Canada (Løng, 1970; Stirling et al. 1975)]. Pedersen (1945) reported a male bear weighing 800 kg. Generally, mean weights of polar bears are heavier than for brown or grizzly bears (Table 1). Adult males average about 280 to 350 kg and may be 60 to 100% larger than adult females (Table 1).

REPRODUCTIVE PATTERNS

Background

Members of the genus *Ursus* share a reproductive syndrome: collectively they exhibit some of the lowest reproductive rates among terrestrial mammals. Periodically, most of the population foregoes reproduction entirely (for polar bears, see data of Stirling et al. 1975; for black bears, Jonkel and Cowan, 1971; for brown bears, Martinka, 1974). The low reproductive rate occurs in spite of features that should encourage reproductive success. All North American *Ursus* are induced ovulators (Erickson and Nellor, 1964; Løng, 1970; Craighead et al. 1969). Induced ovulation normally encourages higher rates of fertilization (Brambell, 1948). All *Ursus* hibernate, although among polar bears, the phenomenon is largely restricted to parturient females. Lord (1960) noted that hibernators generally have smaller litter sizes than do nonhibernators and suggested that the smaller litter size was associated with higher initial survival rates for the young of hibernators. Compared with other mammals of equivalent size, bear litters are not small (Table 2). Nevertheless, realized rates of reproduction are low, primarily attributable to a late age of first reproduction and a long period (here termed *breeding interval*) between litters (Table 3). We believe the periodic failure of reproduction is adaptive and that it is assisted by another characteristic shared among *Ursus*: that is, delayed implantation (Dittrich and Kronberger 1963; Wimsatt, 1963; Craighead et al. 1969). Delayed unplantation likely provides an energetically efficient means of "aborting" the young before the demands of late gestation and lactation occur.

The denning habit, induced ovulation, and delayed implantation are common among members of *Ursus*. Demographic features that modify reproductive rates and that vary among the species are age of first reproduction, breeding interval, and litter size (see also Chapter 9). Black bears, the most primitive of the genus, most frequently have a mean age of first reproduction of 4 to 5 years, although it may be as late as 7 to 8 years (Table 3). Captive animals show somewhat earlier ages of first reproduction ranging from 3 years to 7 years (Rausch, 1961; Stickley 1961; Rogers, 1976). Mean litter sizes in the wild range from 1.32 to 2.4 or more, with a mean of 2.25 ($n = 516$ family groups). Data are sparser for breeding interval. Eastern populations with energy-rich mast and berries as forage may breed every two years (Erickson, 1964; Free and McCaffrey 1972; Pelton and Beeman, 1975) while western populations appear to have a mean breeding interval of slightly more than three years (Table 3).

Table 2. Mean Litter Sizes of Several Species of the Genus *Ursus* at Various Locations^a

Location and Source	Age (years)		Age (years)		Age (years)	
	1 ^b	1 ^c	1 ^b	1 ^c	1 ^b	1 ^c
Ursus americanus						
Western populations						
Idaho		1.52 (18) ^d				
Idaho (Nien, 1946)						1.5 (88)
Idaho (Lowell, 1946)						1.5 (128)
Idaho (Borchert, 1960)	1.55 (75)		1.7 (11)	1.6 (11)		
California (Peterson and Burton, 1975)	1.63 (81)		1.7 (55)	1.6 (86)		
Montana (Jorgensen and Carson, 1971)	1.7 (153)	1.6 (23)	1.7 (12)	1.6 (12)		
Alaska (Hayley, 1967)	1.73		1.9			
Alaska (Conrad, 1968)	1.84 (10)		2.0 (108)	1.8 (125)		
Alaska (Kerns and Borchert, 1960)	1.86 (123)		2.1 (17)			
Alaska (Erickson and Nellor, 1964)			2.1 (10)	1.7 (10)		
Eastern populations						
North Carolina (Caldwell, 1974)	1.68 ^e (30)		2.1 (10)	1.7 (10)		
Michigan (Erickson and Nellor, 1964)	2.2 (10)		2.2 (10)	1.7 (10)		
Florida (Hatch, 1961)	2.2 (5)		2.2 (5)	1.7 (5)		
Alaska (Nagy and Kinnel, 1978)						
Maine (Spencer, 1935)		2.4 (26)				
Wisconsin (Schroeder, 1949)						
Virginia (Stuckey, 1961)	2.65 ^f (19)		2.65 ^f (19)			
Minnesota (Bogert, 1976)	2.74 ^g (55)		2.74 ^g (55)			
Caprine (Baker, 1972)	2.85 (28)		2.85 (28)			
Weighted mean of wild bears	2.25 (516)		2.25 (516)			
Ursus arctos						
Island populations						
SW Yukon (Pearson, 1977)						
SW Yukon (Pearson, 1977)						
Alaska (Glasier, 1975)						
Alaska (Marshall, 1974)						
Alaska (Brooks, 1974)						
Alaska (Reynolds, 1974)						
Alaska (Zedler and Hovinen, 1975)						
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Table 3 Major Reproductive Features among the Genus *Ursus*

Location and Source	Mean Litter Size of Cubs	Mean Age at First Litter (years)	Birth Interval (years)	Litter Size/ Birth Interval
<i>Ursus americanus</i>				
Montana (Jonkel and Cowan, 1971)	1.7	7.8	3.1 ^a	0.55 ^a
Council, Idaho (Reynolds and Beecham, 1980)	1.94	4.76 ^a	5.23 ^a	0.60 ^a
Lowell, Idaho (Beecham, 1980)	1.65	4.75 ^a	2	0.83 ^a
North Carolina (Collins, 1974)	1.8 ^a	4.2 ^a	2	0.90 ^a
Minnesota (Rogers 1976-1977)				
abundant forage	3.1	4.5 ^a	2.1 ^a	1.48 ^a
scarce forage	1.96	6.5 ^a	3.5 ^a	0.56 ^a
Captive (Baker, 1912)	2.4	4	2 ^b	1.20 ^a
<i>Ursus arctos</i>				
SW Yukon (Pearson, 1972-1975)	1.59	7.8 ^a	> 3.1 ^a	< 0.51 ^a
Interior, Alaska (Reynolds, 1976)	1.77	9.9 ^a	> 3	< 0.59 ^a
Yellowstone Park (Craighead et al., 1974)	2.24	5.8 ^a	3.4	0.66
Glacier Park, Canada (Mundy and Flook, 1973)	2.0	> 5	> 2.8 ^a	< 0.71 ^a
Kodiak, Alaska (Hensel et al., 1969)	2.23	4.5	> 3	< 0.74 ^a
McNeil River, Alaska (Glenn et al., 1976)	2.5	6 ^a	3.6 ^a	0.70 ^a
Captive (Dittrich and Kronberger, 1963)	2.05 ^a	3-4	2 ^b	1.02 ^a
<i>Ursus maritimus</i>				
Alaska (Lentfer et al., 1980)	1.58	5.44 ^a	3.6	0.44 ^a
Eastern Beaufort Sea (Stirling et al., 1975)	1.68	> 4.96 ^a	3.05 ^a	0.55 ^a
Svalbard (Long, 1970)	1.67	4.0	> 2.18 ^a	< 0.77 ^a
Captive (Kost'yan, 1954; Afonskaja and Krumina, 1958; Volf, 1963; Harrington, 1968)	1.64	4-6	2.1 ^{a, b}	0.78 ^a

^a Our calculations from data provided.^b Cubs taken from mother.

The larger grizzly matures more slowly, and mean age of first reproduction is more commonly one year later, at age 5 to 6 years. The northernmost populations in the interior of the Yukon and Alaska mature still later, at 7 to 8 years or older (Pearson, 1972; Reynolds, 1976). Modal litter size among grizzlies ranges from about 1.8 to 2.2 (mean 2.12, $n = 1042$ family groups), and mean breeding interval appears to be about 3.5 to 4 years (Tables 2 and 3). Although much larger than the black bear, female polar bears become sexually mature at about the same age (Table 3). Mean breeding interval appears to be from 3 to 3.5 years, but litter sizes are considerably smaller (mean 1.76, $n = 916$ family groups).

Model

Together, the age of first reproduction, litter size, and breeding interval determine the population's reproductive rate. Combining these appropriately into a simple model generates the maximum mortality that a population could sustain. The model assumes constant mortality rates and that cubs die only when the mother dies. The mortality rate essential to generate a stationary (nondeclining) population is balanced against the natality rate (see Bunnell and Tait, 1980). Figure 1 illustrates isoclines of the maximum sustainable mortality for populations having different average natality rates and ages of first reproduction. The natality rate is for reproductive females and is computed by dividing average litter size by the mean interval between reproduction, the breeding interval. This formulation facilitates comparison of black, brown, and polar bears.

For example, a brown bear population, in which females first breed at age 6.5, first reproduce at age 7, have a mean litter size of 1.5, and breed every three years (natality rate 0.5 cubs/year), can sustain no greater mortality than 10.7%/year (Figure 1).

Discussion

As a result of their higher natality rates, black bears can sustain the greatest mortality (Figure 1). The highest rates, 22 to 24%, are those computed from data for captive bears (Baker, 1912) from which cubs were removed and lactation-induced anestrus terminated, and for wild bears enjoying abundant forage (Rogers, 1976, 1977). Although natality rates for grizzly bears differ little from those of polar bears, their later age of sexual maturity generates a lower sustainable rate of mortality. The results have clear implications to managers establishing harvest policy, for they represent optimistic estimates of maximum sustainable mortality. They are also congruent with expectations derived from natural mortality patterns in *Ursus*. All bears are subject to mortality from conspecifics and man. In addition, black bears are killed by grizzlies (Jonkel and Cowan, 1971), by wolves (Schorger, 1949; Rogers, 1977), and even by coyotes (Boyer, 1948). Grizzlies seem to have no predators beyond man and conspecifics.

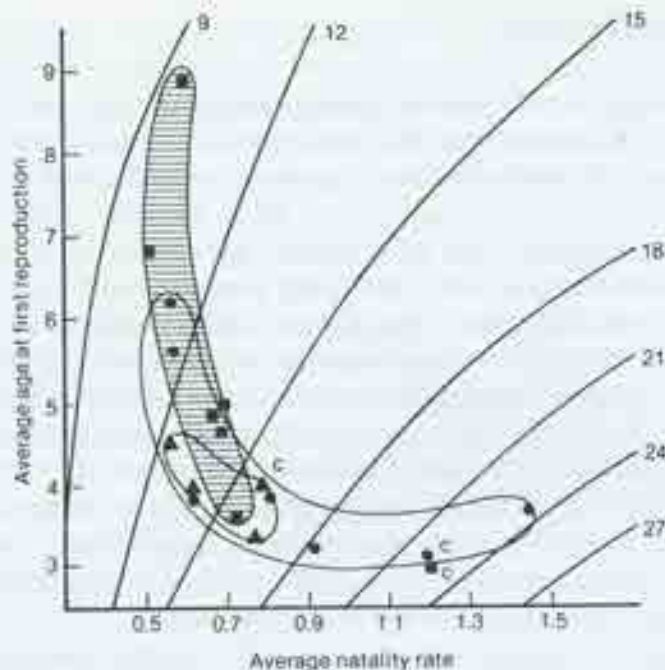


Figure 1 Isoclines of maximum sustainable mortality (%/year) as a function of average age at first reproduction and average natality rate (litter size/years between litters) Grizzly bears, \square polar bears, \blacktriangle black bears, \bullet captive populations, c.

(see chapter 9) although Ognev (1931) Averin (1948) and Pulliainen (1963 1972) have reported instances of wolves attacking brown bears in Eurasia, and Murie (1944) and G. G. Haber (personal communication, 1978) reported wolf attacks on grizzlies in Alaska. Polar bears have no predators beyond conspecifics, but have been killed by their intended prey both walrus (*Odobenus rosmarus*) and hooded seal (*Cystophora cristata*) (Lønø, 1970). As predators, polar bears sometimes experience a serious reduction in prey availability—for example, when ice conditions are unfavorable for hunting seals (Stirling et al. 1975). Thus, we expect and observe higher sustainable rates of mortality than for grizzly bears.

Mean litter size of polar bears is smaller than for grizzlies (Table 2) as we would expect given their obligate, carnivorous nature. The higher realized natality rate is achieved by a lower mean age of first reproduction, despite the fact that the polar bear is larger than the grizzly (Table 1). Female polar bears, however, attain adult weight by age 3.5 years (Lønø, 1970; Stirling et al. 1977a) while female grizzlies require 6 to 7.5 years (Glenn, 1973; Reynolds, 1976).

The rather tight crescent of realized natality shown in Figure 1 suggests that both age of first reproduction and litter size are jointly influenced. Litter sizes are never large when age of first reproduction is late (despite potential advantages), nor is the reverse true. Nutrition is implicated and is discussed in association with population regulation. It is noteworthy that the obligate carnivore, polar bear, exhibits the least flexibility in realized reproductive rates.

MORTALITY PATTERNS

All *Ursus* appear to have similar life spans in the wild. The oldest female polar bears observed have been 25 years old (Stirling et al. 1975; Lentfer et al. 1980). Brown and grizzly females may have a somewhat greater longevity: 28 to 30+ years (Couturier 1954; Storer and Tevis 1955; Pearson 1975). The oldest specimens of free-ranging black bear females are equally aged (a 27-year-old reported by Poelker and Hartwell (1973) and a 32.5-year-old reported by Sauer (1975). Females maintain their reproductive competency almost throughout their life span. The oldest reproductively active females reported in the literature are 21 years (Lentfer et al. 1980) and 23 years (Stirling et al. 1977b) for polar bears, 22 years (Nagy and Russell 1978) and 24.5 years (Pearson 1975) for brown bears, and 27 years (Poelker and Hartwell 1973) and 32.5 years (Sauer 1975) for black bears. Despite the similarity in maximum longevity between species, realized natality rates (Table 3) suggest broad patterns in the mortality rates of *Ursus*. Specifically, brown bear females should experience less mortality than do black or polar bear females (Figure 1).

We consider three stages in the life history of *Ursus*: cub, subadult, and adult. The cub phase lasts while the animal is under the protective care of its mother. This period varies within and between species (Table 3). Generally, black bears are self-sufficient at 1.5 years of age (range: 0.5 to 2.5 years), brown bears at 2.5 years (range: 1.5 to 4.5 years), and polar bears at 2.5 years (range: 1.5 to 3+ years) (see review of Bunnell and Tait 1981). Cubs generally are not hunted and their mortality rate can be estimated from changes in numbers through time without invoking the impacts of hunting. Bunnell and Tait (1981) reported that mortality over the first year of life was higher than had been estimated from changes in litter sizes (an inappropriate method of estimating cub mortality). Specifically, estimated mortality rates for black bear cubs were 25 to 30% and 30 to 40% for brown bear cubs. Assumptions necessary to calculate mortality rates have not held in any of the polar bear populations that have been well studied.

During the subadult stage, animals disperse from the population—an unacceptable violation of mark and recapture assumptions—hence useful estimates of subadult mortality are rare. Bunnell and Tait (1981) noted that the few data available indicated rates of subadult mortality of about 15 to 35% annually, higher than indicated by data derived from live adults.

Estimates of mortality rates of both subadult and adult bears are confused by the impacts of hunting. Cowan (1972) suggested that most of the surviving bear populations were limited by their major predator, man. In their review of the mortality rates of North American *Ursus*, Bunnell and Tait (1981) treated age structures of 30 populations, only one of which was not hunted. Estimated mortality rates of the hunted black and brown bear populations were two to three times greater than for the single unhunted brown bear population. Reproductive behavior of bears also modifies their age structure. Reproduction can become synchronized in alternate years (Free and McCaffrey 1972; Collins,

1974; Rogers, 1976; Lindzey and Meslow, 1977b). Studies cited earlier indicated that among all *Ursus*, most females may forego reproduction during a particular year. Bunnell and Tait (1981) found that the most effective approach to accommodate the resultant erratic age structures of bears was an algebraic transformation of the Chapman-Robson statistic to yield an estimate of the mean mortality rate per year.

Considering only the capture data sampling live, hunted populations, it was found that the female mortality rates were consistently lower than those for males, ranging from 9.8 to 24% /year. Weighted averages were 17.7, 16.6, and 19.4% /year for polar, black, and brown bear females, respectively. Thus, there is broad agreement with the relative rates suggested in Figure 1. On average, estimated mortality rates for males are greater than the rates for females; 21.6, 25.9, and 23.4 respectively, for polar, black, and brown bears. Much of the difference between the sexes is a function of their differential vulnerabilities to hunting, as are the differences between mortality rates derived from live and dead samples (Bunnell and Tait, 1981). Since hunting appears to represent the dominant proportion of bear mortality (whether mortality rates are derived from live or dead samples), interpretation of mortality rates is inextricably related to an understanding of the predator-prey interaction between man and bear. Models of this interaction were proposed by Bunnell and Tait (1980) and evaluated by Bunnell and Tait (1981).

POPULATION REGULATION

Background

Bears have few enemies other than man and conspecifics. The omnivorous food habits of most species frequently have been assumed to ensure an adequate food supply. Therefore, by the process of elimination, it often has been deduced that numbers must be self-limited by social factors.

We suggest that within genus *Ursus* a broad but consistent pattern to population regulation is evident. Nutritional condition dominates the reproductive rate, and social mechanisms facilitate access to, or exclusion from, sources of nutrition. Imposed on these fundamental constraints is the bear's apparent desire and ability to impose a haremlike structure on the mating system.

In presenting this suggestion, we treat reproductive rates and mortality rates separately. Furthermore, we consider that reproductive features are largely density independent, while influences of mortality are invoked at high densities (compare to pattern described in Chapter 25) largely through dispersal of subadults.

Regulation of Reproductive Rate

Age of first reproduction, litter size, and breeding interval all appear to be dominated by nutritional condition. Mean age of first reproduction within

specific bear populations is generally the age at which females attain adult weight, or slightly later. This phenomenon itself generates broad regional differences in realized natality rates. For example, females among the northern interior grizzly attain adult weights at age 6 to 8 years, and first give birth at about age 7 to 9 years (Pearson, 1975; Reynolds, 1976), while coastal populations grow more quickly and reproduce earlier (see data of Hensel et al., 1969; Glenn, 1973; Glenn et al., 1976). Similar comparisons are possible among black bear populations; for example, compare Jonkel and Cowan (1971) with Rogers (1976, 1977). The carnivorous polar bear more consistently has a rapid growth rate.

Among black and brown bears, females that do not gain sufficient weight prior to denning generally fail to produce cubs. Rogers (1976) reported that none of 16 adult female black bears weighing less than 67 kg on October 1 produced cubs, while 28 of 30 females weighing more than 80 kg and without cubs the previous season did produce cubs. It is likely that delayed implantation facilitates effective "abortion" of the pregnancy. Among polar bears, underweight females appear more often to give birth and then lose the litter (Stirling et al., 1976). Striking evidence is available among polar bears in the Canadian Arctic that experienced ice conditions unfavorable to seal populations and to polar bear hunting of seals. Comparing "before" and "during" unfavorable conditions, we note that the total population declined 33%, the percentage of females with cubs of any age declined from 82.2 to 54.7, and yearlings as a proportion of the population declined from 15 to 3.6% (data of Stirling et al., 1975, 1977b). Observed litter sizes of cubs, however, changed insignificantly, from 1.69 ± 0.05 to 1.61 ± 0.08 . During periods of low food abundance, polar bears dispersed widely, seeking more favorable hunting grounds; many females postponed breeding, yearling mortality increased, and entire litters apparently were lost.

A broader relationship is evident between mean litter size and midlatitude of the denning area (Figure 2). Harestad and Bunnell (1978) utilized latitude as a surrogate variable for productivity. These workers noted that regardless of weight or trophic proclivity, mammalian species showed larger home ranges at greater latitude, implicating lower primary productivity with increasing latitude. In all but the most northern regions, female polar bears and their young actively forage for vegetation upon emergence from the maternal den (e.g., Stirling et al., 1977a). At more southerly latitudes, the vegetation and amounts of energy plus nutrients are more abundant upon emergence than in the north. Latitude of denning and litter size show a clear statistical relationship ($r = 0.77$; p of zero slope < 0.003) for the 12 studies summarized in Figure 2:

$$L(x) = 3.05 - 0.02x \quad (1)$$

where L denotes mean litter size and x denotes latitude, degrees north ($^{\circ}$ N).

Similar broad relationships are evident among black and brown bears. In western North America, black bears typically dwell in coniferous forests, their

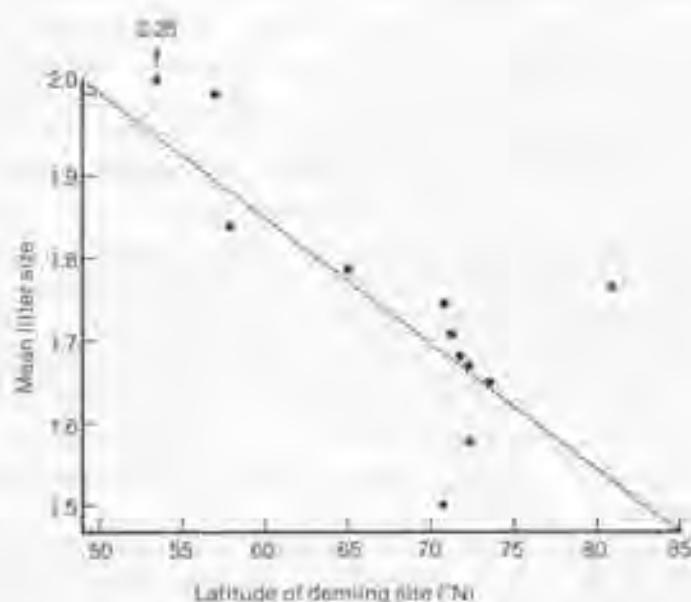


Figure 2 Relationship between mean litter size and midlatitude in degrees north of the denning area among polar bears.

mean litter sizes range from 1.32 to 1.96 with a mean of 1.71 (Table 2). In eastern North America, black bears more frequently inhabit deciduous or mixed forests, where berries and mast commonly provide energy and nutrient-rich forage. Mean litter sizes of black bears east of 95°W range from 2.15 to 2.74 with a mean of 2.42. Other attributes of their life histories also differ. Mean weights of adult black bears from the west (Washington, California, Montana, and Alberta) are about 93.5 kg for males and 64.5 kg for females (Table 1). Eastern black bears are about 40% larger. Growth rates are also faster in the east, and ages of first reproduction correspondingly younger: 5 to 8 years in the west, about 4 years in the east (Table 3). In eastern populations, the breeding interval is more commonly two years (Erickson, 1964; Free and McCaffrey, 1972; Rogers, 1976), while in the west it usually exceeds 3 years (Table 3).

There is also evidence of the importance of nutrition to black bear populations within a given area. Jonkel and Cowan (1971) reported that reproduction of black bear in Montana approached zero when huckleberries (*Vaccinium* spp.) were scarce. Rogers et al. (1976) noted that mean litter sizes observed near sources of garbage in Michigan ($\bar{x} = 3.1$, $n = 7$) were significantly larger ($p < 0.01$) than those observed in the same area but away from sources of garbage ($\bar{x} = 1.99$, $n = 129$) (Erickson et al., 1964). In Minnesota, captive black bears receiving rich diets developed more rapidly than did wild bears, even when captive bears were caged together with larger bears that dominated them (Rogers, 1976). Captive females produced their first cubs at 3 years of age, wild females

with ready access to garbage at 4 to 5 years ($\bar{x} = 4.4$), and those with little or no access to garbage, still later at age 4 to 7 years ($\bar{x} = 5.6$) (Rogers, 1976). Rausch (1976) reported similar findings for black bear in Alaska. Rogers (1976) further noted that "only 33% (14/43) of the females 5 years of age or older were accompanied by cubs following years of scarce food, whereas 44% (17/39) were with cubs following years of moderately abundant food, and 79% (23/29) were with cubs following years of exceptionally abundant food."

The eastern forms of the grizzly have been extirpated so potential east-west differences cannot be examined. There are, however, differences between interior forms and the coastal forms, that have access to salmon. Omitting the Yellowstone population, which until recently frequently exploited garbage dumps, the weighted mean of cub litters is 1.88 for interior populations (2.00 when Yellowstone bears are included). For coastal populations, the comparable estimate is 2.22 (Table 2). Data are sparser for age of first reproduction. Hensel et al. (1969) estimated the mean age of first reproduction for the coastal population on Kodiak Island at 4 to 5 years. The northern interior populations (Yukon and Alaska) breed much later, at 7 to 10 years, while southern interior populations are only a year or more delayed, behind coastal forms (Table 3).

The association between adult weight and reproductive rates is consistent with that observed in black bears. Adult female grizzlies of interior populations weigh about 100 to 140 kg, whereas along the coast they weigh 120 to 200 kg (Table 1). When they finally reproduce, female grizzlies of the northern interior are only slightly heavier than female black bears from eastern North America.

Together, these observations imply strong nutritional control on all reproductive parameters. Age of first reproduction lags slightly behind the age at which adult body weight is attained. Both litter size and breeding interval are correlated with health and weight of the mother.

If nutritional condition is indeed dominant in regulating populations, one might anticipate a territorial spacing mechanism. In theory, territoriality would be the optimal spacing mechanism where resources were plentiful and evenly distributed, or accessible and predictable. Conversely, it would not pay to defend areas in which food was patchy or unpredictable in abundance (Horn, 1968; Wiens, 1976). Limited overlap of home ranges has been interpreted as evidence of territoriality. Among black and brown bears, reported overlap of home ranges within sex classes has ranged from slight (Jonkel and Cowan, 1971; Poelker and Hartwell, 1973; Pearson, 1975; Rogers, 1976) to extensive (Lindzey and Meslow, 1977a; Reynolds and Beecham, 1980; Craighead, 1976; Berns et al., 1980). Available data seldom permit evaluation of the spacing mechanism relative to forage abundance. Jonkel and Cowan (1971) felt that the great diversity of topography, climate, and vegetation on their study area permitted bears to occupy small areas of limited overlap, which these investigators interpreted as territories. Presumably, the diversity provided continuously renewing food resources that were uniformly distributed. Reynolds and Beecham (1980) noted extensive overlap, which they attributed to patchy and unpredictable forage production. Where overlap of home ranges is low, it is more often lower for

females than for males, again implicating the importance of abundant forage for successful reproduction.

The erection of dominance hierarchies at concentrated food sources, such as berry patches, salmon streams, and garbage dumps (e.g., Stonorov and Stokes, 1962; Frame 1974; Rogers, 1976; Egbert and Stokes, 1976), indicates both the lability of social organization among *Ursus* and the importance of social organization in allocating food resources. Generally, it appears that access to food is not greatly restricted by social factors. Where forage is abundant, populations reproduce well. Dominance hierarchies at concentrated food sources appear to operate primarily in mediating communal access to food by an often solitary and aggressive animal. We conclude that reproductive rate is nutritionally regulated in a largely density-independent fashion.

Regulation of Mortality

Nutritional factors appear to regulate the rate at which a population can grow by controlling fecundity generally in a density-independent fashion. Upper limits to bear abundance appear to be determined by density-dependent mortality factors. Analyses by Bunnell and Tait (1981) support the suggestion of Cowan (1972) that the major cause of mortality in modern bears is hunting by man. Of the 23 studies on 30 populations reviewed by these workers, only one examined an unhunted population. Therefore, discussion of "natural" mortality unassociated with man is necessarily speculative. We noted earlier that conspecifics were the bear's next most important mortality agent after man. Here, we argue that adult males regulate population density by killing or evicting younger males (see also Chapter 5). The manner in which male aggression enhances male fitness is discussed subsequently. For the present, we note that male bears enhance their individual fitness by reducing the density of other adult males. Evidence for such density-dependent regulation is sometimes indirect, but it is plentiful and logically consistent.

Examples of conflict among adult males resulting in severe wounding or death occur in all North American *Ursus*: for polar bear, see Løng (1970); brown bears, Pearson (1975), and black bears, Beecham (1980). Although this form of conflict could serve to reduce adult male density, it represents a high degree of risk for both participants. Males are also aggressive toward younger bears. "Murder" of subadults and cubs has been observed in all species [polar bear: Nansen (1897), Parovshchikov (1964), Løng (1970); brown bear: Craighead and Craighead (1967), Pearson (1975), Egbert and Luque (1975); black bear: Erickson (1957), Jonkel and Cowan (1971), Beecham (1980)]. Subadults may simply be driven from the area, as with brown bears (Craighead and Craighead, 1967) or as with polar bears, driven from their freshly killed prey (Pedersen, 1945; Løng, 1970; Stirling, 1974; Stirling and Archibald, 1977). Furthermore, subadults frequently show greater rates of dispersal and larger home ranges than do adults (Stickley, 1961; Erickson and Petrides, 1964; Reynolds and Beecham, 1980). Jonkel and Cowan (1971) observed large losses of subadults from their

black bear population. Enforced eviction of subadults from more productive habitat could help regulate population numbers. Stokes (1970) suggested that dispersal may result from social intolerance and that social intolerance increases rapidly with density. In brief, there is direct and indirect evidence that older individuals—primarily adult males—act to reduce the survivorship or density of subadults. (The analysis by McCullough (Chapter 9) indicates that this is the case for the Yellowstone grizzly population.) Rogers (1976, 1977) documented that, in black bears, the interaction is principally between adult males and subadult males. We suggest that among Ursidae, adult males have evolved an aggressive disposition directed toward subadult males. The resulting eviction or "voluntary" evacuation from the area by subadult males results in low recruitment of adult males and a disproportionate adult sex ratio in the population. We note subsequently that such behavior, even if directed against one's own offspring, would serve to increase fitness of individual adult males.

Over evolutionary time, these subadult male vagabonds would either experience a high mortality rate or settle new areas. In recent times these subadults have become the principal victims of man as predator.

The greater apparent mortality rates of males over females indicate the greater vulnerability of males to hunting. Among black and polar bears, the generally greater apparent mortality rate of killed males over captured males indicates a biased selection in the kill toward younger over older males. Among grizzly bears, the picture is ambiguous. Data of Nagy and Russell (1978) suggest hunter selection for young males, but represent a small sample; data of Glenn (1975), Wood (1976), and Johnson (1980) suggest hunter bias for older males (Bunnell and Tait, 1981).

Together, these observations suggest that evidence of density dependence should be present in the age structures and dynamics of bear populations. Density dependence can be incorporated into a simple model used to develop the isoclines (see Figure 1). The assumption evaluated is that older individuals, primarily adult males, act to reduce the survivorship or density of subadult bears. The older bears may be either the direct source of mortality or an indirect source of reduction by driving the younger bears away. The model assumes that the rates of mortality and dispersal of male and female subadults increase with increasing numbers of males.

Simulated age structures are compared with data from an un hunted population of grizzlies in Yellowstone and a hunted population from northern Canada (Figure 3). Several features are apparent here. First, the age structure differs between the hunted and un hunted populations in the manner anticipated if density dependence was an important regulating mechanism. Second, the explicit formulation of the model closely approximates field measures. The major difference between simulation and data for the un hunted population is among the oldest age classes. The weakest assumption of the model, a high rate of mortality for old adults, was suggested by examining the data of Craighead et al. (1974). However, the review of mortality patterns by Caughley (1966) suggests that increasing mortality with age is general among mammals. The scale in

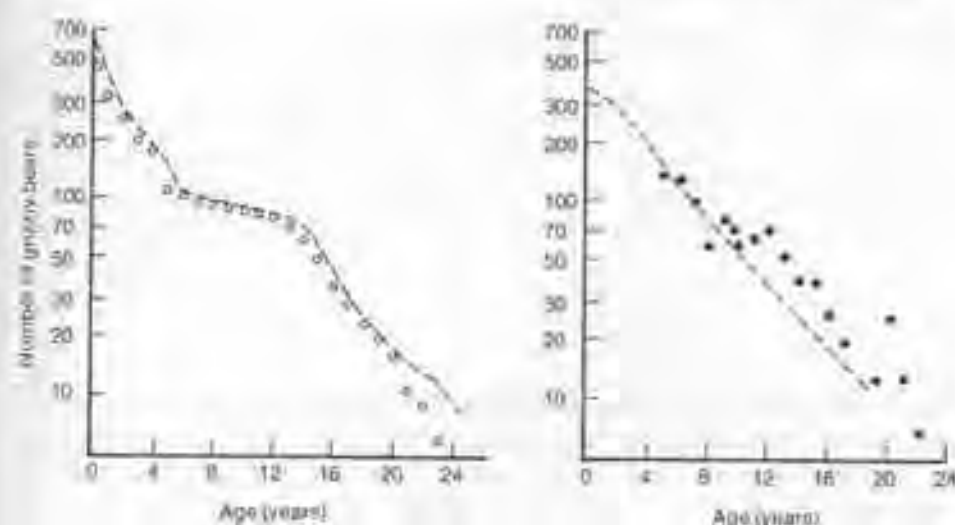


Figure 3 Simulated (dashed line) and sampled (\circ Craighead, et al., 1974; \bullet Pearson, 1975) age distributions of hunted and unhunted populations of grizzly bears. Sample age distributions have been scaled to a common basis for comparison.

Figure 3 is logarithmic, and the number of bears older than 15 years does not represent a significant segment of the population. The principal effect of hunting is to increase the mortality rate of adult animals. In both simulation and data, the slope of the curve through adult age classes steepens and the characteristic kink in age structure separating subadults from adults is removed.

Despite its simplicity and common-sense appeal, the notion of a specific form of density dependence is nontrivial and its rigorous evaluation is important (see Chapter 9). Whereas density-dependent regulation in wildlife population appears to be general (Chapter 23), it need not be resident in any specific portion of the population and, in many ungulates, it appears to be diffuse within the population. There may be value in concentrating the mechanism in the most stable portion of the population. Older male bears are subject to very few forms of mortality and thus provide an ideal regulatory mechanism. If, as field observations and simulation suggest, older males are the regulatory mechanism, there are important implications to harvest and control. Removal of the older males represents an unnatural, or at least unusual, form of mortality, and one that greatly reduces the effectiveness of intrinsic control. We know too little about bear behavior to speculate on how this removal may affect mating systems in sparse populations, but it seems clear that those populations having a higher reproductive rate (black bears) will be difficult to control by hunting, a practice that selects adult males.

Figure 4 illustrates the change in total size of a bear population simulated using the model that generated the close approximations to field data (Figure 3).

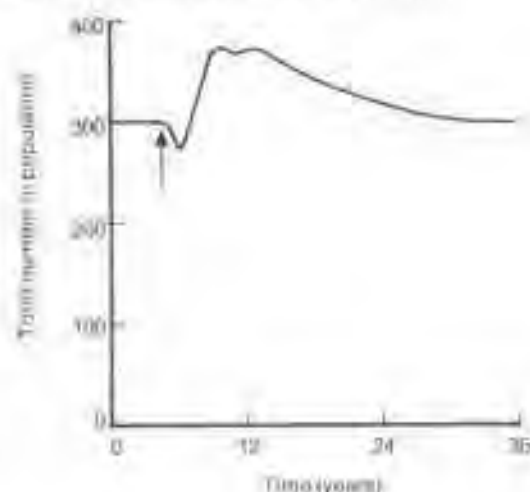


Figure 4. Simulated changes in total size of a population with density-dependent regulation from which 45 adult males and 5 adult females were removed.

The projection simulates removal of 45 adult males and five adult females from an otherwise unhunted stable population. The removal abnormally affects that segment of the population that controls total population size with resulting "overcompensation." Far more than 50 young bears "escape" into the adult segment of the population. The effect is not dampened quickly and the population does not return to its original level until after about 25 years (one generation) (Figure 4).

Data of Kemp (1972, 1976) indicate that the simulated pattern occurs in natural populations as well. Kemp experimentally removed adult male black bears from a population in Alberta. After 26 large adult males were removed from the population of about 80 animals, the population doubled. The increase in the population was attributable primarily to a demonstrated increase in numbers of subadult males, and possibly to increased subadult survivorship. The magnitude of immigration could not be evaluated. We conclude that natural mortality of bears is density dependent with control resident in older males, in basic agreement with McCullough (Chapter 9).

FITNESS

Background

The mortality factor dominating the population dynamics of bears, namely, human predation, is evolutionarily recent. The greater vulnerability of subadult and adult males in this mortality, although fortuitous, must be the consequence

of other selection pressures. Despite apparent value in regulating population density, these selection pressures should be considered within the context of individual fitness.

Our concept of fitness is that of Orians's (1969) *average reproductive success*—that is, an animal increases its fitness if it increases its genetic contribution to future generations. In a nonexpanding population with equally competitive offspring, fitness can be closely approximated by the total number of offspring produced.

Males

Male bears can improve their individual fitness simply by mating successfully with more females. The process of successful mating by the male can be considered in two phases, the search phase and the encounter phase. The search phase for black bears has been discussed by Rogers (1977). Male bears roam widely, eventually locating females, possibly by following scent trails. On the average, less than one-third of adult females will be in estrus each year (Table 3). Male bears can increase their search success by increasing their home range size to include a number of female home ranges. On the average, home ranges of males are 5.4 and 5.6 times larger than those of females for black and brown bears, respectively (Bunnell and Tait, 1981). Rogers (1977) reported that the home range of each mature male included the "territories" of 7 to 15 females. Jonkel and Cowan (1971) noted extensive overlap in home ranges between adult black bears of opposite sex, but little overlap of adult bears of the same sex. In the Yukon, Pearson (1975) observed extensive home-range overlap between male and female brown bears.

The empirical relationships between size of home range and body weight among mammals, noted by McNab (1965), have been extended by Harestad and Bunnell (1978). The home range of omnivorous mammals is proportionate to body weight to the 0.92 power. Sexual dimorphism does not appear to confer advantages by partitioning forage resources among large omnivores. We suggest that the larger body size of male Ursidae (Table 1) represents in part an adaptation that favors the establishment of larger home ranges and, thus, access to an increased number of potential mates.

The second phase of successful mating, the encounter phase, includes copulation. In its simplest form, a lone male meets and copulates with a lone female. An unusual example among brown bear is provided by Herrero and Hamer (1977). A male brown bear actively herded and confined a female to the peak of a mountain for two weeks. Copulation did not occur until the end of the confinement period. More often, however, the encounter phase is complicated by the presence or arrival of another male. Then, copulatory rights are established by contest between the males or through recognition of a dominance hierarchy. Hornocker (1962) observed that the Yellowstone grizzly established a dominance hierarchy that presumably reduced the incidence of actual fighting. Pearson (1975) observed fresh wounds on most large male grizzlies in the Yukon during

the breeding season. Large size confers selective advantage by promoting success in encounters. Encounters between male black bears "were often settled by large males simply chasing away smaller ones" (Rogers, 1977).

But it is not sufficient to achieve success in both searching and encountering an estrus female. Successful mating requires that procreation follow copulation. The promiscuous behavior of the female grizzly (Craighead et al., 1969) and black bear (Rogers, 1977), coupled with induced ovulation, leaves the resolution of successful mating indeterminate. The probability of a bear siring a cub is likely the inverse of the number of males that copulated with the mother. Litter mates need not have a common father. A male's fitness would increase hyperbolically with decreasing promiscuity of the female. Males could remain with the female after copulation and fend off other amorous males. They would then lose their own promiscuous opportunities, might not be able to fend off a large male, and might not have been first to copulate with the female. For whatever reason, it is sufficient to note that males do not generally stay with the female after copulation (Craighead et al., 1969; Herrero and Hanser, 1977 for grizzly; Rogers, 1977 for black). Thus, the adult male's reproductive fitness critically depends on, and is sensitive to, changes in the relative density of adult males to adult females. Anything an adult male does to decrease the abundance of adult males increases his own individual fitness. Thus, we find the density dependence described earlier: male aggression enhances individual fitness.

Evaluation of the presence of density dependence was discussed in association with Figures 3 and 4. We have suggested that adult males reduce numbers of subadult males to generate an adult sex ratio biased toward females. A simple test of this hypothesis would be to examine the adult sex ratio of a "natural" population. The population must be unhunted: park populations with access to garbage dumps might be inadequate tests. Dumps may provide refuges preserving subadult males through to adulthood. Among eastern black bears, males represented 80% of those at garbage dumps (Erickson et al., 1964), and 67% (Rogers et al., 1976) of those feeding at garbage dumps, campgrounds, or residential areas. Rogers et al. (1976) also noted that 72% of those males were age 3 years. McNeil Falls, with its concentrated salmon run, may not be broadly representative for similar reasons.

Females

Circumstances differ for female *Ursus*. With mate selection largely the province of males, females can devote their efforts to rearing of young. From Figure 1 it is apparent that female bears have two broad options whereby they can increase their fitness—to reproduce at an earlier age or to produce more young per unit time after becoming reproductive. The latter option involves shortening the breeding interval or increasing the litter size. All three aspects are under strong nutritional control. Studies have confirmed that territoriality or exclusiveness of home ranges is more strongly expressed in females than in males (Jonkel and Cowan, 1971; Pearson, 1975; Rogers, 1976). The optimum of territoriality is

available to females, as their smaller body size more frequently allows them to establish smaller exclusive home ranges. It is also likely that territoriality is more often expressed in the females because they have a greater, and longer-term investment, at stake. Although adult females appear to be more tolerant toward their offspring (Pearson, 1975; Rogers, 1977) female territoriality may ultimately limit female density with the resulting dispersal of subadult females.

Having established access to forage, there is relatively little a female bear can do to enhance fitness. Age of first reproduction and litter size will likely be established by the forage base and are beyond her control. All she can modify to increase her fitness is the breeding interval, and this only by abandonment of small litters to terminate lactational anestrus. Tait (1980) has documented the value of abandonment to grizzlies, which can be extended to black and polar bears as well.

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Does Hunting Regulate Cougar Populations? A Test of the Compensatory Mortality Hypothesis

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Does hunting regulate cougar populations? A test of the compensatory mortality hypothesis

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Abstract. Many wildlife species are managed based on the compensatory mortality hypothesis, which predicts that harvest mortality (especially adult male mortality) will trigger density-dependent responses in reproduction, survival, and population growth caused via reduced competition for resources. We tested the compensatory mortality hypothesis on two cougar (*Puma concolor*) populations in Washington, USA (one heavily hunted and one lightly hunted). We estimated population growth, density, survival, and reproduction to determine the effects of hunting on cougar population demography based on data collected from 2002 to 2007. In the heavily hunted population, the total hunting mortality rate (mean \pm SD) was 0.24 ± 0.05 (0.35 ± 0.08 for males, 0.16 ± 0.05 for females). In the lightly hunted population, the total hunting mortality rate was 0.11 ± 0.04 (0.16 ± 0.06 for males, 0.07 ± 0.05 for females). The compensatory mortality hypothesis predicts that higher mortality will result in higher maternity, kitten survival, reproductive success, and lower natural mortality. We found no differences in rates of maternity or natural mortality between study areas, and kitten survival was lower in the heavily hunted population. We rejected the compensatory mortality hypothesis because vital rates did not compensate for hunting mortality. Heavy harvest corresponded with increased immigration, reduced kitten survival, reduced female population growth, and a younger overall age structure. Light harvest corresponded with increased emigration, higher kitten survival, increased female population growth, and an older overall age structure. Managers should not assume the existence of compensatory mortality when developing harvest prescriptions for cougars.

Key words: carnivore; compensatory mortality hypothesis; cougar; density; emigration; hunting; immigration; mortality; population growth; *Puma concolor*; source-sink; survival.

INTRODUCTION

Density-dependent population regulation has been experimentally demonstrated for a variety of animals and forms the theoretical basis for sustainable hunting of polygynous mammals (Caughley 1977, Caughley and Sinclair 1994, Ginsberg and Milner-Gulland 1994, Strickland et al. 1994). The compensatory mortality hypothesis predicts that harvest mortality, especially of adult males, triggers density-dependent responses in reproduction, offspring survival, and female population growth by reducing competition for resources (Connell 1978). In unhunted or lightly harvested populations, higher densities generate increased competition for resources, resulting in decreased reproduction, offspring survival, and female population growth. Therefore, removal of adult males in polygynous mating systems

is generally considered to have benign or beneficial effects on population growth (Errington 1945, Frank and Woodroffe 2001, Johnson et al. 2001).

The compensatory mortality model has been demonstrated for a variety of ungulates (Staines 1978, Burnham and Anderson 1984, Peek 1986, Bartmann et al. 1992, White and Bartmann 1998), but little evidence suggests that the model fits carnivore populations (Franke and Woodroffe 2001, Milner et al. 2007). Because life histories of carnivores and ungulates differ, we would also expect that density dependence might operate differently. Ungulates typically have restrictive or limited dispersal movements compared to carnivores (Chepko-Sade and Halpin 1987, Howe et al. 1991, Franke and Woodroffe 2001, Zimmerman et al. 2005, Whitman et al. 2007). Therefore hunting males is likely to reduce local herbivore densities but may not have the same effect on carnivores, which display long-distance, density-independent dispersal by males. Such intrinsic emigration can depress population density, and intrinsic immigration can increase population density regardless of birth and death rates (Franke and Woodroffe 2001, Festa-Bianchet 2003). This exchange of animals via immigration and emigration may offset expected chang-

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es in density and associated effects on vital rates of resident female animals. As a result, harvest levels that are considered beneficial or benign to an ungulate population may impose additive mortality on carnivores (Franke and Woodroffe 2001, Festa-Bianchet 2003, Swenson 2003).

Cougars (*Puma concolor*) are managed for sport harvest and population control based on compensatory mortality throughout the western United States (Strickland et al. 1994, Cougar Management Guidelines Working Group 2005:71–82). Managers seeking to provide trophy-hunting opportunities often adopt strategies that seek to reduce male densities and keep female numbers high (Hemker et al. 1984, Ross and Jalkotzy 1992, Lindzey et al. 1994, Spreadbury et al. 1996, Logan and Sweanor 2001, Martorello and Beausoleil 2003). However, young male cougars often disperse long distances. Harvesting of adult males can create vacancies that attract these young dispersers to vacated territories (Hemker et al. 1984, Logan et al. 1986, Ross and Jalkotzy 1992, Logan and Sweanor 2001, Stoner et al. 2006, Robinson et al. 2008). Robinson et al. (2008) showed that heavy hunting pressure on cougars did not reduce the population in a small-scale management area because of compensatory immigration. Their results suggest that density dependence in cougar populations may act through dispersal and that models of cougar management based on the compensatory mortality hypothesis may be inappropriate.

We tested whether hunting supported the compensatory mortality hypothesis by comparing demographic parameters from two Washington State cougar populations, one heavily hunted and one lightly hunted, from 2002 to 2007. The compensatory mortality hypothesis predicts that heavy hunting of cougars will result in (1) decreased male densities, (2) increased maternity rates, (3) increased survival of young, (4) decreased natural mortality, and (5) increased female population growth; and that low levels of harvest will result in (1) increased male densities, (2) decreased maternity rates, (3) decreased survival of young, (4) higher natural mortality rates, and (5) decreased female population growth.

STUDY AREAS

We monitored cougar population in two study areas >250 km apart and managed under different hunting strategies. Heavy hunting with the aid of hounds (hunting mortality rate = 0.24) was permitted in the Northeast Washington study area and light hunting without the use of hounds (hunting mortality rate = 0.11) was permitted in the Central Washington study area.

Heavily hunted area (HH)

The 735-km² study area lies north of the town of Kettle Falls, and includes a patchwork of federal, state, and privately owned lands. The study area is bounded on the southeast and southwest by the Columbia and

Kettle Rivers. The Canadian–United States border forms the northern boundary. The area is part of a glacially subdued mountainous region (400–2130 m elevation) known as the Okanogan Highlands, and occupies the transition between the East-slope Cascades and Northern Rocky Mountain physiographic province (Bailey et al. 1994). Tree species include Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), ponderosa pine (*Pinus ponderosa*), western red cedar (*Thuja plicata*), and subalpine fir (*Abies lasiocarpa*). Most of the 46-cm annual precipitation falls as snow, with an average of 136 cm falling from mid-November to mid-April annually. Mean annual temperatures range from –6°C in January to 21°C in July. White-tailed deer (*Odocoileus virginianus*) are the most abundant ungulate, but mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and moose (*Alces alces*) are also present. Common predator species besides cougar include coyotes (*Canis latrans*), black bears (*Ursus americanus*), and bobcats (*Lynx rufus*).

Lightly hunted area (LH)

The study area is located along the East-slope foothills of the North Cascades Mountains near the town of Cle Elum. The area covers 594 km² and includes a portion of the upper Yakima River watershed. The study area is bounded by the Cascade Mountains on the west, the Enchantment Wilderness on the north, and unforested agricultural lands of the Kittitas Valley on the south and east. Sagebrush steppe foothills (below 550 m elevation) transition upward to slopes covered with ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*). Subalpine fir (*Abies lasiocarpa*), Englemann spruce (*Picea engelmannii*), silver fir (*Abies amabilis*), and western hemlock (*Tsuga heterophylla*) dominate ridges at elevations >1550 m. Precipitation averages 56.4 cm/yr, with 160 cm of snowfall during winter. Mean annual temperature ranges from –7°C in January to 27°C in July. Elk and mule deer occur throughout the study area, and mountain goats (*Oreamnos americanus*) are present at higher elevations. Common predator species besides cougar include coyotes, black bears, and bobcats.

METHODS

Captures and monitoring

We attempted to capture and mark all cougars each year, from January 2002 through December 2007, by conducting thorough and systematic searches of each study area during winter when tracks can be detected in snow. We used hounds to track and tree cougars (Hornocker 1970). We immobilized treed cougars with a mixture of ketamine hydrochloride (200 mg/mL) and xylazine hydrochloride (20 mg/mL) at a dosage of 0.4 mL/10 kg of body mass, or with Telazol at a dosage of 6 mg/kg, using a projectile dart in the hindquarter (Ross and Jalkotzy 1992, Spreadbury et al. 1996). We determined sex and classified animals as kittens (0–12

months), juveniles (13–24 months), or adults (25+ months) based on physical measurements and gum regression measurements of the canine teeth (Laundre et al. 2000).

We fitted each animal with a mortality-sensing Very High Frequency collar (VHF; Advanced Telemetry Systems, Isanti, Minnesota, USA) or Global Positioning System (GPS; Lotek Wireless, Newmarket, Ontario, Canada and Televilt, Lindesberg, Sweden). Beginning in January 2005, we investigated den sites of collared females and captured kittens by hand. We implanted kittens <6 weeks old with PIT (Passive Integrated Transponder) tags (AVID, Norco, California, USA), and collared kittens that were >6 weeks old with expandable VHF (Telonics, Mesa, Arizona, USA; T. Ruth, *personal communication*) radio collars to accommodate growth. We handled all animals in accordance with Washington State University Animal Care (IACUC Permit #3133) and Animal Welfare Assurance Committee (AWAC Permit #A3485-01). GPS collars were programmed to collect locations at 4-hour intervals (six times/day). The data were retrieved using a remote communication unit. We recorded location coordinates of VHF-collared animals at one-week intervals from ground or aerial telemetry.

Despite attempts to systematically search and mark animals, we were not able to mark the entire population. Therefore, to establish a minimum population estimate for each study area we included demographic data from collared and uncollared cougars that were harvested by hunters, killed during depredation hunts, and killed by vehicle collisions (Stoner et al. 2006, Robinson et al. 2008). Washington Department of Fish and Wildlife recorded sex and age (determined by cementum annuli) for uncollared cougars killed by hunters or killed by special harvest permits or other causes. Because measurements of gum regression and cementum annuli yield comparable ages (Robinson et al. 2008), we included all collared and uncollared animals in a linear regression analysis to examine trends in age structure over the study period.

Survival

We used radiotelemetry to monitor survival of all radio-collared cougars and assigned cause of mortality as hunting, vehicle, or natural. Natural mortalities were confirmed with necropsies. We inferred cause of kitten mortalities by examining the carcass and proximity to other collared cougars.

We used the modified Mayfield method (Heisey and Fuller 1985) to estimate survival of animals because it provides increased precision when mortality rates are high, performs well in the case of small sample size typical of large carnivore species, and can identify cause-specific mortality rates (Winterstein et al. 2001, Murray 2006). We calculated annual survival rates for male and female kittens, juveniles, and adults from January 2002 to December 2007.

To determine intervals when survival probabilities were constant, we analyzed the statistical distribution of deaths over a 365-day period (Lambert et al. 2006). This yielded two mortality seasons: a high-mortality season (LH: 1 August to 31 December, HH: 1 October to 31 January) and a low-mortality season (LH: 1 January to 31 July, HH: 2 February to September 31). Annual survival was the product of seasonal survival rates (Heisey and Fuller 1985). We chose intervals for each period based on the median date of the deaths for each period. We used the Taylor series approximation method to compute variances of class-specific survival rates, and a one-tailed z test to determine whether survival rates in LH were higher than in HH (Micromort version 1.3; Heisey and Fuller 1985).

Maternity and fecundity

We calculated maternity as the mean number of kittens observed during inspection of maternal dens and from snow tracking, divided by the number of adult females observed that year (Case 2000:183). We calculated fecundity rates, $F = S_F \times M_{x+1}$, from the female survival rate in year x multiplied by their mean maternity rate in the following year (Ebert 1999). We used two-tailed t tests assuming unequal variance to compare maternity and fecundity rates from each area (Zar 1999).

Deterministic and stochastic growth rates

We constructed a survival/fecundity dual-sex Leslie matrix (Leslie 1945) to model closed-population growth for each area using RAMAS GIS (Akçakaya 2002). We assigned female age at first reproduction as 24 months, assumed an equal sex ratio at birth, and maximum age or age at senescence of 13 years (Robinson et al. 2008).

We calculated the deterministic growth rate (λ_D) as the dominant eigenvalue of the matrix under a stable age distribution. We calculated the stochastic growth rate (λ_S) by incorporating annual environmental variability (standard deviation of annual survival and fecundity rates) and demographic stochasticity. To estimate demographic stochasticity, we sampled the number of survivors in each sex and age class from a binomial distribution, and the number of kittens born each year from a Poisson distribution using the random number generator in RAMAS GIS (Akçakaya 2002). We sampled vital rates from a lognormal distribution to avoid truncations, which can occur if standard deviations are large due to sampling and measurement error. We projected each population for six years (five transitions), and calculated λ_S as the average geometric mean growth rate from 200 simulations, the point at which rates converged (Robinson et al. 2008).

Observed growth, immigration, and emigration

We determined observed growth rates (λ_O) from annual counts of collared and unmarked cougars. Each year we tallied the number of cougars (adults, juveniles,

TABLE 1. Sources of mortality of radio-collared cougars in northeast (HH, heavily hunted) and central (LH, lightly hunted) Washington State, 2002–2007.

		HH area		
Sex and age	<i>n</i>	Hunting	Depredation	Natural
Female				
Kitten (0–12 months)	10		0.14 ± 0.13 (1)	0.54 ± 0.18 (4)
Juv. (13–24 months)	6			
Adult (24+ months)	19	0.22 ± 0.07 (7)		0.12 ± 0.06 (4)
Total	35	0.16 ± 0.05 (7)	0.02 ± 0.02 (1)	0.18 ± 0.06 (8)
Male				
Kitten (0–12 months)	13			0.69 ± 0.14 (6)
Juv. (13–24 months)	12	0.46 ± 0.17 (4)		
Adult (24+ months)	12	0.46 ± 0.12 (8)	0.06 ± 0.24 (1)	
Total	37	0.35 ± 0.08 (12)	0.03 ± 0.03 (1)	0.17 ± 0.06 (6)
Population totals	72	0.24 ± 0.05 (19)	0.03 ± 0.02 (2)	0.18 ± 0.04 (14)

Note: Sample sizes (n = total number of animals at risk), mortality rates (mean ± SD), and number of mortalities (in parentheses) are shown.

and kittens) in each study area and calculated λ_O as $\lambda_x = (n_t/n_0)^{1/t}$, where λ_x is the annual finite growth rate, n_0 is the starting population, n_t is the final population, and t is the number of transitions between the start and end of the population projection (Case 2000). We used a one-tailed, one-sample t test to determine whether deterministic (λ_D) and stochastic (λ_S) growth rates were higher than the average six-year observed (λ_O) growth rate for LH, and whether λ_D and λ_S were lower than λ_O for HH (Zar 1999). We estimated net immigration/emigration rate (i/e) using the equations $i/e = \lambda_D - \lambda_O$ and $e = \lambda_S - \lambda_O$ (Peery et al. 2006). We also used observations of radio-collared cougars to document net emigration and immigration in each area from 2005 through 2007, the period during which we radio-monitored kittens (radio collars enabled us to document emigrants).

Population density

We estimated mean annual densities of cougars (number of cougars/100 km²) for each study area as the number of animals multiplied by the mean proportion of male and female locations that fell inside a mean annual 95% composite kernel home range of collared females (McLellan 1989). For unmarked cougars, we used the mean proportion of marked animals. We back-calculated the life span of each marked and unmarked cougar to the beginning of the study, its birth date (females), or immigration date (males) as described by Logan and Sweanor (2001:66), Stoner et al. (2006), and Robinson et al. (2008). We used a general linear model (GLM) to test for independent effects of study area and time on cougar density. We included study area, time, time², time × study area, and time² × study area as independent variables and then selected variables stepwise in a backward fashion, removing those that failed to be significant at the 0.10 probability level (Zar 1999).

Age structure

We calculated sex ratios (F:M) from collared cougars only to prevent bias that may result from hunters

selecting for male cougars (trophies). We determined whether ratios were different from equality with a chi-square goodness-of-fit test (Zar 1999). We compared mean age of cougars in each area with a two-sample t test and examined the trend over time in age structure with simple linear regression (Zar 1999).

Confounding factors

To account for possible differences in per capita resources affecting maternity, kitten survival, and female population growth, we compared cougar densities and female predation rates in the two study areas. We compared densities with a general linear model and tested for differences in predation rates with a two-tailed t test (Zar 1999).

RESULTS

Captures and monitoring

We captured and marked 103 cougars in the two study sites (57 in HH, 46 in LH) between January 2002 and December 2007. Hunters killed 50 unmarked cougars (nine females, 13 males in HH; 14 females, 13 males, one of unknown sex in LH), and one uncollared female in LH was killed by a vehicle collision. We observed 26 unmarked kittens (six females, two males, nine of unknown sex in HH; three females, four males, two of unknown sex in LH) traveling with collared females.

Survival and mortality

Fifty-three (35 in HH, 18 in LH) radio-collared cougars died during the study (Table 1). Hunters killed 26 cougars, 22 died from natural causes, three died in vehicle collisions, and two were killed from depredation hunts. Eight juveniles (two in HH, six in LH) emigrated and were censored at the last known date of their location. An additional nine (four in HH, five in LH) animals were censored due to shed collars or lost VHF signals. Of 42 radio-collared kittens, 18 survived to one

TABLE 1. Extended.

<i>n</i>	LH area		
	Hunting	Vehicle	Natural
6			0.28 ± 0.24 (1)
5	0.24 ± 0.21 (1)		
12	0.04 ± 0.04 (1)		0.09 ± 0.06 (2)
23	0.07 ± 0.05 (2)		0.10 ± 0.05 (3)
13			0.47 ± 0.17 (4)
8	0.25 ± 0.22 (1)	0.25 ± 0.22 (1)	
12	0.20 ± 0.09 (4)	0.10 ± 0.07 (2)	0.05 ± 0.05 (1)
33	0.16 ± 0.06 (5)	0.09 ± 0.05 (3)	0.16 ± 0.06 (5)
56	0.11 ± 0.04 (7)	0.05 ± 0.03 (3)	0.13 ± 0.04 (8)

year of age, 16 died from natural causes, and four were censored. Six of the “natural” kitten mortalities in HH (three females, two males, one unknown sex) were presumed to have been killed by male cougars, as confirmed by canine tooth punctures in the skull and close proximity of a collared male at estimated time of death.

Average annual survival rates, including all sources of mortality, for all radio-collared cougars in HH were 0.56 ± 0.05 (mean \pm SD) and 0.71 ± 0.06 in LH, but survival varied with age and sex classes (Table 2). Overall survival and survival of adults was higher in LH than in HH (overall: $Z = 1.98$, $P = 0.02$; adults: $Z = 1.75$, $P = 0.04$). Survival of adult females and survival of kittens was also higher in LH (adult females: $Z = 1.88$, $P = 0.03$; kittens: $Z = 1.49$, $P = 0.07$). We did not detect differences among other sex or age comparisons. Overall mortality rate from hunting was higher ($Z = 2.02$, $P = 0.04$) in HH (0.24 ± 0.05) than in LH (0.11 ± 0.04). We found no differences in natural mortality rates (HH = 0.18 ± 0.04 , LH = 0.13 ± 0.04 ; $Z = 0.77$, $P = 0.44$). The standard deviation of annual survival rates, including all sources of mortality for all cougars, was 0.09 in HH and

0.06 in LH. These values were used in the standard deviation matrix of RAMAS. We removed the six kittens from the analysis that were killed by male cougars in HH, recalculated survival rates, and found that kitten survival was not different ($Z = 0.96$, $P = 0.96$) in HH (0.59 ± 0.02) and LH (0.58 ± 0.02).

Maternity and fecundity

Mean litter size was 2.63 ± 0.80 ($n = 18$ litters) in HH and 2.47 ± 0.83 ($n = 15$ litters) in LH, and did not differ between study areas ($t = 2.04$, $df = 30$, $P = 0.94$). Proportions of females producing newborns (0.44 in HH and 0.51 in LH) were not different ($Z = -0.41$, $P = 0.68$), and proportions of females with dependent kittens (0.58 in HH and 0.75 in LH) were also not different ($Z = 1.15$, $P = 0.25$). Mean maternity in HH did not differ from that in LH (HH: 1.15 kittens/female/year vs. LH: 1.12 kittens/female/year; $t = 2.26$, $df = 9$, $P = 0.94$). Fecundity rates in HH and LH also did not differ (HH, 0.76 ± 0.63 ; LH, 0.97 ± 0.38 ; $t = 2.31$, $df = 8$, $P = 0.49$). The standard deviation of annual fecundity rates was 0.25 in HH and 0.27 in LH. These values were used in the standard deviation matrix of RAMAS.

Population growth

The deterministic annual female growth rate (λ_D) based on survival and fecundity models was 0.80 in HH and 1.13 in LH. The stochastic growth rate (mean $\lambda_S \pm$ SD) for HH (0.78 ± 0.19) was lower than in LH (1.10 ± 0.12 ; $t = 21.09$, $P < 0.01$). The observed growth rates (λ_O) based on the actual number of cougars in the study area were 0.91 (female $\lambda_O = 0.86$, male $\lambda_O = 1.02$) for HH and 0.98 (female $\lambda_O = 0.97$, male $\lambda_O = 0.96$) for LH, and were not different ($t = 0.86$, $P = 0.42$). Modeled growth rates were significantly higher than λ_O in LH (for λ_D , $t = 2.09$, $P = 0.05$; for λ_S , $t = 1.68$, $P = 0.09$) and lower than λ_O in HH (for λ_D , $t = 2.10$, $P = 0.07$; for λ_S , $t = 2.46$, $P = 0.05$). The HH population had net immigration rates of 0.11 ($\lambda_O - \lambda_D$) and 0.13 ($\lambda_O - \lambda_S$), and the LH population had net emigration rates of 0.12 ($\lambda_O - \lambda_S$).

TABLE 2. Radio-days and survival rates (mean \pm SD) by sex and age class for radio-collared cougars in northeast (HH, heavily hunted) and central (LH, lightly hunted) Washington State, 2002–2007.

Sex and age	HH area			LH area		
	Radio-days	<i>n</i>	Survival rate	Radio-days	<i>n</i>	Survival rate
Female						
Kitten (0–12 months)	1611	5 (10)	0.32 ± 0.16	1094	1 (6)	0.72 ± 0.24
Juvenile (13–24 months)	1871	0 (6)	1.00 ± 0.00	1310	1 (5)	0.76 ± 0.21
Adult (24+ months)	9645	11 (19)	0.66 ± 0.08	7601	3 (12)	0.87 ± 0.07
Total	13 126	16 (35)	0.64 ± 0.07	10,005	5 (23)	0.83 ± 0.07
Male						
Kitten (0–12 months)	1885	6 (13)	0.31 ± 0.15	2295	4 (13)	0.53 ± 0.17
Juvenile (13–24 months)	2392	4 (12)	0.54 ± 0.52	1084	2 (8)	0.51 ± 0.24
Adult (24+ months)	4470	9 (12)	0.48 ± 0.12	5851	7 (12)	0.65 ± 0.11
Total	8746	19 (37)	0.45 ± 0.08	9230	13 (33)	0.60 ± 0.08
Population totals	21 872	35 (72)	0.56 ± 0.05	19,235	18 (56)	0.71 ± 0.06

Note: Sample size *n* is the number of mortalities, with the total number of monitored animals in parentheses.

TABLE 3. Densities and ages (mean \pm SD) for monitored cougars in northeast (HH, heavily hunted) and central (LH, lightly hunted) Washington State, 2002–2007.

Age and sex	HH area		LH area	
	Density (cougars/100 km ²)	Age (months)	Density (cougars/100 km ²)	Age (months)
Adults (>24 months)				
Female	1.35 \pm 0.12	51 \pm 7	1.07 \pm 0.38	68 \pm 13
Male	0.23 \pm 0.10	42 \pm 5	0.80 \pm 0.05	59 \pm 5
Total	1.58 \pm 0.17	48 \pm 5	1.87 \pm 0.42	61 \pm 3
All ages				
Female	2.83 \pm 0.76	33 \pm 7	2.32 \pm 0.44	40 \pm 6
Male	0.63 \pm 0.12	24 \pm 5	1.30 \pm 0.15	41 \pm 5
Total	3.46 \pm 0.69	27 \pm 4	3.62 \pm 0.58	39 \pm 4

and 0.15 ($\lambda_O - \lambda_D$). Observations of radio-collared cougars supported these trends; we documented five emigrants and three immigrants in LH, and four immigrants and zero emigrants in HH from 2005 through 2007.

Population density

The mean 95% composite range of females was 772 km² (95% CI = 316–1228) for HH and 655 km² (95% CI = 425–885) for LH. The annual proportion (mean \pm SD) of male GPS points within the composite range of females was 0.32 \pm 0.08 in HH and 0.43 \pm 0.16 in LH.

Time and time \times area explained significant variation in cougar density ($P < 0.10$). The final model included: area, time, and time \times area. Mean annual densities of all cougars were 3.46 \pm 0.69/100 km² in HH and 3.62 \pm 0.58/100 km² in LH, and were not different ($P = 0.26$) (Tables 3 and 4). Compared to LH, mean densities of males were lower in HH (0.63 \pm 0.12 vs. 1.30 \pm 0.15/100 km²; $P < 0.01$) and mean densities of females were higher (2.83 \pm 0.76 vs. 2.32 \pm 0.44; $P = 0.02$). Within HH, densities of all cougars and females declined over the study period, whereas we detected no change in male densities. In LH, we did not detect a change in density for any sex and age class (all $P > 0.05$; Table 4).

Sex and age structure

Mean age of the cougar population was 27 months (2.3 years) in HH and 38 months (3.2 years) in LH (Table 3). Most mean ages of cougars were higher in the LH than in HH for all age and sex classes (all $P < 0.05$), with one exception being mean age of females, which was actually higher in the HH ($P = 0.10$) (Table 3). Mean age of female cougars in HH increased ($P = 0.03$) over time and mean age of males decreased ($P = 0.07$). We detected no changes in age for LH ($P > 0.10$) across the study period.

Confounding factors

We detected no differences in mean maternity rates ($t = 2.26$, $df = 9$, $P = 0.94$), predation rates ($t = 0.79$, $df = 34$, $P = 0.44$), or population density ($t = 1.47$, $df = 1$, $P = 0.26$) between areas. The female predation rate in HH

was 6.68 days/kill (Cooley et al. 2008) and 7.04 days/kill in LH (K. White, *unpublished data*).

DISCUSSION

Data comparing demographics of two Washington cougar populations suggest that hunting does not act in a compensatory manner in cougar populations. The compensatory mortality hypothesis predicts that increased harvest mortality of males will reduce population density, resulting in lower competition for resources, reduced natural mortality, and increased reproduction and survival of young. The compensatory mortality hypothesis predicted that low levels of harvest will result in increased densities and rates of natural mortality, and decreased reproduction and survival.

In the heavily hunted area, female densities declined and male densities remained unchanged, whereas we

TABLE 4. Effects of study area (hunting level) and time (2002–2007) on density estimates of cougars (cougars/100 km²) using a general linear model.

Parameter	Estimate	SE	<i>t</i>	<i>P</i>
Total cougars				
Intercept	4.05	0.38	10.71	<0.01
HH area	0.65	0.54	1.21	0.26
LH area	0.00			
Time	–0.15	0.10	–1.53	0.17
Time \times area HH	–0.27	0.14	–1.94	0.09
Time \times area LH	0.00			
Male cougars				
Intercept	1.41	0.14	10.17	<0.01
HH area	–0.78	0.20	–3.97	<0.01
LH area	0.00			
Time	–0.04	0.04	–1.04	0.33
Time \times area HH	0.02	0.05	0.47	0.65
Time \times area LH	0.00			
Female cougars				
Intercept	2.64	0.33	7.92	<0.01
HH area	1.43	0.47	3.02	0.02
LH area	0.00			
Time	–0.11	0.09	–1.30	0.23
Time \times area HH	–0.29	0.12	–2.38	0.04
Time \times area LH	0.00			

observed no change in male or female densities in the lightly hunted area. We found no differences in rates of natural mortality (0.18 in the heavily hunted area and 0.13 in lightly hunted area) or maternity rates (1.15 in the heavily hunted area vs. 1.12 in lightly hunted area). Kitten survival was lower in the heavily hunted area (0.32 in the heavily hunted area and 0.58 in the lightly hunted area), with none of the kitten mortalities resulting from hunting or death of the mother. Our findings reject the compensatory mortality hypothesis because vital rates did not compensate for hunting mortality.

Resource availability could have influenced vital rates; however, both populations were at similar densities (3.46 cougars/100 km² in the heavily hunted area and 3.62 cougars/100 km² in the lightly hunted area) and female predation rates were not different, suggesting that resources were similar between areas. Densities were maintained via a net immigration into the heavily hunted area and a net emigration out of the lightly hunted area. The net emigration could indicate poorer resources; however, kitten survival and female population growth were higher there, suggesting that this is not the case. The net immigration rate in the heavily hunted area could suggest better resources, but kitten survival and female population growth were lower there, also contrary to the compensatory mortality hypothesis.

Instead of hunting influencing survival and reproduction, hunting was compensated by immigration and emigration in both cougar populations. The stochastic population model, based on the compensatory mortality hypothesis, predicted a 27% population decline, whereas we observed a 9% decline in overall numbers and no decline in the male population. The difference in growth rates resulted from immigration. The stochastic model assumed a closed population structure and did not account for immigration, whereas the observed growth rate accounted for the open nature of cougar populations by including immigration. Many of the mortalities resulting from hunting were replaced by animals immigrating from surrounding areas.

In the lightly hunted population, the stochastic model predicted a 10% increase in population growth, yet cougar numbers remained stable. The projected population increase was compensated by emigration rather than by decreased vital rates. Therefore, neither total population density nor competition among cougars appeared to be influenced by hunting, with immigration and emigration counteracting the effects predicted by the compensatory mortality hypothesis.

Long-distance dispersal is common in cougars (Sweanor et al. 2000, Logan and Sweanor 2001, Stoner et al. 2006) and can help to maintain overall numbers by replacing harvest mortalities with animals dispersing from neighboring areas (Hanski 2001). Rebound from heavy hunter harvest by immigration has been documented in cougar populations elsewhere (Ross and Jalkotzy 1992, Logan et al. 1986, Logan and Sweanor

2001, Anderson and Lindzey 2005, Stoner et al. 2006, Robinson et al. 2008). As a consequence, harvest models based on compensatory mortality hypothesis are unable to accurately predict the responses of cougar populations to hunting.

The heavily hunted population compensated for heavy harvest in overall numbers of cougars through male immigration. However, the female population declined ($\lambda_O = 0.86$). Although male cougars commonly disperse long distances, females are usually philopatric (Sweanor et al. 2000). As a result, fewer female immigrants are available to immigrate and replace those that are harvested, resulting in decreased numbers of females. Adult female survival is therefore vital for population growth and recovery from harvest (Martorello and Beausoleil 2003).

Harvesting adult males may increase incidences of infanticide by allowing immigration of new, unrelated males (Ross and Jalkotzy 1992, Whitman and Packer 1997, Murphy et al. 1999, Logan and Sweanor 2001). Lower kitten survival in the heavily hunted area may be a result of high male turnover from hunting. Male carnivores are known to kill unrelated young in order to induce estrous and gain breeding opportunities (Packer and Pusey 1983, Smith and McDougal 1991, Wielgus and Bunell 1995, Swenson et al. 1997, Logan and Sweanor 2001). Our observations suggest that six kittens of three litters in the heavily hunted area may have been killed by unrelated male cougars. When we removed those six kittens from the survival analysis, we found no difference in survival rates of kittens between areas, suggesting that infanticide may have been responsible for lower kitten survival in the heavily hunted area. High rates of immigration following heavy male harvest were also documented for brown bears *Ursus arctos* (Wielgus and Bunnell 1994) and black bears *Ursus americanus* (Sargeant and Ruff 2001). Female population growth declined because of sexually selected infanticide in brown bears (Wielgus and Bunnell 1994, Swenson et al. 1997). This may indicate that the compensatory mortality hypothesis may not be appropriate for many solitary, territorial, or quasi-territorial carnivores.

It is unlikely that age structure ever stabilizes in long-lived species such as cougars, which may bias our estimates of deterministic growth. Because this lack of variability assumes a stable age distribution, we have little confidence that differences between deterministic growth rates and observed growth rates act as predictors of actual population growth and believe that differences between stochastic growth rates and observed growth rates more accurately project growth rates. Additionally, despite intense trapping efforts conducted each winter, we may have missed some cougars that were present on the landscape during the study, resulting in biased estimates of observed growth and subsequent net immigration and emigration rates. The addition of the same number of cougars each year would increase density estimates, but would not change the observed

growth and emigration rates. A temporal bias, such as missing cougars only early in the study (most likely error), would yield an even lower true observed growth rate, whereas missing cougars only later in the study (least likely error) would yield a higher true observed growth rate. For example, a count of 10 cougars in 2002 and 11 cougars in 2003 would yield an observed growth rate of 1.10. If we missed three cougars in 2002, the true growth rate would have been 11/13, or 0.85. We have neither reason nor evidence to suspect that we missed more cougars as the study progressed, therefore any bias in our observed population growth rates is conservative.

CONSERVATION IMPLICATIONS

Harvest models that are based on the compensatory mortality hypothesis rely on the assumption that density reductions result in reduced competition for resources, thereby increasing survival and reproduction of remaining animals. However, our results suggest that dispersal movements may mitigate for mortalities resulting from hunting and negate compensation by other vital rates. These findings have two management implications. (1) Recovery from harvest relies on nearby source populations; therefore, cougar harvest should be managed at the metapopulation scale (Cougar Management Guidelines Working Group 2005:73–74). (2) Even when healthy source populations exist, prolonged harvest will cause female population declines via direct harvest of adult males and increased kitten mortality caused by immigration of potentially infanticidal males (Ross and Jalkotzy 1992, Logan and Sweanor 2001), and kitten abandonment from harvest of mothers (R. Beausoleil, *personal communication*). The compensatory mortality hypothesis may not be appropriate for modeling hunter harvest for cougars and other large carnivores that exhibit long-distance dispersal. Assumptions of closed populations are not appropriate for solitary carnivore species.

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APPENDIX

Comparison of seasonal survival by year for radio-collared cougars in central (LH, lightly hunted) and northeast (HH, heavily hunted) Washington State, USA, 2002–2007 (*Ecological Archives* E090-207-A1).

FINAL REPORT

Federal Aid in Wildlife Restoration Project W-131-R

A STUDY OF BLACK BEAR ECOLOGY IN NEW MEXICO WITH MODELS FOR POPULATION DYNAMICS AND HABITAT SUITABILITY

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EXECUTIVE SUMMARY

During the late 1980's and the early 1990's, interpretation of New Mexico black bear (*Ursus americana*) harvest data was stymied by the realization that increasing, stable, and decreasing population trend were all plausible explanations for observed changes in harvest data. Various interest groups, favoring different interpretations of population trend, argued for liberalizing or limiting hunting regulations as justified by the data. Clearly, additional information was needed to interpret these data and to determine the status of New Mexico bear populations.

In 1991, responding to this need for more scientific information, the New Mexico State Game Commission instructed the New Mexico Department of Game and Fish (NMDGF) to conduct a black bear study with funding from the NMDGF and the Federal Aid in Wildlife Restoration program. Research was initiated in 1992 with an overall goal to study the ecology and population dynamics of black bears for developing methods and analytical tools to help estimate and predict trends in population size and structure in New Mexico, as influenced by human-caused mortality and environmental variation.

The study involved 2 related efforts: field investigations and population modeling including harvest data evaluation. The first component was an 8-year, field-based investigation of bear ecology within 2 distinct study areas situated in prime bear habitat. To specifically address the effect of hunting on population dynamics, 1 study area was closed to hunting for the majority of the study period. Primary objectives of the field study were to estimate black bear reproductive and survival rates, especially as related to mast production and human-caused mortality. Another primary objective was to validate the cementum annuli method for aging bears in New Mexico. Secondary objectives were to examine patterns of denning, home range, movements, habitat use, and population density between study areas and among sex-age categories. Combining all relevant data, the final objective was to extrapolate study area characteristics to identify suitable habitat across New Mexico using a Geographic Information System.

The second component involved analyses of existing NMDGF harvest data and development of an analytical tool for understanding bear population dynamics. Primary objectives were to determine relationships between the harvest sample and the sex-age composition of study populations, and to determine relationships among weather variables, mast production, and bear population characteristics. Using all relevant information, the final objective was to develop a population/environmental/hunt model and to integrate the model into management application.

This report chronicles results of this 8-year study, which represents the first concerted effort to understand New Mexico black bear ecology. We also

discuss applications of the existing tools and the new tools based on this research to black bear management in New Mexico.

We conducted field investigations on 2 study areas. The Northern Study Area (NSA) was located in the Sangre de Cristo Mountains of northern New Mexico. The NSA was approximately 310 km² and was comprised of private and state lands. It was adjacent to the towns of Eagle Nest and Ute Park, and about 6 km from Cimarron. The Southern Study Area (SSA) was located in the Mogollon Mountains of west-central New Mexico. The SSA was approximately 423 km² and was encompassed within the Gila National Forest. It was remote, with the closest towns of Reserve, Glenwood, and Mogollon, located 3-16 km away.

Field data were collected using capture, den investigation, and radio-telemetry techniques. We captured bears using foot snares or culvert traps and chemically immobilized most individuals. Approximate age of bears was estimated from dental characteristics and size. A vestigial premolar tooth was extracted from bears ≥ 1 year old for age determination using cementum annuli counts. We marked each bear with numbered, colored ear tags and tattooed the same number on an inner, upper lip. We placed radio-transmitters on all females, on adult males as needed to maintain a sample of about 10 individuals, and on younger bears as needed for assessing population attributes. We monitored radio-transmitted bears from fixed-wing aircraft on a 14-day schedule during the active season. We visited dens of radio-transmitted bears to ascertain their reproductive status and change or refit collars as necessary. Weights and other measurements were obtained from all bears when possible.

Between September 1992 and June 2000, we captured 300 bears (103 females, 195 males, 2 unknown sex) 517 times, and observed 339 bears in dens (178 females, 137 males, 24 unknown sex) on 680 occasions. We placed 409 radio-transmitters on 316 bears (181 females, 135 males), and obtained 5,723 radio-telemetry locations.

Reproductive data were obtained during 268 den investigations of 80 female bears 4-27 years old. The minimum observed age of first litter production was 4 years old. Mean age at production of the first litter was 5.7 years and most females (73%) produced their first litter either at age 5 or 6 years. Natality of female bears ≥ 4 years old was 0.77 cubs/female/year and percent of females with cubs was 43%. Among previously reproductive females, natality was 1.4 cubs/female/year and percent of females with cubs was 77% ($n = 112$). Litter size ranged from 1-3 cubs and mean litter size was 1.8 cubs ($n = 115$). Observed litter interval ranged from 1-3 years and mean litter interval was 1.8 years ($n = 69$). Overall cub survival rate for 148 individual cubs from 82 litters was 55%. Recruitment of females ≥ 5 years old was 0.40 yearlings/female/year and percent of females with yearlings was 27% ($n = 232$). Recruitment of

previously reproductive females was 0.53 yearlings/female/year and percent of females with yearlings was 35% ($n = 175$).

Reproductive success was evaluated on the basis of mast production by 10 surveyed species. Acorn (*Quercus* spp.) crop failure had the greatest influence on reproduction and juniper (*Juniperus* spp.) berry failure had a secondary effect. Mast failure was associated with decreased natality, cub survival, and recruitment. Neither natality nor recruitment varied following poor to good mast production, suggesting only a minimum threshold of quality food is needed for successful reproduction. Documenting annual mast production, especially the occurrence and frequency of oak failures, may be an effective index to bear reproductive success. During 1999-2000, NMDGF officers subjectively evaluated mast production statewide. Evaluations were highly correlated with our survey results, indicating subjective criteria were adequate to distinguish variation in mast production.

Observed annual survival rates for adult and subadult females were above 90%, and rates of adult and subadult males were above 80% ($n = 591$ bear-years). Most mortality of adults and subadults was human-caused, including hunter kills, depredation kills, illegal kills, and automobile kills. Observed yearling survival was variable, ranging from 75%-97% by sex and study area ($n = 72$). Among yearlings, most mortality was from natural causes, but human-caused mortality also was observed.

Among 179 bears observed on both study areas, observed den entrance dates ranged from 25 September-7 February. The majority of bears entered dens between mid October and mid November. Mean entrance date of pregnant females was 29 October, while that of all other bears was 6 November. Among 177 bears, observed den emergence dates ranged from 21 March-5 June. Adult males emerged earliest (mean date = 18 April); females with yearlings, lone females, and subadult males emerged next (mean date = 28 April); and females with cubs emerged the latest (mean date = 7 May). Comparing study areas, the schedule of denning dates was approximately 2 weeks earlier for den entrance and 2 weeks later for emergence on the NSA than the SSA.

Bear home range and movement patterns differed by sex, age class, season, and annual mast production. Male bears had significantly larger home ranges and activity radii than female bears. For both sexes, mean activity radii and percent of long-range movements increased during the mast season, when foraging for acorns and other mast dominated activity. During years of oak failure, mean activity radii were larger than during other years. Dispersal away from natal areas was observed for 4 males monitored until age 4, but none was observed for 8 females. Nuisance and depredation activity was associated with availability of human-related foods, especially garbage. Monitoring of translocated nuisance bears indicated subadult bears, particularly males, were less likely to exhibit homing behavior than adult bears.

Bear density appeared to be higher on the NSA ($17.0/100\text{km}^2$) than the SSA ($9.4/100\text{km}^2$), but the sex-age composition was very similar for the 2 study areas. Adult females constituted approximately 30% of study populations and adult males accounted for 15-19%. Annually, relative proportions of yearlings and subadult males appeared to vary the most.

Using the habitat model, we predicted suitable black bear habitat across approximately $58,939\text{ km}^2$ (14.6 million acres), of which 75% was comprised of primary cover types. Nearly 50% of the predicted suitable bear habitat was managed by the U. S. Forest Service, 33% was under private ownership, and tribal lands comprised about 10% of the area. Statewide, 17% of predicted bear habitat was within 5 km of human-populated areas. Although currently based on relatively coarse data, the model was constructed so that future, more resolved information can be easily incorporated to update model predictions.

Extrapolating observed density estimates to areas of primary habitat yielded a statewide population estimate of 5,947 bears ≥ 1 year old. This estimate was similar to the independent estimate of 5,200 derived from population modeling for the state (excluding the Zuni, Mt. Taylor, Sandia/Manzano, and Chuska regions). These estimates refute the previous estimate of 3,000 bears used by the NMDGF, however they do not suggest a doubling of the bear population in the past decade. Rather, these estimates are based on better information and, as such, are more reliable.

Analyses of harvest data from 1985-1999 indicated bear hunters in New Mexico consistently harvested more males than females. The female proportion of annual statewide harvest ranged from 29 to 46%. Total annual bear kill by hunters was affected by many factors including season timing, hunter effort, hunter method, and mast production, as well as underlying population composition. Hunters aided with dogs had higher success rates and harvested 4 times as many female bears per hunter as those not using dogs. Later fall seasons were associated with lower total harvest and lower proportions of females in the harvest, compared to earlier fall seasons and spring seasons. Failures in oak production were associated with increases in hunter effort, hunter success, and the proportion of females in the kill.

Accuracy and consistency of the cementum annuli aging technique appeared adequate for assessing the age composition of annual hunter-killed bears and reporting of sex appeared to be accurate. However, analyses indicated harvest data were incomplete, underestimating the annual bear kill by as much as 7%.

The bear population model was designed to simulate a black bear population through time, with biological realism, hunting, and environmental influences. Using observed reproductive and survival rates, modeling indicated study populations were either stable or slightly increasing. Future utility of the

model will depend on continued input of data in the form of annual harvest records and annual surveys of mast production. Use of the model will allow for interpretation of recent demographic trends in New Mexico bear populations, a timely indication of potential overharvest, and predictive scenarios useful for selecting from several management options.

The outcomes of this research will significantly improve understanding of black bear ecology and management in New Mexico. Using the new tools provided by this study, as well as the existing tools, managers can evaluate the results and consequences of numerous management alternatives and assess past, current, and future trends in bear populations. The existing tools consist of hunter-kill records and the hunter mail-in survey. The validity of those tools has been verified to supply useful input to hunt regulation assessment and regional management decisions. The new tools include the bear population model, the model to predict suitable bear habitat, a simple annual mast survey, and the research report as a compilation and archive of these tools.

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PREFACE

In the early part of the 20th century, the science of wildlife management was in its infancy, but public and government interest in this discipline intensified as the need for protection of wildlife species became apparent. Across North America, unregulated hunting had reduced or eliminated wildlife populations once plentiful. In 1914, the last passenger pigeon died, bringing the extinction of a species, once so numerous as to blacken the skies with their multitudes. In the Southwest, Merriam's elk were eradicated, and several carnivore species, including black bears, grizzly bears, cougars, and Mexican wolves, were facing unprecedented mortality from predator control programs.

Amidst these extraordinary events, New Mexico joined only a handful of other states in granting game status to black bears and grizzly bears in 1927. Conservation measures came too late for grizzly bears, but black bear populations rebounded. Today, evidence indicates black bears inhabit the same range in New Mexico as they did prior to European settlement. They tread the same mountains, consume the same foods, and possibly slumber in the very dens used by their ancestors for thousands of years.

How did these historic events come about? The answer is as relevant today as it was in 1927. The decision to protect bear populations, by setting legal hunting regulations, arose from participation of the public, the legislature, and the New Mexico Department of Game and Fish. Without involvement from each of these 3 entities, conservation of black bears might also have come too late. With this in mind, it seems fitting that the black bear was selected as the symbol of the Department of Game and Fish. Black bears may well have been the first wildlife management success story in New Mexico.

As human populations increase in the 21st century, management of black bears will only become more challenging. Creative solutions to bear-human conflict will be necessary, as well as sensible management strategies for hunting and habitat quality. But with continued public involvement and sound management based on science, existence of black bears in New Mexico can continue to be a success story for generations to come.

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Permits to capture bears and use immobilizing chemicals were obtained from NMDGF or bears were captured in cooperation with NMDGF personnel. Further permits for use of controlled substances for immobilizing bears were obtained from New Mexico Board of Pharmacy and U.S. Drug Enforcement Agency. Fieldwork during 1999-2000 was approved under the NMSU Institutional Animal Care and Use Committee.

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Use of brand or trade names throughout this report acknowledges the product's application to our research but does not constitute agency or cooperator endorsement of those products.

Photo credits for the cover are: Cecily Costello for Gambel oak acorns, F506 yearling in tree, F536 in den, and Baldy Meadows in fall; Robert Inman for Southern Study Area (Gila) ridges from airplane, and Gerry Lamarre for black bear on rock.

CHAPTER 1

INTRODUCTION

RATIONALE FOR STUDY

The black bear (*Ursus americanus*) is an important species in New Mexico, valued both as a big game animal and an embodiment of the southwestern wilderness. Throughout history, bears have been both revered and scorned by humankind. Management of this species must balance the positive aspects of bear-human interactions, including wildlife viewing and hunting, with negative aspects, such as nuisance problems, crop and livestock depredation, and bear-inflicted human injuries. With expanding human populations, management of these bear-human interactions will only become more challenging.

The New Mexico Department of Game and Fish (NMDGF) is responsible for managing the wildlife and fish populations of New Mexico, including black bears. Their mission is to "provide and maintain an adequate supply of wildlife and fish within the state of New Mexico by utilizing a flexible management system that provides for their protection, propagation, regulation, and conservation; and for their use as a public recreation and food supply." The NMDGF primarily manages bear populations through hunting regulations and resolution of nuisance and depredation problems.

Wildlife management is essentially governed by knowledge of the status and trend of populations. However, monitoring black bear population status is a difficult job. The solitary nature of bears, coupled with the dense habitats they generally use, prevent use of survey methods commonly used for other big game species such as elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), or pronghorn antelope (*Antilocapra americana*). As in many states, the primary foundation for black bear management in New Mexico is information obtained from hunter-killed bears. Since 1978, the NMDGF has collected annual records of harvested bears through a mandatory reporting program. Beginning in 1985, utility of these data was improved with the requirement of proof of sex and collection of a premolar tooth for aging with the cementum annuli method. Since 1986, the NMDGF also has conducted hunter surveys to obtain data on hunter effort and methods to be used in conjunction with harvest records.

Managers often make inferences about status and trend of populations based on the sex and age composition of harvested bears. However, harvest data are not necessarily representative of actual bear populations because of differences in vulnerability and hunter selectivity between sex and age groups (Miller 1990, Garshelis 1991). One common circumstance, subject to misinterpretation, is an observed increase in the percentage of young bears in

the harvest sample. Is this increase due to previous overharvest of mature individuals or an increase in reproductive success?

During the late 1980's and the early 1990's, interpretation of New Mexico black bear harvest data was stymied by these very circumstances. Increasing, stable, and decreasing population trend were all plausible explanations for the observed changes in the harvest data. The lack of conclusive evidence for any trend did little to alleviate the growing controversy over future hunting regulations. Many guides, outfitters, and hunters favored the interpretation of an increasing trend, arguing that hunting regulations could be less restrictive. But other hunters and environmental groups defended the interpretation of a declining trend, and advocated more conservative hunting regulations. Clearly, additional information was necessary to interpret these data and to determine the true status and trend of New Mexico bear populations.

In 1991, responding to this need for more scientific information, members of the New Mexico State Game Commission instructed the NMDGF to conduct a black bear study. With funding from the NMDGF and the Federal Aid in Wildlife Restoration program (U. S. Fish and Wildlife Service) research was initiated in 1992. This 8-year study involved the NMDGF and three contracting organizations: Hornocker Wildlife Institute (HWI), Ecosystem Modeling (EM), and the New Mexico Cooperative Fish and Wildlife Research Unit (NMCFWRU) at New Mexico State University. The overall goal was to study the ecology and population dynamics of black bears for developing methods and analytic tools to help estimate and predict trends in population size and structure in New Mexico, as influenced by human-caused mortality and environmental variation.

STUDY OBJECTIVES

The study involved 2 related efforts. The first job was an 8-year, field-based investigation of bear ecology. Research was conducted within 2 distinct study areas situated in prime bear habitat. To specifically address the effect of hunting on population dynamics, 1 study area was closed to hunting for the majority of the study period. Research involved use of radio-telemetry transmitters on free-ranging bears, and although our primary objectives were related to population characteristics, use of telemetry permitted investigation of other ecological questions. Objectives of the field study were:

1. To document black bear population characteristics and dynamics, focusing on natality; cub survival; yearling survival; and adult/subadult survival relative to human-caused mortality.
2. To document black bear foraging habits and identify key foods, especially mast-producing species.

3. To quantify annual variation in production of important mast species for evaluation of its influence on reproductive success and survival.
4. To validate the premolar cementum annuli aging technique for New Mexico bears.
5. To document den entrance and emergence dates for comparison among sex/age categories and between study areas.
6. To investigate den site selection and use of elevation and habitat by denning bears.
7. To document home range characteristics, seasonal patterns of movement, subadult dispersal, and general habitat use.
8. To determine density and sex-age composition of study populations annually and with all years combined.
9. To extrapolate study area habitat characteristics to identify suitable bear habitat across the state using a Geographic Information System (GIS).

A second job involved analyses of NMDGF harvest and hunter survey data and development of a black bear population model using data collected during the field study. Primary objectives were:

1. To determine relationships between the harvest sample and the sex-age composition of study populations.
2. To determine relationships among weather variables, mast production, and bear population characteristics.
3. To develop a population/environmental/hunt model based on existing knowledge, and refined by rates observed in the field study.
4. To integrate the model into management application.

This report chronicles the results of this 8-year study, which represents the first concerted effort to understand New Mexico black bear ecology. Prior to 1992, only 2 research efforts had been conducted on New Mexico black bears. With funding from the NMDGF, Zager and Beecham (1982) conducted a preliminary investigation of food habits and habitat ecology in north-central, west-central, and southeast New Mexico. In 1988, a radio-telemetry study was initiated by a NMDGF District Officer to investigate bear-human conflicts, particularly on Philmont Scout Ranch (Jones 1991). That investigation acted as a springboard for establishment of the Northern Study Area for this study.

Further, this study and the resulting report supplements NMDGF data on hunter-killed black bears with information on vital rates, relationships with annual environmental variation, live population structure, and habitat use. The population model will provide managers with a tool for integrating harvest data with biological and environmental information to make inferences about bear population status consistent with all available information. Although uncertainty about black bear population resources will remain a challenge to bear management, the knowledge available to managers has been significantly improved.

CHAPTER 2

LIFE HISTORY AND MANAGEMENT HISTORY IN NEW MEXICO

This chapter describes the general ecology of black bears. It provides background for understanding the design, implementation, outcomes, and interpretations of this research.

TAXONOMY

Bears are members of the Family Ursidae, in the Order Carnivora, in the Class Mammalia. Other families found within the Carnivora include the Canidae (dogs), Felidae (cats), Mustelidae (weasels), and Procyonidae (raccoons). The Ursidae family is of recent origin, believed to have diverged from the Canidae approximately 20-25 million years ago (McLellan and Reiner 1994). Black bears are 1 of 8 ursid species worldwide.

At least 2 million years ago, after radiating to North America from Asia, a small forest-adapted ancestor (probably *Ursus abstrusus*) gave rise to the modern American black bear (Stirling and Derocher 1989). Despite climatic changes and competition with various species, the black bear adapted to survive to the present day virtually unchanged from 1 million years ago (Stirling and Derocher 1989). Within their evolutionary history, black bears have coexisted with several other ursid species, including the extinct short-faced bear (*Arctodus simus*) and the extinct North American spectacled bear (*Tremarctos floridanus*). The brown bear (*Ursus arctos*), which coexists with black bears in northwestern regions today, radiated into North America only about 100,000 years ago, and probably reached the Southwest about 13,000 years ago. Since then, black and grizzly bears inhabited New Mexico and probably shared similar distributions. However, grizzly bears were extirpated from New Mexico by the late 1930's.

DISTRIBUTION AND STATUS

Throughout their evolutionary history, the distribution of black bears has been basically defined by the extent of forested habitat in North America. Black bears have inhabited eastern deciduous forests from Florida to Maine, boreal forests from Newfoundland to Alaska, and montane forests from Alberta to Mexico. Fossil evidence indicates black bears were never commonly found in open habitats, such as the Great Plains, the Great Basin, or the arctic tundra, possibly due to competition with larger ursids, such as short-faced bears and brown bears (Stirling and Derocher 1989).

During modern times, black bear distribution has been most affected by deforestation, unlimited hunting, and use of poisons following European settlement of North America. Beginning in the 19th century, black bears were eliminated or greatly reduced in several U.S. states, including Illinois, Ohio,

Kentucky, Florida, Alabama, Louisiana, Arkansas, Missouri, and Texas (Servheen 1989). However, during the last century, reforestation, legal limits on hunting, and restrictions on the use of poisons have allowed population recovery in many regions. The bear population in Arkansas, and subsequently Missouri and Louisiana, also were augmented with bears transplanted from Minnesota in the 1950's. Today, black bear distribution is expanding and is known to include 32 U.S. states, 11 Canadian provinces or territories, and 6 Mexican states (Servheen 1989, Carrera 1993). Throughout their current distribution, bears are variously protected by game, threatened, or endangered status.

In New Mexico, evidence indicates black bear populations were greatly reduced by the early 1900's due to unlimited hunting and use of poisons (NMDGF 1926, Bailey 1932, Brown 1985). Much of the mortality was the result of government sponsored anti-predator programs, aimed at eliminating loss of livestock to grizzly bears, black bear, wolves, and other carnivores (Brown 1985). In 1924, the U. S. Forest Service (USFS) estimated only 1,500 black bears inhabiting the national forests of New Mexico, Arizona, southern Colorado, and southern Utah, combined (Brown 1985). In 1925, the New Mexico population estimate was 660 black bears (NMDGF 1926). Responding to public and legislative support for protection of bears, the NMDGF classified the black bear as a big game species in 1927, and set a bag limit of 1 bear/season (10-31 October). Black bear, deer (*Odocoileus* spp.), and turkey (*Meleagris gallopavo*) were included in a single big game license and this regulation remained until 1981. This protection had significant results, and the bear population appeared to rebound by the 1940's. In 1941, more than 3,500 bears were estimated to reside in the national forests of the southwest (Brown 1985). By 1967, the black bear population in New Mexico was estimated at 3,000 and stable (Lee 1967). In 1971, a regulation was adopted prohibiting the harvest of young less than 1 year of age or females accompanied by young. In 1978, a mandatory hide-tagging program was instituted and 2 further requirements were added in 1985: proof of sex and collection of premolar teeth for cementum aging. In 1982, facilitated by the separate black bear hunting license, the NMDGF initiated a survey of randomly selected license holders.

Since the first bear hunting seasons were set in 1927, timing and duration of seasons have varied. By the late 1970's, bear seasons encompassed 7-8 months each year, including parts of April, May, June, August, September, October, November, December, and January. In 1992, due to concerns about potential overharvest, NMDGF eliminated the spring bear season and reduced the fall season to 1 September-31 October. The fall season was again changed to 15 October-15 December in 1998 and 1 October-15 December in 1999.

Current distribution of black bears in New Mexico is associated with the forested mountain ranges. Bears inhabit areas ranging from the low elevation pinyon-juniper woodland and oak scrub habitats to the high elevation mixed conifer and spruce-fir forests (See Chapter 11).

LIFE HISTORY

Although taxonomically carnivores, black bears are, in fact, omnivorous. Throughout North America, diets of black bears are dominated by plant matter (Hatler 1972, Beeman and Pelton 1980, Graber and White 1983, MacHutcheon 1989, Raine and Kansas 1990). Diets of black bears in New Mexico also are dominated by plant material (see Chapter 5).

To an herbivorous black bear incapable of digesting cellulose, winter represents a time of food shortage, especially in northern regions. It is believed bear hibernation evolved primarily as a response to this seasonal scarcity of food (Pelton 1982). In most regions of North America, hibernation is a central component of the annual cycle of black bear activity, and the timing and duration of all other activities might be viewed as evolutionary consequences of this unique process. Although different from hibernation among smaller mammals, the physiological state attained by bears is generally considered true hibernation (Folk et al. 1976, Hellgren 1998), and some argue it is the most refined response to starvation of any mammal (Nelson 1980). For periods up to 7 months, a hibernating bear does not eat, drink, defecate, or urinate (Folk et al. 1976, Nelson 1980, Hellgren 1998). In all hibernators, metabolic activity is generated from energy stored in the form of fat, but small hibernators must arouse periodically to feed. Bears are capable of recycling the waste products of fat metabolism into lean body mass, while other hibernators must arouse and eliminate wastes through urination or suffer toxemia (Nelson et al. 1973, Hellgren 1980). Bears, like other hibernators, achieve energy savings by reducing their heart rate from 40-50 beats per minute (bpm) to 8-10 bpm, and lowering their metabolic rate by 27-50% (Hellgren 1998). However, concurrent with these other declines, black bear body temperature drops from 37-38°C to only 31-35°C compared to temperatures less than 10°C in other hibernators (Hellgren 1998). Bears can achieve energy savings equal to small hibernators without dramatic changes in body temperature, because of their lower surface-area to volume ratio. This maintenance of near normal body temperature also allows bears to arouse quickly in response to disturbance.

Female black bears give birth in winter dens, and in addition to their own metabolic requirements must fulfill the energetic demands of gestation and lactation during the hibernating phase. Timing of breeding season may be tied to hibernation. Although mating occurs during spring or summer, fetal development does not begin until late fall, due to the process of delayed implantation. Following fertilization, eggs divide until the blastocyst stage (about 300 cells) and remain within the fallopian tubes for several months. In late fall, the blastocyst migrates down the fallopian tubes and implants in the uterine wall, at which time gestation begins (Wimsatt 1963). Actual gestation length is approximately 30-90 days and cubs generally are born during late January or early February (Alt 1983, Hellgren et al. 1991). Black bear litter sizes are known to range from 1-5, but litter sizes observed during this study ranged only from 1-3 (see Chapter 6).

Delayed implantation may be adaptive in bears for 2 primary reasons. First, it allows breeding to occur early in the active season when it would not interfere with the prolonged fall foraging necessary to build up fat stores for hibernation. Secondly, even after mating occurs, it is postulated that delayed implantation may allow females, with fat stores insufficient for gestation and lactation, to forego reproduction by not implanting the blastocyst. No hard evidence of this process had been found, however lack of litter production has been linked to poor nutritional status (Kolenosky 1990, Noyce and Garshelis 1994, Samson and Huot 1995).

Like most other members of the Carnivora, black bears can be classified as k-selected species, characterized by slow maturation, low reproductive potential, and long life spans (Caughley 1977). Throughout North America, female black bears reach reproductive maturity and mate at ages ranging from 1-5 years, with most over 3 years. In New Mexico, the youngest females observed in estrus were 3 years old, and the youngest females observed to give birth were 4 years old (see Chapter 6).

Breeding season typically ranges from May to September with peaks in June or July. Evidence from New Mexico indicates the peak of breeding occurs in June. Prolonged dependence of offspring on their mother sets the minimum successful birth interval at 2 years. Bears have been observed to give birth in the presence of yearlings (Alt 1981) and to give birth to newborn cubs after fall separation from the previous year's cubs (LeCount 1983). Nonetheless, these events appear to be extremely rare, and we found no evidence of their occurrence in New Mexico.

Cubs remain with their mothers for approximately 16-18 months, denning with them during their second winter. Following den emergence in the spring, yearling bears generally become independent between May and July, at which time the female is usually receptive to mating. Despite independence, occasional socialization between mothers and offspring probably occurs for several months to years. Numerous studies, including this one, have documented temporary reuniting of mothers and offspring. Bear species exhibit a high degree of female philopatry. Subadult female bears often remain in the vicinity of their mother's home range and establish their own home range adjacent to their mother. Conversely, most male offspring disperse away from natal areas at ages ranging from 1-3 years old. Findings of this study concur with these general trends (see Chapter 9).

Natural life expectancy of black bears probably varies regionally, but bears living in excess of 20 years are common. During this study, the oldest female bear age documented using cementum annuli counts was 27 years and the oldest male was 23 years. The highest age recorded for litter production was 22 years and was observed for 2 bears.

CHAPTER 3

STUDY AREAS

Research was conducted on 2 study areas in New Mexico. The Northern Study Area (NSA) was located in the Sangre de Cristo Mountains of northern New Mexico (Figure 3-1). The study area was approximately 310 km² and was bounded by U.S. Highway 64 to the south and Moreno Valley to the west. The area encompassed private and state lands, including Philmont Scout Ranch, the Colin Neblett State Wildlife Area (CNWA) and the Elliot Barker State Wildlife Area (EBWA), Cimarron Canyon State Park, and several private ranches. It was adjacent to the towns of Eagle Nest and Ute Park, and about 6 km from Cimarron. It was bordered by a 2-lane highway, which received fairly high use year-round. It also enclosed numerous gravel roads, dirt roads, and trails. During the study period, recreation and cattle ranching were the primary land uses. Philmont Scout Ranch hosted up to 20,000 scouts during 3 months each summer. Access to private lands was limited and vehicular access to the CNWA was restricted to the highway.

In addition to presence of highways and towns, the primary human influences on the landscape included excavation, logging, and construction of dirt tanks. Scattered mines and dredge tailings remained from gold and copper mining activities that lasted from the late 19th to the mid 20th century. Most forests within the study area were second-growth, following selective logging, clearing for pasture, and forest fires. During the 1960's, an elaborate network of dirt roads was constructed on the CNWA to provide access for selective logging. Public driving access to the roads was restricted, allowing most roads to become overgrown. Occasional man-made dirt tanks were scattered within the area, primarily on private lands.

Topography and vegetation were diverse. Elevations range from 2,073 m (6,800 ft) on the east side of the study area to 3,793 m (12,441 ft) on Baldy Mountain. At the lower elevations, dominant habitat types included pinyon-juniper (*Pinus edulis-Juniperus* spp.) woodlands, and oak-mountain mahogany (*Quercus* spp.-*Cercocarpus* spp.) scrub. Middle elevations were dominated by ponderosa pine (*Pinus ponderosa*), mixed conifer (*Pseudotsuga menziesii-Abies concolor*), and aspen (*Populus tremuloides*) forests. Meadows of fescue (*Festuca* spp.), mountain muhly (*Muhlenbergia Montana*), grama (*Bouteloua* spp.), and bluegrass (*Poa* spp.) existed throughout the wooded habitats at lower and mid elevations. Spruce-fir (*Picea engelmannii-Abies lasiocarpa*), and bristlecone pine-limber pine (*Pinus aristata-Pinus flexilis*) forests dominated the higher elevations. An alpine tundra community, consisting of sedge (*Carex* spp.), alpine avens (*Geum rossii*), mountain current (*Ribes montigenum*), shrubby cinquefoil (*Potentilla fruticosa*), and grounself (*Senecio* spp.) surrounded the scree and talus slopes at the highest elevations. Further description of these vegetation communities is provided by Dick-Peddie (1993).

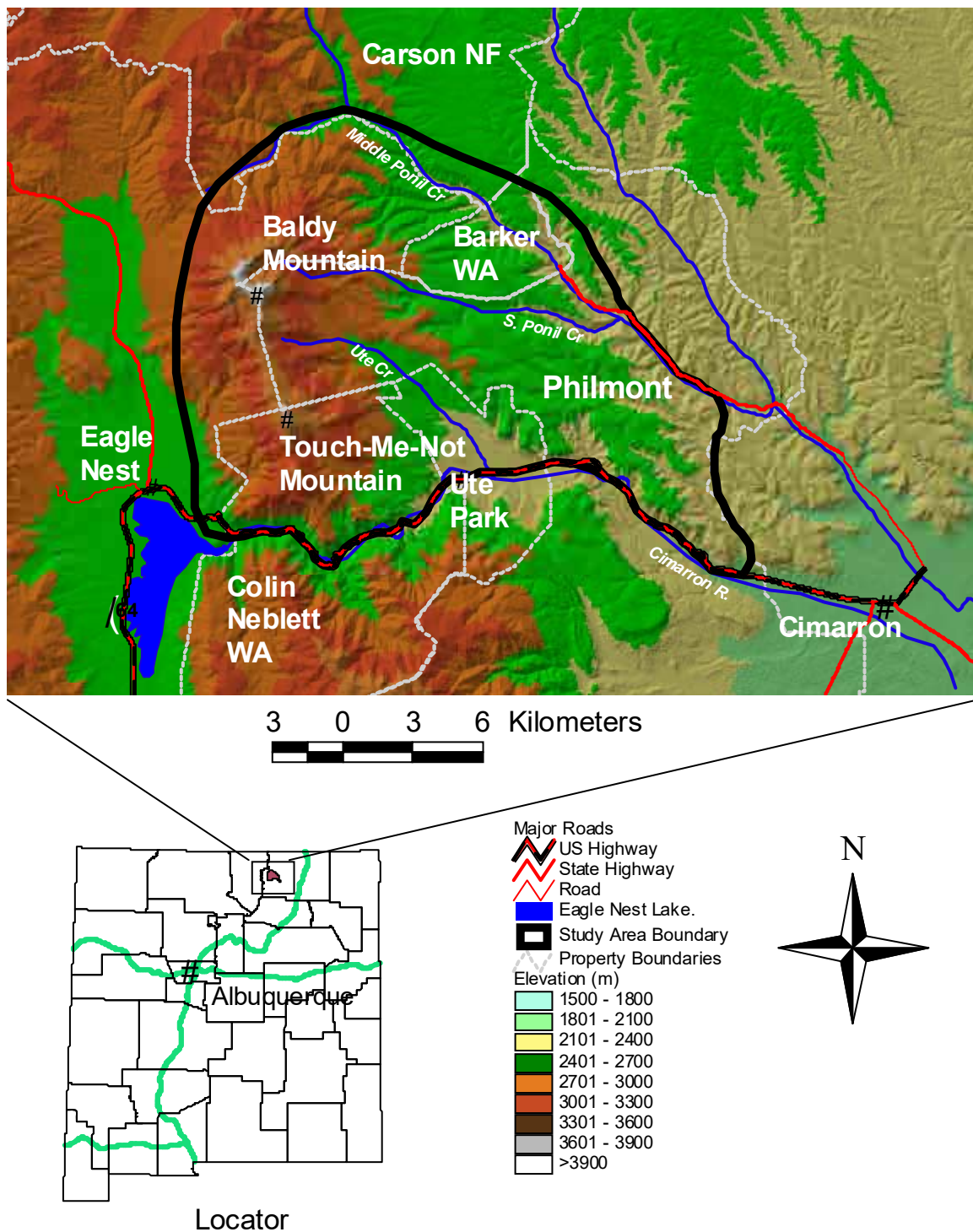


Figure 3-1. Location of the Northern Study Area of the Black Bear Study in New Mexico showing relationship to major roads, towns, and terrain.

The area included numerous permanent streams draining into the Cimarron River, including Willow Creek, California Creek, Ute Creek, Dean Creek, and Ponil Creek. Most of the smaller streams draining into these larger streams also were permanent.

Climate varied by elevation within the study area (Table 3-1). Mean January temperatures were at or below freezing and snowfall was high in the upper elevations. July temperatures were generally mild with most rainfall occurring during July-August.

Table 3-1. Climate variables recorded at weather stations close to the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1939-2000.

Parameter	NSA		SSA	
	Eagle Nest (2506 m ^a)	Cimarron (1939 m)	Beaverhead (2023 m)	Glenwood (1432 m)
Mean Jan temperature (°C)	-7	0	-1	5
Mean Jul temperature (°C)	16	21	19	24
Frost -free season (days)	70-120	145-190	110-155	180-230
Annual precipitation (cm)	37.8	41.4	37.6	40.4
Monthly snowfall Dec-Mar (cm)	25.4	15.0	10.5	4.0
Monthly rainfall Jul-Aug (cm)	6.9	7.0	6.6	6.8

^a Elevation of weather station

The area was located in Game Management Unit (GMU) 55. Prior to the study, bear hunting intensity varied within the study area. The CNWA and EBWA were closed to bear hunting since the late 1980's. Levels of bear hunting varied on private land, but were probably moderate to high throughout the area. With cooperation of private landowners, the area was closed to bear hunting so population dynamics could be studied in the absence of hunting. This closure was in effect from 1992 until 1998 when hunting was reestablished on some private land within the study area.

The Southern Study Area (SSA) was located in the Mogollon Mountains of west-central New Mexico (Figure 3-2). The area was approximately 423 km² and was bounded by U. S. Forest Service Road 141 to the north and Mineral Creek to the south. The area was encompassed within the Gila National Forest (Reserve Ranger District), but included some private parcels. It was remote, with the closest towns of Reserve, Glenwood, and Mogollon, located 3-16 km away. A 2-lane, partially paved loop road provided the main access into the study area. Numerous gravel roads, dirt roads, and trails were found on the study area, and access was usually unrestricted.

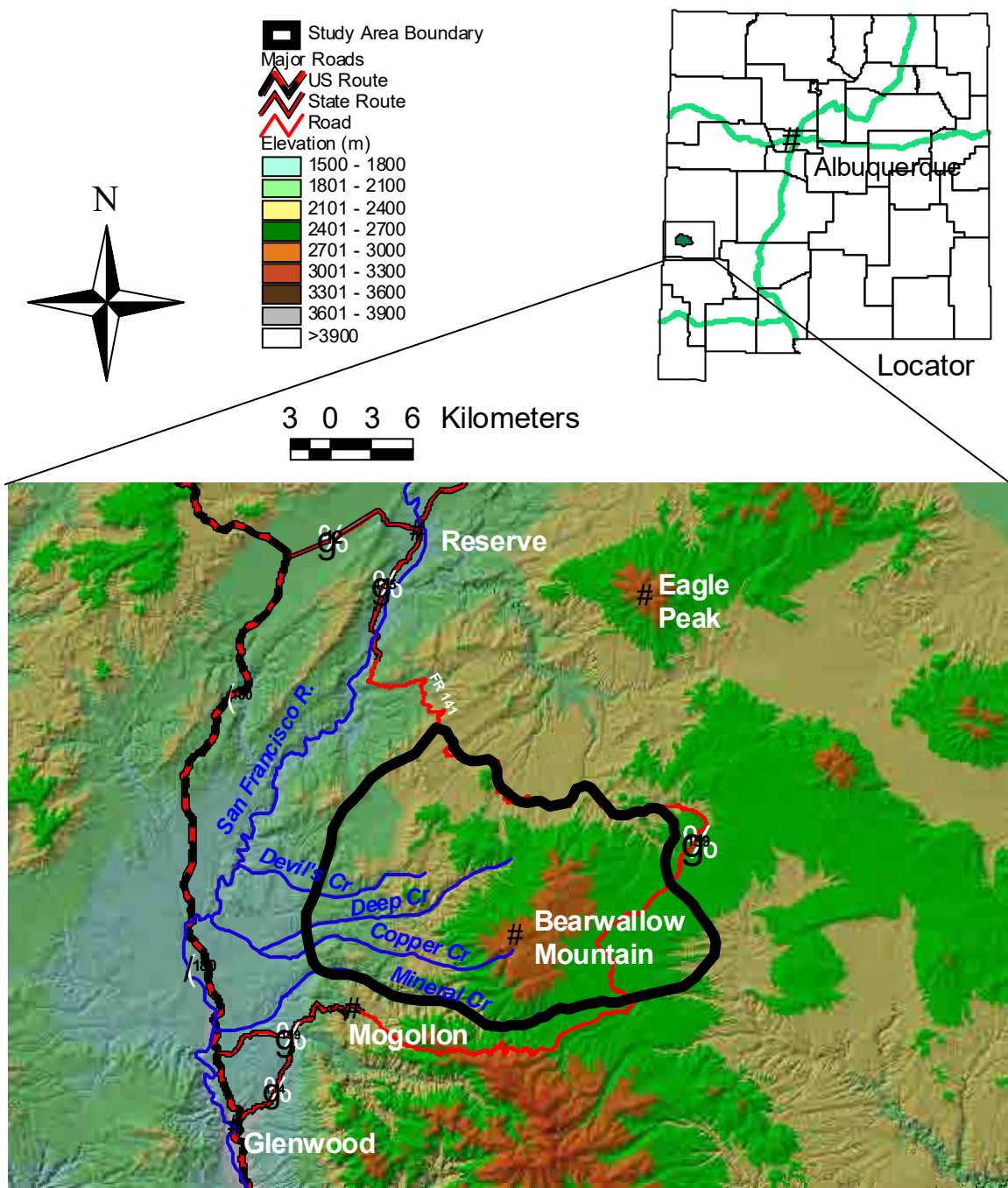


Figure 3-2. Location of the Southern Study Area of the Black Bear Study in New Mexico showing relationship to major roads, towns, and terrain.

During the study period, cattle grazing and recreation were the primary land uses. Historically, logging was also a dominant land use in this area, but during the 1990's, timber harvest was very limited within the study area. It consisted of 1 commercial timber sale on Corner Mountain and limited firewood cutting. Prior to the 1990's, much of the forested area was selectively logged or cleared for pasture, therefore most forests were second-growth. Some old-growth forests persisted, especially in steeper canyons. Numerous constructed dirt tanks were found within the area, providing permanent or seasonal water for cattle and wildlife.

Topography was diverse on the SSA, but elevations were lower than the NSA. Elevations ranged from approximately 1,750 m (5,740 ft) on the west side of the study area to 3,035 m (9,954 ft) on Bearwallow Mountain. Dominant habitat types coincided with those described for the NSA, with some variation in species composition. The high elevation bristlecone pine-limber pine forest and alpine community of the NSA were not present on the SSA.

The area included numerous permanent streams draining into the San Francisco River, including Devils Creek, Deep Creek, Copper Creek, and Mineral Creek. Many of the smaller streams on the area were ephemeral, drying out annually or in drought years.

Climate varied by elevation within the study area (Table 3-1). Mean January temperatures were below freezing at upper elevations, but above freezing at lower elevations. Snowfall was lower than that of the NSA. July temperatures were generally mild, but warmer than the NSA. Most rainfall occurred during July-August and rates were similar to the NSA.

The SSA was located within GMU 16A, and was open to bear hunting throughout the study period. Historically, hunting intensity in the region was moderate to high.

CHAPTER 4

CAPTURE OUTCOMES AND PHYSICAL CHARACTERISTICS

The objectives of the field study required us to capture a large sample of black bears and place radio-transmitters on many individuals. As a prelude to later chapters, we report the methods for our field investigations, including trapping efforts, den investigations, and radio-telemetry monitoring. We also include information on physical characteristics of bears obtained during these activities.

METHODS

Throughout the study period, our trapping efforts were primarily focused on the capture of previously unmarked females, to meet a target of 25 radio-transmitter equipped females monitored each year for reproductive success. During later years, much of the trapping effort was aimed at recapture of individuals requiring refitting or removal of their radio-collar.

Throughout the active season (primarily May-October), we captured bears using foot snares and culvert traps. Traps were examined by 1200 hours each day to prevent excessive stress to captured animals. All snared bears and most culvert-trapped bears were chemically immobilized and handled, however some recaptured bears caught in culvert traps were released without handling. Immobilizing drugs were administered using syringe poles. Captured bears were immobilized using 1 of 2 mixtures of immobilizing agents. Most often, we used a 2:1 mixture of ketamine hydrochloride (Ketaset, Fort Dodge Animal Health, Overland Park, Kansas) and xylazine hydrochloride (Rompun, A. H. Robins Co., Richmond, Virginia) at a combined dosage rate of 6.6 mg/kg (3mg/lb) estimated body weight (Addison and Kolenosky 1979). Under some circumstances, we used tiletamine hydrochloride + zolazepam hydrochloride (premixed as Telazol, A. H. Robins Co., Richmond, Virginia) at a dosage rate of 5.5 mg/kg (2.5mg/lb) estimated body weight (Gibeau and Paquet 1991). Use of Telazol was not ideal for our trapping regime because the protracted recovery period, characteristic of this drug, limited our ability to handle multiple bears per day.

We monitored respiration, pulse, and body temperature during immobilization. Ointment was applied to the eyes of bears to inhibit drying. Blindfolds were used and loud sounds were minimized to reduce unnecessary disrupting stimulus. We remained with immobilized bears until recovery was observed.

Sex of captured bears was determined from external genitalia. Black or brown color phase was noted for each bear, based on the color of the guard hairs and the underfur. Coat condition was rated as good or poor/shedding. For all bears, we recorded chest girth, body length, neck circumference, foot pad

length/width, and weight (when possible). For female bears, we noted vulval swelling, teat length/width, teat color, occurrence of lactation, evidence of suckling (swollen teats or hair matting), and presence of offspring.

Approximate age of bears was estimated from tooth eruption/wear (Jonkel 1993) and size. A vestigial premolar tooth was extracted from bears ≥ 1 year old for age determination using cementum annuli counts (Stoneberg and Jonkel 1966, Willey 1974). Age class was assigned as follows: cub (< 1 year), yearling (1 year), subadult (2-4 years), and adult (≥ 5 years).

We marked each bear with numbered, colored eartags (Allflex USA, Dallas, TX) and we tattooed the same number on an inner, upper lip. We placed radio-transmitters on all females captured, except during 1999-2000 when our target sample size of 25 had been met. We placed radio-transmitters on adult males as needed to maintain a sample of approximately 10 individuals each year. During the first year of the study, most subadult males were also given radio-transmitters. The practice of collaring captured subadult males was terminated after 1993, in favor of placing transmitters on yearling males and females in the den. Adult-sized collars (mod-500 or mod-505, Telonics, Tempe, Arizona) were placed on bears weighing over 23 kg (50 lbs). Bears weighing less than 23 kg were fitted with Telonics mod-400 collars, expandable subadult collars (Ursus Technologies, Williamsburg, Virginia), or ear-tag transmitters (Advanced Telemetry Systems, Isanti, Minnesota). Collars were fitted to allow for growth and cotton spacers were attached to ensure collars would fall off in the event of transmitter failure (Hellgren et al. 1988).

We visited dens of radio-transmitted adult females each year to ascertain their reproductive status. If offspring were present, we attempted to handle all bears in the den, however inaccessibility sometimes prevented it. If offspring were not present, females were usually handled only if necessary to change or refit collars. Dens of males and subadult females were visited annually or biannually to change or refit collars as necessary. Adult, subadult, and yearling bears requiring handling were immobilized using Telazol. We elected to use Telazol for den work because of its reduced tendency to depress heart rate and respiration compared to Ketaset/Rompun. Cubs were handled without immobilization. Typically, we did not remove adult bears from dens, unless it was necessary to reach their head or to reach offspring, however yearlings and cubs were removed from dens for handling. Weights and other measurements were obtained from all bears when possible. Den investigations were conducted between January and April, however we limited handling of cubs to March and April when our handling would have negligible impact on their survival.

We monitored radio-collared bears from fixed-wing aircraft on a 14-day schedule during the active season (weather permitting). During fall and spring months, we attempted to increase the flight schedule to 7-10 days for obtaining

den entrance and den emergence data. During winter months, monitoring of bears was reduced while the bears remained in their dens. We recorded locations using Universal Transverse Mercator (UTM) grid coordinates to the nearest 0.1km, on United States Geological Survey (USGS) 7.5-minute maps. We estimated aerial telemetry error by comparing locations obtained by telemetry to actual locations verified by ground investigation. These locations included those of shed transmitters, bear mortalities, and blind tests.

RESULTS AND DISCUSSION

Trapping Success, Den Investigations, and Monitoring

Between September 1992 and June 2000, we captured 300 bears (103 females, 195 males, 2 unknown sex) 517 times. Individual bears were captured 1-9 times with a mean of 1.5 captures/bear. First-time captures, total captures, and capture success were similar between study areas (Table 4-1). History and circumstances of all bears handled are described in Appendix A.

Table 4-1. Black bear trapping success on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2000.

Area	Category	No. Trap-nights	No. Captures		Capture Success (trap-nights/bear)	
			First-time	Total	First-time	Total
NSA	Snare	1338	64	116	20.9	11.5
	Culvert	1564	76	162	21.7	9.7
	Total	2902	140	278	20.7	10.4
	Females		49	73	59.2	31.9
	Males		91	204	39.8	14.2
SSA	Snare	1552	79	116	19.6	13.4
	Culvert	2230	81	123	27.5	18.1
	Total	3782	160	239	23.6	15.8
	Females		54	73	70.0	51.8
	Males		104	164	36.4	23.1

Between January 1993 and April 2000, we handled or observed 339 bears (178 females, 137 males, 24 unknown sex) in dens 680 times. Individual bears were handled or observed 1-8 times with a mean of 2.0 observations/bear. Successful den investigations included 282 individual adults (233 females, 49 males), 99 subadults (65 females, 34 males), 95 yearlings (45 females, 44 males, 6 unknown sex) and 204 cubs (94 females, 91 males, 19 unknown sex). In addition to these successful den investigations, we attempted to visit the dens of 24 other bears, but were unsuccessful because of inaccessibility of dens ($n = 14$), and prior emergence from the den ($n = 10$).

During 1992-1999, we placed 409 radio-transmitters on 316 bears (181 females, 135 males). Transmitters included 287 adult-sized collars, 27 subadult-

sized collars, 55 expandable subadult collars, and 40 ear-tag transmitters. We obtained 5,723 radio-telemetry locations.

Telemetry error was estimated from 105 locations verified with ground investigation. On the NSA, error ranged from 50-1,100 m with a median of 200 m, and a mean of 285 m ($n = 23$). On the SSA, error ranged from 50-3,780 m, with a median of 505 m and a mean of 784 m ($n = 82$).

Physical Characteristics

Color phase was recorded for 471 bears on 918 occasions. Most bears (75%) were brown-phase. Confidently assigning a bear to a color phase was sometimes difficult, due to color differences in underfur, especially when coats were shedding. Black-phase bears were identified by their black guard hairs, but often had gray to brown underfur. Within the brown-phase, we observed hues ranging from blonde to cinnamon to dark chocolate or liver color. Due to bleaching and shedding, the hue of brown-phase individuals was observed to vary, depending on season. Many bears with light-colored coats during spring and summer were observed with dark brown coats in the fall or winter. Color phase has been described as changing for an individual (Beck 1991), but we found no definitive evidence of such change. We believe any recorded changes in color phase were due to seasonal changes in hair condition (shedding, bleaching), different conditions during observation (time of day, lighting), and differences in observers.

Percent color phase did not differ by sex ($X^2 = 0.03$, $df = 1$, $P = 0.85$, $n = 471$), but differed by study area ($X^2 = 35.5$, $df = 1$, $P < 0.001$, $n = 471$). On the NSA, 83% of females and 84% of males were brown phase. On the SSA, 58% of females and 64% of males were brown phase.

Coat condition varied throughout the year. Almost all bears (98%) had good coat condition during fall months (September-October, $n = 132$) and during the denning period (January-early April, $n = 326$). During May-August, we observed shedding or poor coat condition on 18-40% of bears ($n = 267$), with the highest proportion in July.

We obtained active-season weights or measurements for 280 individuals on 333 occasions. Weights and measurements differed among sex and age categories (Table 4-2). Mean weight of males increased significantly between cub age and 6-7 years, when mean weight appeared to level off (Figure 4-1). Mean weight of females increased between cub age and 2-3 years, when a gradual increase in weight was observed by age. A significant difference in male and female weights was observed by the ages of 2-3 and this deviation increased with age. Means for all other measurements showed similar trends (Figure 4-2).

Table 4-2. Mean and range for weights and measurements, by age category, of black bears recorded during the trapping season (May-October) on the Northern and Southern Study Areas, New Mexico, 1992-1999.

Measurement	Sex	Age	<i>n</i>	Mean	Range
Weight (kg)	Female	Cub	3	20.9	17 - 25
		Yearling	13	23.0	11 - 36
		2-3 years	33	46.2	21 - 71
		4-5 years	17	52.9	36 - 84
		6-7 years	10	64.1	52 - 82
		8-10 years	14	68.9	50 - 114
		>10 years	11	73.1	53 - 107
	Male	Cub	2	20.0	18 - 22
		Yearling	19	29.3	14 - 48
		2-3 years	71	62.8	27 - 105
		4-5 years	33	84.9	50 - 130
		6-7 years	16	117.1	75 - 178
		8-10 years	20	117.3	77 - 159
		>10 years	23	110.2	70 - 146
Chest girth (cm)	Female	Cub	3	51	48 - 53
		Yearling	14	52	45 - 63
		2-3 years	36	70	52 - 86
		4-5 years	21	75	62 - 97
		6-7 years	12	77	69 - 93
		8-10 years	16	83	75 - 103
		>10 years	14	84	69 - 98
	Male	Cub	2	54	47 - 61
		Yearling	19	60	45 - 83
		2-3 years	83	79	45 - 108
		4-5 years	38	92	70 - 120
		6-7 years	25	102	84 - 127
		8-10 years	25	104	86 - 124
		>10 years	27	105	88 - 124
Length (cm)	Female	Cub	3	105	100 - 108
		Yearling	14	117	96 - 142
		2-3 years	35	137	107 - 160
		4-5 years	21	148	110 - 162
		6-7 years	11	152	140 - 162
		8-10 years	16	154	139 - 175
		>10 years	13	159	146 - 170
	Male	Cub	1	104	
		Yearling	19	119	103 - 142
		2-3 years	82	153	115 - 184
		4-5 years	35	171	146 - 193
		6-7 years	22	177	161 - 205
		8-10 years	24	177	125 - 194
		>10 years	27	178	164 - 193

Measurement	Sex	Age	n	Mean	Range
Neck circumference (cm)	Female	Cub	3	32	29 - 34
		Yearling	14	32	27 - 38
		2-3 years	34	42	27 - 55
		4-5 years	21	46	40 - 54
		6-7 years	12	47	42 - 51
		8-10 years	16	50	44 - 58
		>10 years	13	50	42 - 59
	Male	Cub	1	31	
		Yearling	19	36	28 - 49
		2-3 years	81	48	36 - 69
		4-5 years	36	57	35 - 73
		6-7 years	24	64	22 - 78
		8-10 years	25	66	50 - 76
		>10 years	27	65	49 - 79
Front pad width (mm)	Female	Cub	3	76	73 - 79
		Yearling	14	81	73 - 85
		2-3 years	33	94	80 - 115
		4-5 years	21	99	93 - 108
		6-7 years	12	101	90 - 110
		8-10 years	16	104	90 - 120
		>10 years	14	106	95 - 116
	Male	Cub	1	82	
		Yearling	18	89	70 - 110
		2-3 years	78	108	75 - 135
		4-5 years	36	120	100 - 139
		6-7 years	24	125	110 - 149
		8-10 years	21	125	96 - 140
		>10 years	24	126	102 - 153
Rear pad length (mm)	Female	Cub	3	96	90 - 100
		Yearling	14	108	89 - 122
		2-3 years	34	123	103 - 143
		4-5 years	21	129	102 - 147
		6-7 years	12	135	120 - 150
		8-10 years	16	138	124 - 153
		>10 years	14	135	122 - 150
	Male	Cub	3	112	108 - 117
		Yearling	18	119	103 - 140
		2-3 years	77	142	103 - 172
		4-5 years	37	156	140 - 187
		6-7 years	24	157	106 - 184
		8-10 years	20	161	140 - 190
		> 10 years	25	163	146 - 185

We obtained den-season weights or measurements for 183 cubs or yearlings on 238 occasions (Table 4-3). At approximately 4-8 weeks of age, mean weight of cubs was 2.0 kg, and mean weight did not differ by sex ($t = -0.5$, $df = 165$, $P = 0.64$, $n = 167$). At approximately 12-14 months, mean weight of

yearlings was 20.8kg, and it did not differ by sex either ($t = -0.5$, $df = 36$, $P = 0.63$, $n = 38$).

Table 4-3. Mean and range for weights and measurements of cub (<1 year) and yearling (1 year old) black bears, recorded during the den season (January-April) on the Northern and Southern Study Areas, New Mexico, 1992-1999.

Measurement	Age	<i>n</i>	Mean	Range
Weight (kg)	Cub	167	2.0	1.0 - 3.8
	Yearling	38	20.8	9.1 - 38.6
Chest girth (cm)	Cub	87	27	19 - 36
	Yearling	65	54	34 - 74
Length (cm)	Cub	44	46	36 - 60
	Yearling	49	105	82 - 134
Neck circumference (cm)	Cub	49	18	12 - 23
	Yearling	51	33	22 - 40
Front pad width (mm)	Cub	7	36	31 - 43
	Yearling	18	75	50 - 91
Rear pad length (mm)	Cub	7	43	38 - 47
	Yearling	18	101	80 - 140

We observed 1 unusual bear on the NSA, first captured as a 3-year-old and monitored for 3 years. This bear exhibited male and a female external genitalia. It was not clear whether this hermaphrodite was reproductively functional as either sex. The bear was not observed to produce cubs, but it was once observed in the company of a marked female bear during the mating season. Its size was also more closely aligned with that of males. Because of the lack of offspring and its large size, we treated this individual as a male for most analyses, such as survival and home range.

Research-related Injury, Mortality, and Den Disturbance

During 517 captures, bears sustained 1 mortality (0.2%) and 10 injuries (1.9%). The mortality was sustained by a snared subadult female killed by another bear, and 1 injury (severed toe and claw) was sustained by a snared adult male as he defended himself from another bear. The other 9 injuries were the result of bears chewing their snared foot and severing toes and/or part of the main pad. Two incidents occurred during 1992 on the NSA, and 7 occurred during 1993 or 1995 on the SSA. During 1993 on the SSA, trapping teams sometimes separated to examine snares and, after meeting up, returned to sites where bears were captured. We suspect this action may have contributed to some of the first incidents of foot chewing on the SSA, and this practice was immediately discontinued when snares were used. It appeared most other

incidents occurred when function of the swivel mechanism was inhibited, however cause could not be identified in all cases. Factors contributing to loss of swivel action included: use of stacked log cubbies; use of small, but live plant materials as part of the cubby; and failure to remove small shrubs from the area reachable by the snared bear. We discontinued use of stacked-log cubbies and only used dry, brittle material in cubby construction. Complete elimination of these factors after 1995 resulted in no further incidents of foot chewing. The addition of bungee cords and hood springs to snares during 1995-1997 also may have reduced injuries.

In traps and dens, we immobilized 762 bears and experienced 3 handling mortalities (0.4%). We believe an adult male died from reaction to the immobilizing drugs because a necropsy revealed the bear had sustained internal injuries prior to capture and it also had a congenital heart defect. An adult female with a debilitating case of sarcoptic mange died during den handling. Probably as a result of the infection and blindness, she was very emaciated and weak. The dose of immobilizing drug was appropriate for a healthy bear, however it may have been too much for a bear in her poor condition. Another adult female died when her radio-collar blocked her airway when she became immobile in the den. The problem was not observed quickly enough, and her breathing and heartbeat stopped. Cardio-pulmonary resuscitation was attempted for 35 minutes, however she was not revived.

In 369 uses of radio-collars, 8 uses (2.2%) resulted in severe subdermal injury when bears outgrew the collar. One injury involved an adult male wearing an adult-sized collar. Another injury involved a maturing female wearing an adult-sized collar. The 6 other injuries occurred when juvenile bears were fitted with expandable collars. Injuries occurred both when collars expanded as designed ($n = 3$) and when collars failed to expand ($n = 2$). Four of 6 injuries resulted from collars worn >2 years because we were prevented from removing them by inaccessible dens, unsuccessful trapping, and loss of signal.

During 414 den visits, there were 33 instances when bears fled dens upon our approach. Nine of these instances (27%) involved adult females with offspring (5 with cubs, 4 with yearlings). Following our disturbance, 4 of 5 females with cubs were believed to have returned to their dens. One female abandoned a single cub, which was removed from the den and cross-fostered with another adult female with cubs. When disturbed, 3 of 4 females with yearlings fled without their offspring, while 1 of 4 fled along with her single yearling. One of the 3 females that fled without their yearlings returned to the den, while 2 did not return. It was unknown if 1 of these females reunited with her offspring, but the other was handled in a second den and her yearlings were not with her. One female on the NSA fled her den each time we visited it, including 4 times when we immobilized her as she fled the den. This bear accounted for 4 of the 9 incidents described above (3 with cubs, 1 with yearlings).

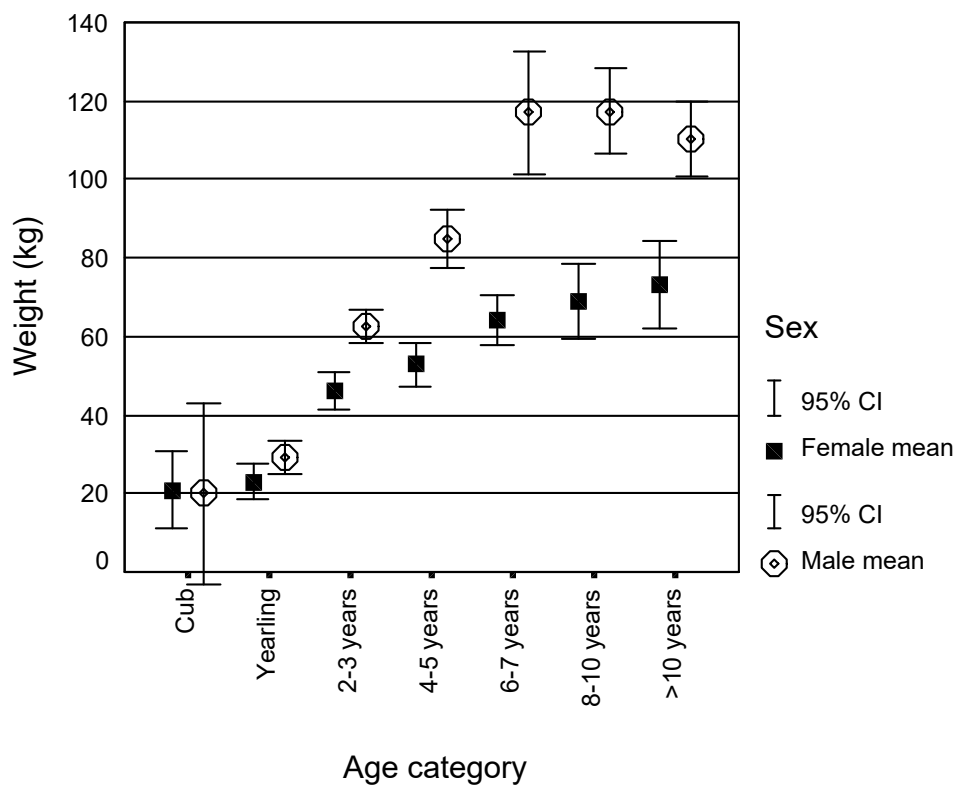


Figure 4-1. Mean and 95% confidence interval for weight (kg), by age category, of female and male black bears, recorded during the trapping season (May-October) on the Northern and Southern Study Areas, New Mexico, 1992-1999.

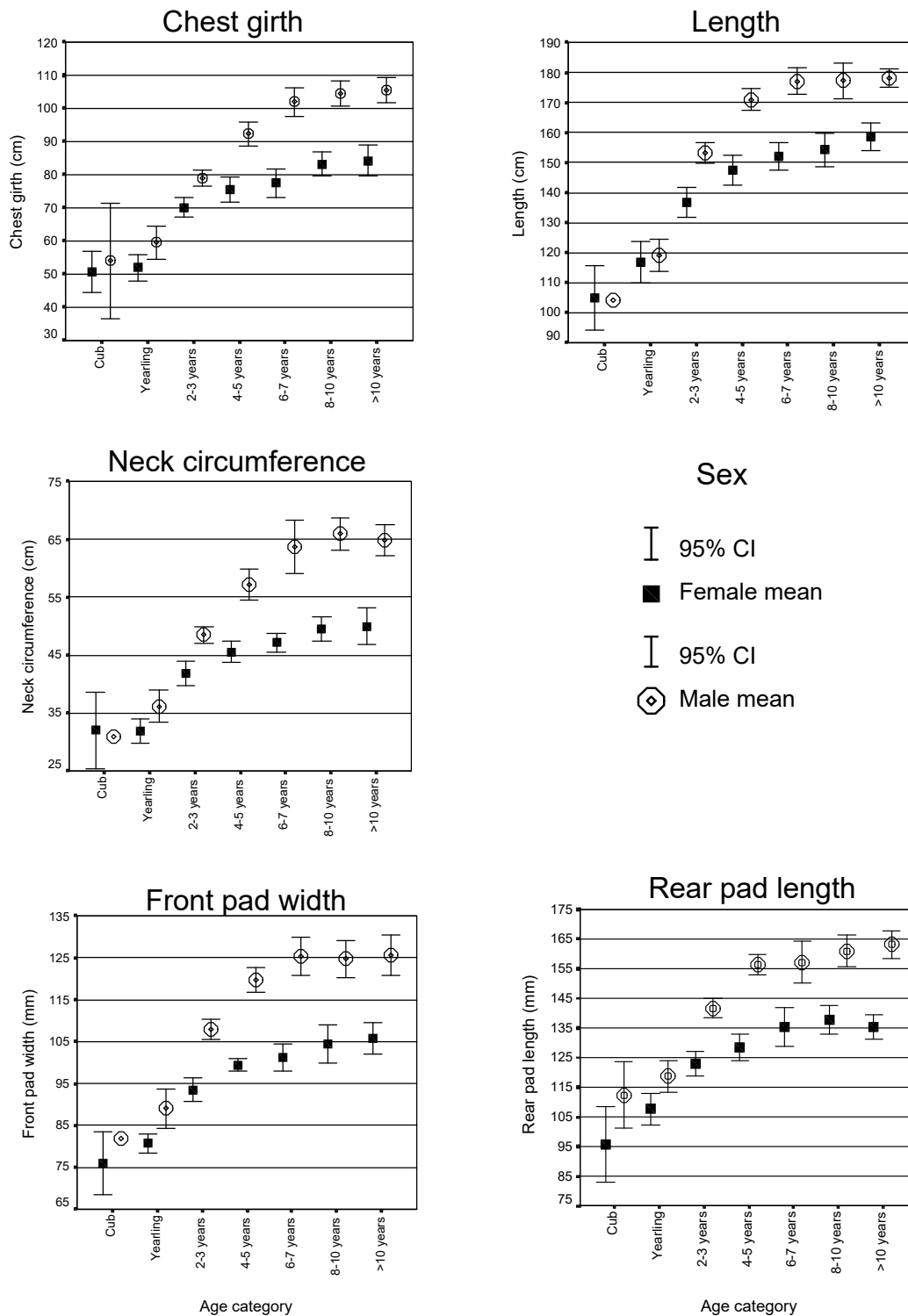


Figure 4-2. Mean and 95% confidence interval for measurements, by age category, of female and male black bears, recorded during the trapping season (May-October) on the Northern and Southern Study Areas, New Mexico, 1992-1999.

CHAPTER 5

VARIATION IN MAST PRODUCTION

A positive correlation between food abundance and black bear reproductive success has been widely reported, based on annual variability in foods (Jonkel and Cowan 1971, Rogers 1976, Eiler et al. 1989, Elowe and Dodge 1989, McLaughlin et al. 1994, Miller 1994), geographic variability in foods (Schwartz and Franzmann 1991, McLaughlin et al. 1994, Miller 1994) and differential feeding behaviors among bears (Rogers 1976, Elowe and Dodge 1989). In most studies, availability of hard mast (e.g., acorns and beechnuts) and soft mast (e.g., huckleberries and blueberries) appeared to have the greatest influence on reproduction. Reproductive success also has been linked to female nutritional condition (Kolenosky 1990, Noyce and Garshelis 1994, Samson and Huot 1995).

A first step in understanding New Mexico black bear ecology and population dynamics was to verify use and availability of mast species. We investigated bear foraging habits and variation in mast production on the 2 study areas during 1993-2000. Our objectives were to: (1) identify important mast species consumed by New Mexico black bears; (2) document annual variation in mast production of these species; (3) determine relationships between weather parameters and mast production; and (4) evaluate the feasibility of implementing statewide mast production surveys.

METHODS

Foraging Habits

We quantified bear foraging habits from scat analysis and observation. During 1992-1995, we collected scats incidental to field work. In addition, we visited selected ground locations identified from aerial telemetry to collect scats and observe bear sign. We recorded approximate date of deposition, location, and habitat descriptions for each scat. Data on other bear sign and activity also were noted. We analyzed scats using methods described by Hatler (1972) and visually estimated percent volume of each food item. We summarized scat contents during 3 seasons: premast (den emergence-20 July), early mast (21 July-15 September), and late mast (16 September-den entrance). During 1995-1996, we documented general trends in foraging habits by recording observations of bear sign and identifying primary contents of scats in the field.

Study Area Mast Surveys

We conducted mast production surveys to quantify annual variation in food abundance on the 2 study areas. Surveys were limited to species contributing most to bear diets, based on scat analysis, field observations, and

previous studies in the Western U.S. On the NSA, surveyed species included Gambel oak (*Quercus gambelii*), wavyleaf oak (*Q. undulata*), pinyon (*Pinus edulis*), Rocky Mountain juniper (*Juniperus scopulorum*), one-seed juniper (*J. monosperma*), and chokecherry (*Prunus virginiana*). On the SSA, surveyed species included Gambel oak, gray oak (*Q. grisea*), pinyon, alligator juniper (*J. deppeana*), Utah juniper (*J. osteosperma*), and orange gooseberry (*Ribes pinetorum*). Timing of surveys coincided with the period just prior to peak ripening (mid August to mid September), to ensure most fruit were fully formed, but losses to wildlife were minimal.

We established mast survey routes across study areas designed to encompass variation in elevation and aspect. Survey routes followed roads, jeep trails, or foot trails, and ranged from approximately 0.8-8.0 km (0.5-5.0 mi), depending on the extent of appropriate habitat. On each transect, we designated 2-10 survey sites at predetermined intervals of 0.2-1.6 km (0.1-1.0 mi). At each site, we walked 10 paces away from the road and classified production for the closest 1-10 (usually 5) plants of each species. The same survey routes and sites were revisited each year, with the same number of plants classified at each site. One hundred individual plants were classified for oaks, junipers, pinyon, and gooseberry. Forty individual plants were classified for chokecherry. All species, except for chokecherry, were surveyed on 2-5 separate survey routes.

Ratings were assigned as described by Graves (1980): no visible fruit = 0; fruit visible after very close inspection = 2; fruit readily visible, but not covering entire plant = 4; or fruit readily visible and covering entire plant = 8. This sequence of numbers was chosen because it roughly represented a minimum ratio of fruit/plant among the 4 classifications.

Analyses were performed using SPSS statistical software (SPSS, Chicago, Illinois). Mean ratings were calculated for each species by year. Because the rating data were ordinal, the Kruskal-Wallis (KW) rank procedure was used to test for annual differences, by species and genera. The Student-Newman-Keuls (SNK) test was then used to detect differences among mean ranks and identify homogenous subsets (pool years). We used mean ratings of homogenous subsets to characterize mast production by species or genera, with the following ranges of values as guidelines: 0.0 - 1.4 = failure; 1.5 - 2.4 = poor; 2.5 - 3.9 = moderate; 4.0 - 4.9 = good; 5.0 - 6.0 = excellent. These ranges of values were flexible under certain circumstances. For example, if the mean rating of subset A was 1.6 and the mean rating of subset B was 2.4, subset B might be designated as "moderate" to differentiate it from subset A.

Relationship with Weather Variables

Forward and backward stepwise linear regressions, using S-PLUS 2000 statistical software (Insightful Corporation, Seattle, Washington), were performed using average oak mast index as the response variable. Explanatory

environmental variables considered included temperature, last frost date, seasonal rainfall, and seasonal Palmer Drought Stress Index, all varying both between study areas and from year to year on each study area. Additional statewide variables, which differed from year to year but were the same for both study areas each year, were annual total wildland fire acres, winter El Nino state estimated by NOAA (coded as +1 for warm El Nino conditions, -1 for cold or La Nina conditions, and 0 for neutral). One-year time lags were considered. Analyses were run using 1993-1999 mast observations, to be tested with 2000 observations, and also with 1993-2000 mast observations.

District Mast Surveys

During 1999-2000, we distributed simplified mast survey forms to New Mexico Department of Game and Fish officers whose districts included bear habitat. For these surveys, mast production was assessed at the genera level for oaks, junipers, and pinyon. Officers were asked to observe mast production any time during September, coincident with other field activities, and answer the following questions for each genera (no specific training given to officers):

- (a) What percentage of plants had fruit? (circle one)
< 25% = 1; 25-50% = 2; 51-75% = 3; > 75% = 4
- (b) In general, of plants bearing fruit, how would you characterize the number of fruit per plant? (circle one or two)
scarce = 2; moderate = 3; abundant = 4; super abundant = 5
- (c) How would you characterize overall fruit production? (circle one)
mast failure = 1; poor = 2; moderate = 3; good = 4; bumper crop = 5

For summarizing data, the subjective criteria were substituted with numerical variables, as shown above. Numerical values to questions (a) and (b) were multiplied to produce a mast production "score". Numerical answers to question (c) were used as mast production "assessment". Officer surveys were summarized on a regional basis. Mean scores and assessments were calculated for each of the following mountain regions (see Chapter 11):

- San Juan complex (San Juan and Jemez Ranges, Navajo Dam area)
- Sangre de Cristo complex
- Central (Sandia, Manzano, Zuni, and San Mateo ranges)
- Gila complex (Mogollon, Tularosa, Mimbres, Gallinas, and Animas ranges)
- Southeast (Sacramento, Capitan, and Guadalupe ranges)

We used Spearman's rank correlation procedure to compare our mast survey results to scores and assessments provided by officers from the 2 Districts encompassing the study areas.

Follow-up Telephone Survey

We conducted a follow-up telephone survey during October-December 1999. Personnel from NMDGF were asked several questions regarding the ease of the survey, the time spent on the survey, and their willingness to participate in the survey on an annual basis.

RESULTS

Foraging Habits

Analysis of scats collected during 1993-1995, indicated most of the annual diet was plant matter on both study areas (Table 5-1). Diets during the pre-mast season (den emergence – 20 July) were dominated by grasses and forbs. On the NSA, most of diet was grasses, including *Poa*, *Festuca*, and *Muhlenbergia*. On the SSA, grasses and sedges were most dominant, including *Poa*, *Festuca*, *Muhlenbergia*, *Piptochaetium* and *Carex*. Forbs appeared to be more important on the SSA, and included vetch (*Vicia* spp.), peavine (*Lathyrus* spp.), and golden pea (*Thermopsis rhombifolia*). Blossoms of New Mexico locust (*Robinia neomexicana*) also were consumed. On both study areas, ants (Formicidae) constituted a significant portion of the pre-mast season diet. Unlike the NSA, soft mast was a significant portion of the pre-mast diet for bears on the SSA. Mast species consumed included alligator juniper, Utah juniper, squawroot (*Conopholis alpina*), gooseberry (*Ribes* spp.), and hawthorn (*Crataegus* sp.).

Mast species became more dominant in the diets of bears on both study areas during the early mast season (21 July – 15 September), and consumption of vegetation and ants was reduced. On the NSA, acorns of Gambel oak and wavyleaf oak were most common, comprising 56% of the scat volume. Other mast species consumed included chokecherry, squawroot, and gooseberry. On the SSA, important species consumed included juniper berries, acorns, pinyon nuts, gooseberries, prickly pear fruit (*Opuntia* spp.), and squawroot.

During the late mast season (16 September – den entrance), mast was the dominant food on both study areas. On the NSA, 88% of the scat volume was mast, with acorns comprising 87%. On the SSA, 82% of the diet was mast, with acorns accounting for 36%. Other species included juniper and prickly pear.

Observations and field examination of scats during 1995-2000 concurred with scat analysis findings reported above. On the NSA, grasses and insects were the most commonly observed pre-mast foods. During the early and late mast seasons, observations indicated acorns were the primary food sought by bears. However, consumption of 5 other soft mast species, not found during 1992-1995, were recorded. During the early mast season bears were observed to forage on squawbush (*Rhus trilobata*), wild plum (*Prunus americana*), and kinnikinnick (*Arctostaphylos uva-ursi*), and during the late mast season bears

were observed to forage on Rocky Mountain juniper and one-seed juniper. Most juniper scats were encountered at den sites, indicating this food was primarily consumed during the late fall, just prior to den entry.

Table 5-1. Percent volume and percent frequency (in parentheses) of food items identified from black bear scats collected on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-1995.

Item	NSA			SSA		
	Pre-Mast Season ^a (n = 44)	Early Mast Season ^b (n = 20)	Late Mast Season ^c (n = 50)	Pre-Mast Season (n = 53)	Early Mast Season (n = 145)	Late Mast Season (n = 56)
Vegetation						
Poaceae / Cyperaceae	78 (89)	11 (30)	2 (10)	33 (60)	17 (34)	4 (16)
Forbs	2 (5)			9 (19)	3 (9)	5 (7)
<i>Conopholis</i> spp.		5 (5)		6 (6)	4 (6)	Tr ^d (4)
<i>Robinia neomexicana</i>				5 (6)		
<i>Prosopis glandulosa</i>					3 (5)	
Hard and Soft Mast						
<i>Quercus</i> spp.		56 (60)	87 (98)	1 (6)	7 (10)	36 (43)
<i>Juniperus</i> spp.				2 (6)	32 (46)	36 (52)
<i>Pinus edulis</i>					11 (17)	2 (4)
<i>Opuntia</i> spp.					4 (10)	6 (11)
<i>Ribes</i> spp.		5 (5)		1 (4)	10 (21)	
<i>Prunus virginiana</i>		5 (5)	1 (2)			
<i>Crataegus</i> sp.				3 (4)		
<i>Actea arguta</i>	1 (2)					
<i>Rhamnus</i> sp.					Tr (1)	
<i>Juglans</i> sp.						Tr (2)
<i>Sambucus</i> sp.					Tr (1)	
Unidentified		3 (5)				2 (4)
Insect						
Formicidae	15 (48)	9 (15)	5 (6)	23 (66)	3 (13)	Tr (11)
Vespidae				Tr (4)	1 (4)	
Coleoptera	Tr (2)			1 (8)	Tr (3)	
Orthoptera			2 (2)			
Unidentified larvae	Tr (2)	3 (10)			Tr (1)	Tr (2)
Fungi						
	0	0	0	0	Tr (3)	2 (4)
Mammal						
<i>Ursus americanus</i>		Tr (5)	Tr (32)		Tr (6)	Tr (14)
<i>Urocyon cinereoargenteus</i>	1 (2)					
Cervidae			2 (8)			
Sciuridae	1 (2)					
Unidentified	Tr (7)			2 (2)	2 (6)	

^a Den emergence-20 July

^b 21 July-15 September

^c 16 September-den entrance

^d Trace amounts

On the SSA, observations during 1996-2000 also concurred with findings from scat analysis, with 1 possible exception. During 1997 and 1999, we observed bears feeding on juniper berries throughout the active season, beginning as early as April. These observations indicated juniper berries constituted more than 10% of the spring and summer diet as observed from scat analysis. Consumption of 2 other soft mast species, Wright siltassel (*Garrya wrightii*) and squawbush), was noted during 1996-2000.

Study Area Mast Surveys

Mast production varied annually for all species on both study areas ($P < 0.001$). Production of Utah juniper was most variable of the species surveyed, with crops ranging from failure to excellent (Table 5-2). Production of Gambel oak, gray oak, alligator juniper, and orange gooseberry also was variable, with crops ranging from poor to excellent or failure to good. Production of wavyleaf oak, Rocky Mountain juniper, and pinyon was generally low, with only 1 of 8 years exceeding a poor rating on either study area. Although production of one-seed juniper varied among years, all production was rated as failure.

Within most years on each study area, mast production varied by species or genera. With the exceptions of 1997 (NSA) and 2000 (SSA), at least 1 species produced mast in excess of poor each year. We observed only 1 year of outstanding mast production, when production of all species was at least moderate. This occurred on the SSA in 1998. Production of combined oak varied annually on both study areas. Combined juniper production varied greatly on the SSA, but juniper failure occurred every year on the NSA.

Relationship with Weather Parameters

Mast patterns differed between the study areas. The SSA had a higher correlation among species, but more variability within species over time. Analysis focused on environmental associations with oak mast, because oak had a consistent relationship to parturition (see Chapter 6).

For the NSA for 1993-1999, the best regressions with average oak mast used last frost date and El Nino state. Both a regression with frost date alone and a regression with both variables predicted good mast for 2000, as observed, but the regressions were not usable. The single variable model was not significant ($P = 0.185$) and the independent variables were negatively correlated (-0.60) in the model with both variables. For the NSA for 1993-2000, reasonable models were found with a single variable (last frost date) and 2 variables (last frost date and winter El Nino: Table 5-3). With the addition of the year 2000 data points, the correlation between frost date and El Nino (0.07) was eliminated. Both models leave much of the variation in oak mast unexplained, and neither correctly predicts the single NSA mast failure in 1993.

Table 5-2. Mast production survey results for 10 woody plant species examined on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-2000.

Area	Species	N	Mast Production Rating by Year							
			1993	1994	1995	1996	1997	1998	1999	2000
NSA	Gambel Oak	100	1.2 ^a P^b	3.4 M	1.6 P	3.3 M	2.3 P	3.5 M	1.5 P	5.9 E
	Wavyleaf Oak	100	0.6 F	3.3 M	2.4 P	1.9 P	2.3 P	2.8 P	2.4 P	2.0 P
	Combined Oaks	200	0.9 F	3.4 M	2.0 P	2.6 P	2.3 P	3.2 M	1.9 P	4.0 M
	Rocky Mtn. Juniper	100	2.6 M	0.3 F	0.1 F	0.6 F	1.6 P	1.7 P	0.8 F	1.0 F
	One-seed Juniper	100	0.1 F	0.8 F	0.2 F	0.02 F	0.8 F	0.3 F	0.9 F	0.04 F
	Combined Junipers	200	1.4 F	0.5 F	0.1 F	0.3 F	1.2 F	1.1 F	0.9 F	0.5 F
	Pinyon	100	2.4 M	0.5 F	1.2 P	2.2 P	0.3 F	1.4 P	1.8 P	0.4 F
	Chokecherry	40	---	2.9 M	2.4 M	1.6 P	0.6 F	3.9 M	3.1 M	---
	Gambel Oak	100	1.6 F	1.3 F	2.1 P	1.1 F	3.5 M	4.6 G	0.7 F	1.5 F
	Gray Oak	100	2.5 M	1.1 F	4.1 G	0.6 F	1.6 P	4.4 G	0.1 F	0.0 F
SSA	Combined Oaks	200	2.1 P	1.2 F	3.1 M	0.9 F	2.5 P	4.5 G	0.4 F	0.7 F
	Alligator Juniper	100	---	0.5 F	0.5 F	0.5 F	1.8 P	4.6 G	0.5 F	0.4 F
	Utah Juniper	100	---	4.4 G	4.9 G	2.2 P	4.6 G	5.9 E	1.8 P	0.8 F
	Combined Junipers	200	---	2.5 M	2.7 M	1.3 F	3.2 M	5.2 E	1.1 F	0.6 F
	Pinyon	100	1.3 F	0.2 F	1.1 F	0.8 F	0.4 F	3.6 M	0.1 F	0.1 F
	Orange Gooseberry	100	4.4 G	1.7 P	0.2 F	3.3 M	2.2 P	3.6 M	3.4 M	---

^a Individual plants were visually rated using the following criteria and mean ratings are shown: no visible fruit = 0; fruit visible after very close inspection = 2; fruit readily visible, but not covering entire plant = 4; or fruit readily visible and covering entire plant = 8.

^b Letters refer to the following relative scale for mast production: F = Failure, P = Poor, M = Moderate, G = Good, or E = Excellent. For each species, annual estimates designated with distinct letters were different based on the Kruskal-Wallis rank sum and Student-Newman-Keuls tests ($P \leq 0.10$).

For the SSA, good regressions with average oak mast were found with either winter El Nino state or average April temperature for 1993-2000 (Table 5-3). Models for 1993-1999 were nearly identical. El Nino and April temperature are strongly negatively correlated (-0.76 for 1993-1999 and -0.80 for 1993-2000), so the 2 models are related. The El Nino model correctly predicts the mast failures in 1996, 1999, and 2000, but not in 1994. The April temperature model correctly predicts the mast failures in 1996 and 2000, but not in 1994 or 1999.

Table 5-3. Regressions predicting average oak mast production from weather parameters for the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-2000.

Area	Model	Variable	Coefficient	t-value	Model R ²	Model P
NSA	1-variable	Intercept	12.4215	3.5	0.56	0.03
		Date of last 28°F frost	-0.0844	-2.8		
	2-variable	Intercept	12.1190	3.6	0.67	0.07
		Date of last 28°F frost	-0.0818	-2.8		
		Winter El Nino state	-0.3455	-1.3		
SSA	1-variable	Intercept	1.9250	6.8	0.72	<0.008
		Winter El Nino state	1.2833	3.9		
	1-variable	Intercept	18.3257	3.2	0.58	0.03
		Average April temperature	-0.3325	-2.9		

District Mast Surveys

Combining all genera, mast scores and evaluations were highly correlated (Spearman's $r = 0.82$, $P < 0.001$, $n = 58$), indicating both criteria (Question a*b vs. Question c) produced similar relationships. On the 2 study areas, scores were highly correlated with survey results (Spearman's $r = 0.0.72$, $P = 0.008$, $n = 12$), as were assessments (Spearman's $r = 0.76$, $P = 0.004$, $n = 12$), but scores displayed less variation at the lower levels.

Summarizing data for the 5 mountain regions, mast production was either failure or poor for all genera (Table 5-4). However, a few districts reported moderate and good production of oak and juniper. Some districts also reported moderate pinyon production, but none reported good production.

Phone Survey

Twenty-two NMDGF officers were interviewed in the follow-up phone surveys, but 3 (14%) did not complete mast surveys in their districts. One respondent thought the survey pertained only to an adjacent district; 1

respondent felt there was only marginal bear habitat in his district, therefore a survey was not necessary; and 1 respondent said he did not have time to participate.

Nineteen (86%) of the 21 NMDGF officers interviewed completed mast surveys in their districts. Summary of responses to 6 questions indicated that most respondents (94%) said it was easy to evaluate mast production using the criteria provided, while 1 respondent (5%) said it was moderately difficult. More than half of respondents (67%) said it was easy to evaluate their entire district, while several respondents (28%) said it was moderately difficult, and 1 respondent (6%) said it was difficult.

Similarly, more than half of respondents (64%) did not believe their districts needed to be subdivided for this survey, while several respondents (36%) believed districts should be subdivided. Two NMDGF personnel subdivided their districts by Game Management Unit (GMU) for the mast survey, and several respondents also suggested this option during the phone surveys. One respondent identified 4 separate sections of bear habitat within a district, but said these areas did not correspond with GMU boundaries. One other respondent suggested adding a section on the form for a description of the areas surveyed.

Almost all respondents (95%) said they were able to complete the surveys in the course of their usual duties; only 1 respondent (5%) said he had to devote specific time to the survey, but he added that it was not a large time commitment. All respondents agreed mast survey information is important for bear management, but several respondents voiced concern over how data would be used, or whether the surveys were detailed enough to be useful. All respondents (100%, $n = 20$) said they would be willing and able to participate in the survey on an annual basis. One respondent suggested the survey period be extended into October, since mast is still available, and officers spend many hours patrolling during that month.

DISCUSSION

Oak production was highly variable on both study areas, especially that of Gambel oak and gray oak. On the NSA, only 1 oak failure was recorded in 8 years of study, however 4 oak failures were recorded on the SSA in the same period. Continuation of mast surveys may allow us to determine if these observed frequencies of oak failure are consistent within the 2 regions of the state. Production was highly variable for Utah and alligator juniper, but was consistently low for Rocky Mountain and one-seed-juniper. If further surveys indicate a consistent trend, the lack of abundant juniper berries throughout northern New Mexico, where Utah and alligator juniper are largely absent, may have important implications for bear population dynamics. According to popular thought, abundant pinyon production occurs only once every 7 years. Results of

our surveys concur with that belief, in that there was only 1 year of moderate production on each study area in 8 years. Results of statewide mast surveys showed, in most areas, mast production was relatively low in both 1999 and 2000.

The variables correlated with oak production were temperature and El Nino winter state, suggesting that a combination of moisture and temperature conditions for the winter and spring influence mast conditions in the following fall. Each of the oaks surveyed were species that flower and fruit within the same year, and we observed oak flowering from mid May-early June. Models for the NSA and SSA used different variables, and no useful relationship was found that applied to both areas. All of the models failed to predict at least 1 mast failure year; none predicted mast failure when no failure was observed.

MANAGEMENT IMPLICATIONS

Environmental cues did not provide a prediction of mast conditions adequate for bear management needs. Results of simplified surveys conducted by NMDGF officers were highly correlated with our more intensive survey results, indicating subjective criteria were adequate to distinguish variation in mast production. Results were most consistent with a score of relative numbers of fruit/plant and relative numbers of plants bearing fruit. Most officers indicated the criteria were reasonably easy to use and said they were able to complete the surveys in the course of their usual duties. Although most NMDGF officers were comfortable making assessments for their entire districts, others felt subdivision of their district into sections or Game Management Units made the assessments more realistic. Quality assessments of regional mast production will always be improved with higher sample sizes, therefore subdivision of districts may be preferable to district-wide surveys.

Table 5-4. Results of mast production surveys conducted by New Mexico Department of Game and Fish District Officers, New Mexico, 1999-2000^a.

Genera	Region / District	1999			2000		
		a*b	c	Rating	a*b	c	Ratings
Oak	San Juan complex						
	Aztec				4	3	P
	Chama				8	4	M
	Jemez Springs	2	1	F			
	Navajo Dam	1	1	F			
	Tres Piedras (GMU 51)	4	3	P			
	Tres Piedras (GMU 52)	12	4	G			
		4.8	2.4	P	6.0	3.5	P
	Sangre de Cristo						
	Cimarron	4	3	P	12	4	G
	Mora	4	3	P	4	3	P
	Pecos				1	2	F
	Penasco	1	2	F	1	2	F
	Raton	1	2	F	9	4	M
	Santa Fe	2	2	F			
		2.4	2.4	F	5.4	3.0	P
	Central						
	Belen	1	1	F	1	2	F
	Gallup	3	2	F	3	2	F
	Grants				1	2	F
	Grants (GMU 9)	9	4	M			
	Grants (GMU 10)	2	2	F			
	Grants (GMU 13)	3	3	F			
	Moriarty	1	2	F			
		2.8	2.1	F	1.7	2	F
	Gila complex						
	Quemado	1	2	F			
	Reserve	1	2	F	1.5	2	F
	Silver City	1	2	F	1	2	F
	Socorro				6	2	P
	T or C	1	2	F	4	3	P
		1.0	2.0	F	3.1	2.3	F
	Southeast						
	Alamagordo	3	2	F	1	2	F
	Carlsbad	1	1	F			
	Mayhill				9	4	M
	Mountainaire				2	2	F
	Ruidoso	4	3	P			
		2.7	2.0	F	4.0	2.7	P
Juniper	San Juan complex						
	Aztec				9	4	M
	Chama				4	3	P
	Jemez Springs	2.5	1	F			
	Navajo Dam	1	2	F			
	Tres Piedras (GMU 51)	4	3	P			
	Tres Piedras (GMU 52)	9	4	M			
		4.1	2.5	P	6.5	3.5	P
	Sangre de Cristo						
	Cimarron	4	3	P	2	2	F
	Mora	4	3	P	6	3	P
	Pecos				1	2	F

Genera	Region / District	1999			2000		
		a*b	c	Rating	a*b	c	Ratings
	Penasco	12	4	G	4	2	P
	Raton	1	2	F	6	3	P
	Santa Fe	12	4	G			
		6.6	3.2	P	3.8	2.4	P
	Central						
	Belen	1	2	F	1	2	F
	Gallup	4	2	P	10	4	M
	Grants				4	3	P
	Grants (GMU 9)	4	3	P			
	Grants (GMU 10)	3	2	F			
	Grants (GMU 13)	3	2	F			
	Moriarty	2	3	F			
		2.8	2.5	F	5.0	3.0	P
	Gila complex						
	Quemado	1	2	F			
	Reserve	4	2	P	1.5	1	F
	Silver City	4	3	P	9	4	M
	Socorro				1	1	F
	T or C	4	3	P	2	2	F
		3.2	2.5	F	3.4	2.0	F
	Southeast						
	Alamagordo	1	1	F	1	1	F
	Carlsbad	3	3	F			
	Mayhill				9	4	M
	Mountaineaire				6	3	P
	Ruidoso	6	3	P			
		3.3	2.3	F	5.3	2.7	P
Pinyon	San Juan complex						
	Aztec				4	3	P
	Chama				4	3	P
	Jemez Springs	2	1	F			
	Navajo Dam	6	3	P			
	Tres Piedras (GMU 51)	4	3	P			
	Tres Piedras (GMU 52)	9	4	M			
		5.3	2.8	P	4.0	3.0	P
	Sangre de Cristo						
	Cimarron	6	3	P	1	2	F
	Mora	3	3	F	2	2	F
	Pecos				1	1	F
	Penasco	1	2	F	1	2	F
	Raton	1	2	F	2	2	F
	Santa Fe	4.5	3	P			
		3.1	2.6	F	1.4	1.8	F
	Central						
	Belen	4	3	P	1	1	F
	Gallup	6	4	P	6	3	P
	Grants				1	1	F
	Grants (GMU 9)	9	4	M			
	Grants (GMU 10)	6	3	P			
	Grants (GMU 13)	9	4	M			
	Moriarty	4	3	P			
		6.3	3.5	P	2.7	1.6	F
	Gila complex						

Genera	Region / District	1999			2000		
		a*b	c	Rating	a*b	c	Ratings
	Quemado	1	2	F			
	Reserve	1	2	F	1	1	F
	Silver City	1	2	F	9	4	M
	Socorro				1	1	F
	T or C	1	2	F	1	2	F
		1.0	2.0	F	3.0	2.0	F
	Southeast						
	Alamagordo	1	1	F	1	1	F
	Carlsbad	1	1	F			
	Mayhill				9	4	M
	Mountainaire				4	3	P
	Ruidoso	6	3	P			
		2.7	1.7	F	4.7	2.7	P

^aOfficers assessed production of oak, juniper, and pinyon production using the following subjective criteria: mean number of fruit/plant on a scale of 1-4 (a), percent of plants bearing fruit on a scale of 1-4 (b), and overall production on a scale of 1-5 (c). Scores (a*b) were highly correlated with more intensive surveys conducted concurrently (Spearman's $r = 0.0.72$, $P = 0.008$, $n = 12$), and ratings were calculated using the equation of the line. Letters refer to the following relative scale for mast production: F = Failure, P = Poor, M = Moderate, G = Good, or E = Excellent.

CHAPTER 6

REPRODUCTION AND CUB SURVIVAL

Maintenance and growth of wildlife populations are closely tied to reproductive output. Collectively, bear species exhibit some of the lowest reproductive rates among terrestrial mammals (Bunnell and Tait 1981). In many previous bear studies, a positive correlation between food abundance and black bear reproduction has been reported, based on annual variability in foods (Jonkel and Cowan 1971, Rogers 1976, Eiler et al. 1989, Elowe and Dodge 1989, McLaughlin et al. 1994, Miller 1994), geographic variability in foods (Schwartz and Franzmann 1991, McLaughlin et al. 1994, Miller 1994), and differential feeding behaviors among bears (Rogers 1976, Elowe and Dodge 1989). Reproductive success also has been linked to female nutritional condition (Kolenosky 1990, Noyce and Garshelis 1994, Samson and Huot 1995). Understanding the reproductive rates of black bears in New Mexico, as well as the factors that influence success, is important for monitoring population trend. On an annual basis, collection of actual data on bear reproduction would probably be labor-intensive and cost-prohibitive. However, documentation of annual variation in food abundance may serve as an index to bear reproductive success.

We investigated black bear reproductive success on the 2 New Mexico study areas during 1993-2000. Our objectives were to (1) document black bear reproductive parameters, including age of primiparity, natality, cub survival, recruitment, and litter interval; and (2) investigate relationships between mast production and reproductive parameters.

METHODS

Data on natality, litter size, and recruitment were collected during annual den investigations of radio-collared bears. We visited dens of adult females each year to ascertain their reproductive status. Dens of 2- or 3-year-old bears were visited annually or biannually to change or refit collars as necessary. We obtained cub survival data by revisiting dens of females whose cubs were handled or observed the previous year. Cubs were assumed to have died if they were absent from the den as yearlings, or if their mother died prior to 1 July in their birth year. Cubs whose mother died after 1 July and cubs whose fate was unknown (due to mother shedding collars, lost signals, inaccessible dens, etc.) were excluded from analyses.

We estimated mean age when the first litter is produced (age of primiparity) by constructing a cumulative table of ages for bears that had never give birth versus ages of bears when they first produced cubs.(Garshelis et al. 1998). The minimum age of primiparity was judged to be 4 years old, because no 1-, 2-, or 3-year-old bear was observed with cubs in the den ($n = 76$), and no

1- or 2-year-old bear was observed in estrus when captured between May and September ($n = 21$). We constructed the cumulative table by first including all bears whose reproductive status was verified during annual den investigations beginning at age 4 ($n = 36$). We also included females captured at age 4, whose reproductive status was judged from teat measurements, weight, lactation, or observation of cubs ($n = 11$). Among females captured at age 5, we included bears judged to never have given birth from teat measurements and weight, but entered them into the table only for later den investigations ($n = 2$). To backdate them to age 4 or include them for the year of capture would bias the sample against bears captured with their first cubs, because we could not distinguish first litters from subsequent litters for bears captured at ages >4 years. We used the same procedure to estimate mean age of primiparity relative to mast production during the previous fall (year-1).

We tested for variation in reproductive success relative to mast production using Mann-Whitney (MW), Kruskal-Wallis (KW), Chi-square, and Student-Newman-Keuls (SNK) tests. We report specific p-values associated with any differences declared. Annual reproductive events for the same female were treated as independent observations, as were offspring from the same female. When possible, we separated females into distinct subsets to lessen effects of any potential lack of independence. Variation in reproductive parameters was investigated relative to mast production during the previous fall (year-1) and relative to fall mast production 2 years previous (year-2). Mast production categories included combined oaks, combined junipers, pinyon, and softmast (chokecherry or gooseberry).

To construct a sample for estimating mean litter interval, we first included all bears whose interval was verified during annual den investigations ($n = 63$). We also included females whose interval was known from observation of offspring at capture ($n = 2$), and bears whose incomplete interval was known to be at least 3 years ($n = 7$). We included these latter bears in the analyses because long intervals were more difficult to document than short intervals. Reproductive status must be documented for at least 3 consecutive years to document a successful 3-year interval and at least 4 years for an unsuccessful 3-year interval. During this study, reproductive status was documented <3 times for 38% of individual bears ($n = 64$), reducing the likelihood of documenting longer intervals.

RESULTS

Age of First Birth

Age at birth of first litter was documented for 31 bears between 1992 and 2000, and mean age from this sample was 5.5 years. However, age(s) prior to primiparity were documented for another 18 bears aged 4-6. Ultimate age of primiparity was not documented among this sample because of collar removals

at the end of the study ($n = 6$), collar removal due to a wound ($n = 1$), mortalities ($n = 4$), shed transmitters ($n = 4$), and lost signals ($n = 3$).

Among bears observed at each age that had not produced litters previously, only 9% of 4-year-old bears produced their first litters, while 40% of 5-year-olds, 67% of 6-year-olds, 75% of 7-year-olds, and 100% of 9-year-olds produced their first litters (Table 6-1). Proportions differed among ages ($\chi^2 = 27.1$, $df = 5$, $P < 0.001$, $n = 97$), with 4-year-old females having the most significant residual. When this age was excluded, proportions did not differ among other ages ($\chi^2 P = 0.21$, $n = 51$). Proportions did not differ between study areas within any age ($X P \geq 0.47$). Accounting for the proportion of previously non-reproductive bears in the population at each age, analysis indicated 9% of bears produced their first litter at age 4, 37% at age 5, 36% at age 6, 14% at age 7, and 5% at age 9. The mean age of primiparity calculated from these percentages was 5.7 years. Mean age of primiparity was 5.8 years on the NSA and 5.7 years on the SSA. Although age of primiparity varied by 5 years among the entire sample, analyses indicated most bears (73%) produced their first litter either at age 5 or 6.

Table 6-1. Observed percent of previously non-reproductive female black bears (by age) that produced first litters, on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2000.

Area	Age (years) ^a						Mean age
	4	5	6	7	8	9	
NSA							
<i>n</i>	28	19	8	3	1	1	
% of <i>n</i> with first litters	11	37	63	67	0	100	
Cumulative % with first litter	11	44	79	93	93	100	
Incremental % with first litter	11	33	35	14	0	7	5.8
SSA							
<i>n</i>	19	11	6	1			
Percent of <i>n</i> with first litters	5	46	67	100			
Cumulative % with first litter	5	48	83	100			
Incremental % with first litter	5	43	40	17			5.6
Combined							
<i>n</i>	47	30	14	4	1	1	
Percent of <i>n</i> with first litters	9	40	64	75	0	100	
Cumulative % with first litter	9	45	80	95	95	100	
Incremental % with first litter	9	36	35	15	0	5	5.8

^a Proportions of previously non-reproductive bears that produced first litters were different among ages ($P < 0.001$), but were not different within ages between study areas ($P > 0.45$). Mean age at birth of first litter was calculated using incremental percentages.

Mean age of primiparity appeared to differ by oak production during the previous fall, however mean testing was not possible using this method. Mean age of primiparity following oak failure was 6.3 years. Mean age of primiparity

following poor, moderate, and good oak production was 5.7 years, 5.7 years, and 5.8 years, respectively.

Natality

Between 1993 and 2000, reproductive data were obtained during 268 den investigations of 80 female bears aged 4-27 years. We estimated natality (cub production) using observations from all females. In addition, we separated the sample into 2 categories: non-reproductive females (those never having produced cubs prior to the current observation) and eligible reproductive females (those having produced cubs prior to the current observation). We considered all bears unaccompanied by yearlings "eligible" for cub production.

Overall natality of female bears ≥ 4 years old was 0.77 cubs/female/year and parturition rate (percent of females with cubs) was 43% ($n = 268$). Overall there was no difference (0.85 vs. 0.67, MW, $Z = -1.4$, $P = 0.15$) in natality on the NSA versus the SSA (Table 6-2). Parturition rate also did not differ by study area ($X^2 P = 0.32$). Among previously non-reproductive females, natality was 0.53 cubs/female/year and parturition rate was 33% ($n = 87$). Neither rate differed by study area (MW $P = 1.0$, $X^2 P = 0.81$). Among previously reproductive females, natality was 1.4 cubs/female/year and parturition rate was 77% ($n = 112$). Natality among these female bears was higher on the NSA (1.6 vs. 1.2, MW, $Z = -2.3$, $P = 0.02$), as was parturition rate (62% vs. 37%, $X^2 = 4.8$, $df = 1$, $P = 0.04$).

Table 6-2. Natality and recruitment of female black bears determined from den investigations on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-2000. Females were considered eligible for cub production if unaccompanied by yearlings in the den. Rates denoted by asterisks differed from others by reproductive history or study area ($P \leq 0.15$).

Area/ Category of female	Natality (all females)			Natality (eligible females)			Recruitment (all females)		
	<i>n</i>	Rate ^a	% ^b	<i>n</i>	Rate ^a	% ^b	<i>n</i>	Rate ^c	% ^d
NSA	155	0.9	46	118	1.1*	60	133	0.4	27
SSA	112	0.7	39	85	0.9	52	98	0.4	27
Combined	267	0.8	43	203	1.0	57	231	0.4	27
Previously non-reproductive	45	1.0	64	35	1.3*	83	42	0.3	21
Previously reproductive	153	1.0	56	101	1.6	85	152	0.5	34

^a No. cubs/female/year

^b Percent of females with cubs

^c No. yearlings/female/year

^d Percent of females with yearlings

Within all categories of females, natality and parturition rate were positively associated with oak production during the previous year (Table 6-3). For all females and for reproductive females, natality was lower in years following acorn failures than all other years (KW $P < 0.001$, SNK $P = 0.05$), as was parturition rate ($X^2 P < 0.001$). Neither natality nor parturition rate differed relative to poor, moderate, or good oak production during the previous fall (KW $P \geq 0.37$, $X^2 P \geq 0.23$). Among previously non-reproductive females, natality varied by oak production (KW $P = 0.08$), however no distinct subsets were identified (SNK $P > 0.15$). Parturition rate was positively associated with oak production ($X^2 P = 0.10$), with the lowest rate associated with oak failure. However, among the previously non-reproductive females, strength of the test was limited by an age bias in the sample. Of the 18 previously non-reproductive females observed following oak failure, 13 (72%) were 4-year-olds, and 5 (28%) were aged 5 or 6. Following poor, moderate, and good oak production, 4-year-old females comprised 29% ($n = 45$), 40% ($n = 15$), and 0% ($n = 7$) of the sample, respectively. When 4-year-old bears were analyzed alone, natality was positively but weakly associated with oak production. Natality was 0.2 cubs/female/year following moderate oak production, but 0.0 following oak failure and poor production (KW, $X^2 = 4.3$, $P = 0.12$, $n = 32$, SNK $P = 0.15$). Parturition rate was higher following moderate oak production (0% vs. 17%, $X^2 = 4.4$, $P = 0.11$, $n = 32$). When non-reproductive bears >4 years old were examined, neither natality nor parturition rate varied significantly by oak production during the previous fall (KW $P \geq 0.77$, $X^2 P = 0.91$). Within all categories of females, neither natality nor parturition rate was positively associated with juniper, pinyon, or softmast production during the previous year.

In years following oak failures, natality was lowest when the failure was preceded by poor oak production, among all females and among eligible reproductive females (KW $P \leq 0.09$, SNK $P = 0.05$). When the failure was preceded by moderate or good oak production, 73% of eligible reproductive females produced cubs. However, none produced cubs when the failure was preceded by a poor oak crop ($X^2 = 10.0$, $df = 2$, $P = 0.007$, $n = 19$). This association was possibly observed for juniper production. During 1993, no juniper survey was completed on the SSA. However, scat analysis and bear weight data indicated juniper production was relatively low. If we assume a juniper failure, or even a poor juniper crop occurred in that year, then natality was positively associated with juniper production during the fall 2 years previous. However, the low oak and juniper production, prior to oak failure, occurred simultaneously, therefore it was not possible to ascertain which genera exerted more of an influence on natality.

Litter Size

A total of 115 litters were handled or observed in dens during 1993 - 2000. Litter size ranged from 1-3 cubs and mean litter size was 1.8 cubs (Table 6-4). Two-cub litters were most common (71%), followed by 1-cub litters (24%).

Three-cub litters were rare, accounting for only 5% of observations. Mean litter size on the NSA (1.9) did not differ ($Z = -1.6$, $P = 0.11$) from that on the SSA (1.7). Observed frequencies of 1-, 2-, and 3-cub litters did not differ by study area ($X^2 = 2.6$, $df = 2$, $P = 0.27$).

Table 6-3. Black bear reproductive parameters associated with variable oak production on 2 New Mexico study areas, 1993-2000. Natality (cubs/female/year) and parturition rates (percent of females with cubs) were analyzed relative to oak production during the previous fall (year-1). Following oak failure, rates were also analyzed relative to fall oak production 2 years previous (year-2). Recruitment rate (yearlings/female/year) and percent of females with yearlings were analyzed relative to fall oak production 2 years previous (year-2). Asterisks indicate distinct subsets differing from other observations within the category, with corresponding P -values provided.

Parameter / Category of females	Observations included	Mast year	<i>n</i>	Oak production rating ^a				KW ^b	SNK ^c	<i>X</i> ²
				F	P	M	G	<i>P</i>	<i>P</i>	<i>P</i>
Natality										
All (age ≥ 4)	All	Year – 1	262	0.3 *	0.9	1.0	0.7	<0.001	0.05	
	Year-1 = F	Year – 2	52		0 *	0.4	0.5	0.09	0.15	
Previously non-reproductive	All	Year – 1	85	0.1	0.6	0.5	0.9	0.08		
Eligible ^d reproductive	All	Year – 1	108	0.7 *	1.6	1.6	2.0	<0.001	0.05	
	Year-1 = F	Year – 2	19		0 *	1.5	1.3	0.01	0.05	
Percent with Cubs										
All (age ≥ 4)	All	Year – 1	262	16 *	47	59	40			<0.001
	Year-1 = F	Year – 2	52		0 *	20	32			0.08
Previously non-reproductive	All	Year – 1	85	11	38	33	57			0.10
Eligible reproductive	All	Year – 1	108	35 *	84	90	100			<0.001
	Year-1 = F	Year – 2	19		0 *	75	72			0.007
Recruitment										
All (age ≥ 5)	All	Year – 2	214	0.1 *	0.4	0.6	0.6	0.003	0.10	
Reproductive	All	Year – 2	157	0.2 *	0.6	0.7	0.7	0.009	0.05	
Percent with Yearlings										
All (age ≥ 5)	All	Year – 2	214	7 *	28	42	38			0.001
Reproductive	All	Year – 2	157	10 *	40	51	46			0.003

^aF = Failure, P = Poor, M = Moderate, G = Good

^bKruskal-Wallis test

^cStudent-Newman-Keuls test

^dFemales were considered eligible for cub production if unaccompanied by yearlings in the den.

First litters were smaller than subsequent litters (1.6 vs. 1.9, $Z = -2.7$, $P = 0.008$, $n = 115$) and frequencies of 1-, 2-, and 3-cub litters also varied ($X^2 = 7.18$, $df = 2$, $P = 0.03$). Specifically, frequency of 1-cub litters was higher among first litters than among subsequent litters. Litter size did not vary by mast production of any species among all litters, first litters, or subsequent litters (KW $P \geq 0.24$).

Table 6-4. Size (range, mean, and relative frequency) of black bear litters observed on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2001.

Area/Litter order	<i>n</i>	Range (cubs/litter)	Mean ^a (cubs/litter)	Relative frequency ^a		
				1-cub	2-cub	3-cub
NSA	71	1 – 3	1.9	20%	75%	5%
SSA	44	1 – 3	1.7	32%	66%	2%
Combined	115	1 – 3	1.8	25%	71%	4%
First litters	29	1 – 2	1.6 [*]	41% [*]	59%	
Subsequent litters	86	1 – 3	1.9 [*]	19% [*]	76%	6%

^a Means and frequencies denoted by asterisks were different by litter order ($P < 0.10$).

Cub Survival

Cub survival was documented for 148 individual cubs from 82 litters handled or observed in dens between 1993 and 2000. Overall cub survival rate was 0.55, and observed rates did not differ by study area ($X^2 P = 0.22$) or sex ($X^2 P = 0.30$). Among litters observed, 45% experienced no mortality, 20% experienced partial mortality, and 35% were completely lost. Observed frequencies of litter fate did not differ by study area ($X^2 P = 0.53$).

Cub survival was lower among first litters than subsequent litters (38% vs. 60%, $X^2 = 4.9$, $df = 1$, $P = 0.03$, $n = 148$). Similarly, frequency of whole litter loss was higher among first litters than subsequent litters (57% vs. 30%, $X^2 = 5.7$, $df = 2$, $P = 0.06$, $n = 84$). Based on these findings, cubs were separated into these 2 categories for further analyses.

Among all litters and first litters, cub survival varied positively with juniper and pinyon production during the previous fall ($X^2 P \geq 0.10$), but no differences were found among subsequent litters ($X^2 P \geq 0.34$). The most significant residual corresponded to 100% cub survival ($n = 5$) observed in 1999, following the single most outstanding year of juniper, pinyon, and oak production on the SSA. Cub survival within the cohort born following 1998 was higher than within the combined cohorts born following years of lower production (100% vs. 56%, $X^2 = 3.9$, $df = 1$, $P = 0.07$, $n = 133$). When this cohort was excluded from analyses, cub survival no longer differed by juniper or pinyon production during the previous fall ($X^2 P \geq 0.55$). Instead, cub survival appeared to be weakly associated with oak production during the birth year ($X^2 P \geq 0.14$). The most significant residual was associated with cohorts born during years of oak failure. Their survival rate was lower than the rate observed for cohorts born during years of poor to good oak production (33% vs. 57%, $X^2 = 3.1$, $df = 1$, $P = 0.08$, $n = 136$). The association of low cub survival and oak failure during the birth year was masked when the 1999 cohort was included in analyses. Although this cohort was born during a year of oak failure, it experienced 100% survival, possibly owing to the super abundance of food produced in 1998. Field

observations indicated mast of oak, pinyon, and especially juniper remained available long into the spring and summer of 1999, perhaps compensating for the lack of new production.

To account for the interacting effects of mast production during the previous fall and mast production during the birth year, we produced mast indices combining genera over the 2 periods. Cub survival was most significantly associated with an index of juniper production (during the previous fall) and oak production (during the birth year). For these analyses, we presumed juniper failure on the SSA during 1993 (as described above). Low cub survival was associated with mast failure by oak and juniper; intermediate cub survival was associated with poor to moderate production by oak and/or juniper; and high cub survival was associated with good to excellent production by oak and/or juniper. These patterns in survival were observed among all litters (13% vs. 54% vs. 76%, $X^2 = 9.7$, $df = 2$, $P = 0.008$, $n = 138$) and among subsequent litters (13% vs. 60% vs. 83%, $X^2 = 10.1$, $df = 2$, $P = 0.006$, $n = 108$). Among first litters, no cubs were born in years when both genera failed, however, higher cub survival was associated with good to excellent production (29% vs. 67%, $X^2 = 3.8$, $df = 2$, $P = 0.10$, $n = 30$).

Cub survival varied annually on the SSA within all categories ($X^2 P \leq 0.08$). On the NSA, cub survival did not vary annually within any category ($X^2 P \geq 0.13$). The uniform cub survival observed on the NSA was associated with consistent poor to moderate combined mast production. The variable cub survival on the SSA (13% vs. 63% vs. 76%, $X^2 = 9.9$, $df = 2$, $P = 0.007$, $n = 48$) was positively associated with all 3 levels of mast production. When all observations from the NSA were compared to the SSA observations associated with poor to moderate mast production, no difference was found in the cub survival rate ($P = 0.45$).

Cause of death was rarely documented among cubs, because they were not fitted with radio-transmitters. However, cause of death was documented for 8 cubs, all on the NSA. Two sibling female cubs were killed in August 1993 by an automobile when they attempted to cross a 2-lane highway in Ute Park, adjacent to a campground. These cubs, as well as their mother, frequently obtained food from visitors to the campground and from unsecured garbage containers. In February 1997, a dead female cub was found at the entrance of her den. Her mother and female sibling were hibernating within the den. The position and condition of the carcass indicated she had died at least 6 weeks prior to our discovery and that she had been dragged from the den chamber (probably by her mother). Examination of the carcass indicated a broken pelvis, suggesting she may have died from internal injuries, but cause of the injuries was unknown. This family resided in a part of the study area characterized by very steep slopes adjacent to a 2-lane highway, therefore the injuries may have been sustained in a fall or an automobile collision. Five cubs in 2 litters presumably died from predation, along with their mothers. Although no cub remains were found,

evidence indicated their mothers had been killed by predators, possibly bears. The first incident occurred in May 1995 and the second incident occurred in April 1999.

Recruitment

We estimated recruitment using observations from all females ≥ 5 years old and observations of reproductive females only. Overall recruitment of females ≥ 5 years old was 0.40 yearlings/female/year and 27% of 232 females were accompanied by yearlings in the den. Rates did not differ by study area (MW $P \geq 0.78$, Table 6-2). Recruitment of previously reproductive females was 0.53 yearlings/female/year and percent of females with yearlings was 35% ($n = 175$). These rates did not differ by study area either (MW $P \geq 0.79$).

Within both categories, recruitment was positively associated with fall oak production 2 years previous (KW $P \leq 0.09$, SNK $P \leq 0.10$). Specifically, recruitment was lower 2 years after oak failures than all other years (Table 6-3). Percent of females with yearling also was lower 2 years after oak failures than all other years ($P \leq 0.003$). Neither rate differed relative to poor, moderate, or good oak production 2 years previous ($P \geq 0.43$), nor did they differ by production of juniper, pinyon, or softmast production 2 years prior ($P \geq 0.49$).

Litter Interval

We documented 65 complete litter intervals and 7 incomplete intervals known to be at least 3 years, occurring between 1992 and 2001 (Table 6-5). Incomplete intervals ranged from 3-5 years. However 3 of the 7 incomplete intervals (two 3-year intervals and one 5-year interval) were documented for bears believed to have reached reproductive senescence at 16, 24, and 25 years of age, respectively. Because it was likely these bears would not complete the intervals, these 3 observations were excluded from analyses. In fact, the diseased 16-year-old female did not survive to complete her interval.

Observed litter interval ranged from 1-3 years. One-year intervals occurred when entire litters were lost and bears bred again. Two- and 3-year intervals occurred both when litters were lost and cubs survived, but 3-year intervals included an additional year when the bear failed to produce a litter. Mean litter interval was 1.8 years and it was slightly lower on the NSA than the SSA (1.7 vs. 1.9, $Z = -1.7$, $P = 0.09$, $n = 69$). However, relative frequencies of 1-, 2-, and 3-year intervals were not different between study areas ($X^2 P = 0.15$). Unsuccessful intervals (when entire litters were lost) ranged from 1-3 years with a mean of 1.3 years ($n = 27$). For unsuccessful intervals, neither mean interval nor frequencies of 1-, 2-, and 3-year intervals differed by study area ($X^2 P > 0.44$). Successful intervals (when some or all cubs survived) ranged from 2-3 years with a mean of 2.1 years ($n = 42$). Among successful intervals, frequency

of 3-year intervals was lower on the NSA ($X^2 P = 0.07$), resulting in a lower mean successful interval (2.0 vs. 2.2, $Z = -1.9$, $P = 0.05$).

Table 6-5. Ranges, means, and relative frequencies of black bear litter intervals observed on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2001.

Interval type/Area	n	Range (years)	Mean ^a (years)	Relative frequency ^a		
				1-year	2-year	3-year
All intervals						
NSA	44	1 - 3	1.7 [*]	34%	61%	5%
SSA	25	1 - 3	2.0 [*]	20%	64%	16%
Combined	69	1 - 3	1.8	29%	62%	9%
Successful intervals						
NSA	25	2 - 3	2.0 [*]		96% [*]	4% [*]
SSA	17	2 - 2	2.2 [*]		77% [*]	23% [*]
Combined	42	2 - 3	2.1		88%	12%
Unsuccessful intervals						
NSA	19	1 - 3	1.3	79%	16%	5%
SSA	8	1 - 2	1.4	63%	37%	
Combined	27	1 - 3	1.3	74%	22%	4%

^a Means and frequencies denoted by asterisks were different by study area ($X^2 P < 0.10$).

Within unsuccessful 2- and 3-year intervals, and within successful 3-year intervals, bears failed to produce cubs at 1 or 2 reproductive opportunities. We observed 14 failed reproductive opportunities, and 71% coincided with oak failures during the previous fall, while 29% coincided with poor to good oak production. Conversely, within 1-year intervals and successful 2-year intervals, bears reproduced at the first reproductive opportunity. We observed 52 successful reproductive opportunities, and only 14% coincided with oak failures, while 84% coincided with poor to good oak production. These observed ratios of failed to successful opportunities varied by oak production ($X^2 = 19.8$, $df = 3$, $P < 0.001$, $n = 66$).

DISCUSSION

The influence of mast production on age of first production of cubs was not entirely clear. Mean age of first litter appeared to increase in years following oak failure. However, production of first litters did not appear to decline, except among 4-year-old bears. This result was possibly due to the small sample size of previously non-reproductive bears aged >4 years observed during years following oak failure. Among females that had produced multiple litters, a higher frequency of skipped reproductive opportunities occurred following oak failure. Therefore, it would be expected that reproduction of potential first litters would also decline. However, production of first litters may not be determined solely by mast production during the previous year. Instead, a bear's ability to produce her

first litter may be influenced by mast production throughout her developing years. Noyce and Garshelis (1994) postulated age at birth of first litter may be more closely tied to cub growth rates and hence the condition of the mother. The more important influence of mast production may be the onset of first estrus. Of 3-year-old females handled between May and September ($n = 18$), only 11% showed signs of estrus, indicating most 4-year-old bears would not reproduce regardless of mast abundance. Even among non-reproductive bears aged 4-6 ($n = 14$), only 43% handled during the mating season appeared to be in estrus.

The influence of oak production, especially acorn failures, on bear reproductive success appeared to be strong. Natality, and subsequently recruitment, was reduced by more than 50% following years of oak failure. Rates were reduced to zero when oak failure was preceded by poor oak production. Availability of hard mast has been tied to reproductive success in several regions (Eiler et al. 1989, Elowe and Dodge 1989, McLaughlin et al. 1994). Neither natality nor recruitment varied following poor, moderate, or even good oak production. Following poor to good production, 94% of eligible reproductively experienced females produced cubs, and no increase in litter size was observed when oak production was high. This suggests only a minimum threshold of high quality food is needed for successful reproduction.

Juniper production possibly had a secondary effect on natality, when oak production failed. Natality rates were zero when oak failure was preceded by poor juniper production. However this poor juniper production coincided with poor oak production, making it impossible to ascertain which genera may have exerted the greater influence on natality. Given the primary effect oak had on reproductive success, it is probable that oak also exerted the greater secondary effect.

Juniper production probably had more of an impact on cub survival than natality. From our observations, juniper berries began to ripen from September to October and remained on the tree through late fall. Berries began to drop during winter and early spring. We observed consumption of significant quantities of juniper berries by bears during fall, spring, and summer (unpublished data). Therefore, more than any other mast genera, juniper could continue to affect the nutritional condition of bears and their cubs long after emergence from the den. Comparing study areas, consumption of juniper berries appeared to be related to production. Juniper production failed each year on the NSA, and only limited consumption of juniper berries was observed, primarily during late fall. The lack of this important spring food, combined with no occurrence of good or excellent fall oak production, resulted in consistent, but low cub survival on the NSA. On the contrary, juniper production varied greatly on the SSA, with crops ranging from failure to excellent. Juniper berries were a significant food item in the spring and summer diets of bears on this area (see Chapter 5). The variable cub survival observed on the SSA was associated with varied levels of juniper and oak production.

No positive association was found between pinyon production and reproductive success. On each study area, pinyon production was better than poor during only 1 year. Unfortunately, on the SSA, the moderate pinyon crop coincided with a good oak crop and an excellent juniper crop in 1998. These simultaneous events did not allow us to assess the effect of pinyon alone on reproductive success. On the NSA, moderate pinyon production occurred in 1993, when both oak and juniper production failed. Nonetheless, natality and recruitment was zero following this production, indicating a moderate supply of pinyon nuts did not compensate for the lack of acorn production. This result may be due to the timing of availability. Pinyon cones mature and open approximately 6 to 8 weeks after the ripening of acorns, possibly limiting the foraging opportunities of bears readying for hibernation. More study is needed to determine the influence of pinyon production on bear reproduction, especially in the absence of other foods.

Production of chokecherries and gooseberries did not appear to influence reproductive success. Compared to the other species surveyed, these soft mast species were more limited in distribution, and were probably available to only a fraction of the bear population. Analyses of foraging habits indicated these species also accounted for <10% of scat volume during the fall (see Chapter 5).

In their study comparing body condition to reproductive success, Noyce and Garshelis (1994) concluded black bears respond to declining nutrition by modifying reproductive performance in the following sequence: (1) litter size, (2) age of primiparity, (3) cub survival, and (4) litter frequency. Our analyses indicated the sequence may be exactly opposite in New Mexico. The greatest influence of mast failure on bears in New Mexico appeared to be a reduction in the number of females producing litters, hence an increase in litter interval. Second, cub survival appeared to decline associated with mast availability. Third, mast failure was associated with a decrease in the percent of bears producing first litters and a resulting increase in the age of primiparity. Litter size did not appear to be associated with availability of mast, among first litters or subsequent litters.

MANAGEMENT IMPLICATIONS

Documenting annual mast production, particularly occurrence and frequency of mast failures, may be an effective tool for monitoring black bear reproductive success in New Mexico. Continuation of the statewide mast surveys, as conducted by NMDGF officers during 1999-2000 (see Chapter 5), will provide valuable data for all regions of bear habitat. These data will be useful for analyzing population trend and interpreting harvest data with the bear population model.

Chapter 7

SURVIVAL RATES AND CAUSES OF MORTALITY

As in many states, the primary foundation for black bear management in New Mexico is information obtained from hunter-killed bears. Fluctuations in the sex and age composition of kills are seen as signals of changing population trends. However, trends in kill data can sometimes be misleading (Garshelis 1991). Therefore, interpretation of kill data is often aided by supporting information about bear population characteristics, especially survival rates, and associated cause-specific mortality rates.

We investigated black bear survival on 2 New Mexico study areas. To better understand the effects of hunting on black bears, a hunting closure was instituted on 1 study area that remained in effect from 1992-1997. Our objective was to document survival and cause-specific mortality rates by sex and age category.

METHODS

We estimated adult (≥ 5 years old), subadult (2-4 years old), and yearling (1 year old) survival rates using data from bears equipped with radio-transmitters. We monitored radio-collared bears from fixed-wing aircraft on a 14-day schedule during the active season (weather permitting). Radio-collars were constructed to emit a "mortality" signal when they remained stationary for more than 2 hours. We ground-tracked all collars emitting a mortality signal to determine whether the signal was a mortality or a dropped collar. We determined approximate date and cause of mortality (when possible).

Hunting mortalities of marked bears were recorded through the New Mexico Department of Game and Fish (NMDGF) mandatory pelt tag program. Personnel of the Colorado Division of Wildlife (CDOW) and the Arizona Department of Game and Fish (ADGF) also reported hunting mortalities. Depredation mortalities and relocations of marked bears were reported by the NMDGF and the CDOW.

Survival rates were calculated using the staggered entry method (Pollock et al. 1989). Rates were estimated separately for each study area by year, within 26 quarter-monthly intervals from May 1 – November 15. Mortality rates for specific causes of death were calculated as $1 - \text{survival rate}$ estimated with deaths from other causes treated as censors. Annual rates over 1993-1999 were averaged with years weighted equally; annual confidence intervals were pooled (N.S. Urquhart, personal communication.)

We used data from all bears with working transmitters monitored for ≥ 1 day during the active season. Bears whose signals were not heard for periods

exceeding 45 days were censored from analyses beginning on the last day of contact. If contact was re-established, bears re-entered the analyses on the day the first signal was heard. If contact was not re-established, bears did not re-enter the analysis.

Radio-telemetry contact was permanently lost for numerous bears during the study period. Some signal loss was probably attributable to premature transmitter failure, transmitter battery expiration, or long-range movements made by bears. However, we suspect other signal loss was due to deliberate destruction of transmitters following human-caused mortality. Signal loss also may have been due to transmitter damage caused by predation. To account for these possibilities in our survival estimates, we identified a portion of the missing bears as possible mortalities.

Assignment of potential mortality for each bear was based on transmitter type, expected battery life left on its transmitter, known failure rate for that transmitter type, and information on subsequent recapture, observation, or mortality. Signal loss was attributed to battery expiration if it occurred at $\geq 70\%$ of battery life. Signal loss was attributed to known failure if transmitters were recovered or observed not functioning or not functioning properly (timer failure of eartag transmitters). Signal loss was attributed to possible signal failure when bears were later captured or killed by hunters not wearing transmitters. Signal loss was attributed to possible damage or weak signal if temporary signal loss occurred ≥ 3 times or if signal loss occurred during the time the bear was denning. Signal loss not attributed to any of these causes was considered possible mortalities. We also reclassified 1 handling mortality as a possible natural mortality due to the poor condition of the bear. Possible survival rates were then calculated including known and suspected mortalities.

RESULTS

Possible Mortalities from Signal Loss

Known and possible failure rates were only 1% and 2% for Telonics and Ursus Technologies (UT) radio-collars, respectively (Table 7-1). However, known failure rate for the Advanced Telemetry Systems (ATS) eartag transmitters was 13%. Due to this high rate of known failure among ATS transmitters, and an even higher number of unexplained signal losses (32%), no missing bears wearing ATS eartags were considered possible mortalities. Eight missing bears wearing Telonics or UT radio-collars were considered possible mortalities due to unexplained signal loss.

Known and Possible Survival Rates

Observed adult female survival rates were very similar for the 2 study areas and were above 90% (Table 7-2). Most mortality of adult females was

human-caused, including hunter kills, depredation kills, and illegal kills (Table 7-3). Surprisingly, female hunting mortality rates were fairly similar for the 2 study areas, despite the hunting closure from 1992-1997 on the NSA. Of 4 adult female bears killed by hunters on the NSA, 1 (25%) was taken after the closure was lifted, 2 (50%) were known to be taken outside of the closure area, and 1 (25%) was reported as taken outside of the hunting closure area, however examination of her movements suggest this may not have been true. Depredation mortalities ($n = 2$) were observed only on the NSA, while illegal kills ($n = 2$) were observed only on the SSA. The 2 illegal kills occurred during the hunting season but no carcasses were found (only cut collars), therefore they may have been unreported legal kills. Of 4 mortalities of unknown cause, 3 (75%) occurred during the hunting season and may have been associated with hunting. However, we found no evidence confirming this due to the condition of the carcasses. The other mortality of unknown cause occurred during August. Despite finding an almost intact carcass, we could not identify the cause of death, but it did not appear to be human-caused.

Table 7-1 . Signal loss from radio-telemetry transmitters fitted on black bears on the Northern Study Area and Southern Study Area, New Mexico, 1992-1999.

	Telonics Radio- Collars	UT Radio- Collars	ATS Eartag Transmitters
Transmitters Used	287	55	38
Total Signal Loss	20 (7%)	9 (16%)	24 (63%)
Known or Probable Battery Expiration	9 (3%)	4 (7%)	7 (18%)
Known Failures	1 (0.3%)	1 (2%)	5 (13%)
Possible Failures with Known Fate	4 (1%)	0	0
Possible Damage or Weak Signal	0	2 (4%)	0
Unexplained Losses	6 (2%)	2 (4%)	12 (32%)

Two known natural mortalities occurred on the NSA and both appeared to be predation. Both females killed had new cubs and the predation occurred during spring. Evidence for the first mortality indicated the bear was killed in a struggle with another bear. Evidence for the second mortality was not conclusive, but bear sign in the area suggested the predator may have been a bear. A possible mortality was observed on the NSA and involved an adult female with a severe case of sarcoptic mange. Her mortality was actually a result of our handling in the den. However she was extremely emaciated and essentially blind (from callousing over her eyes), and we suspect she would not have survived through spring.

Known and possible survival rates of subadult females also were similar between study areas. Known survival rates were very similar to adult females; however possible rates appeared to be somewhat lower. Most mortality of

subadult females also was human-caused. Again, hunting mortality rates were fairly similar for the 2 study areas, despite the hunting closure. The single subadult female killed by a hunter on the NSA was reported as taken outside of the hunting closure area, however examination of her movements suggest this may not have been true. Again, depredation mortality ($n = 1$) was observed only on the NSA. The 2 mortalities of unknown cause were observed on the SSA. Although no cause of death could be identified, timing and locations of these mortalities did not suggest they were human-caused.

Table 7-2. Observed survival rates and 95% confidence intervals (in parenthesis) of adult (≥ 5 years old), subadult (2-4 years old), and yearling (1 year old) black bears monitored on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-1999. Rates were obtained using the staggered entry method. Known rates included documented mortalities, while possible rates included known and suspected mortalities. Sample size is reported in bear-years.

	NSA			SSA			Combined	
	<i>n</i>	Known	Possible	<i>n</i>	Known	Possible	Known	Possible
Female								
Adult	131	0.93 (0.81-1.0)	0.92 (0.79-1.0)	119	0.90 (0.73-1.0)	0.90 (0.73-1.0)	0.92 (0.81-1.0)	0.91 (0.80-1.0)
Subadult	67	0.94 (0.72-1.0)	0.86 (0.58-1.0)	54	0.91 (0.71-1.0)	0.89 (0.68-1.0)	0.93 (0.78-1.0)	0.88 (0.70-1.0)
Yearling	19	0.75 (0.56-0.86)	0.75 (0.56-0.86)	19	0.97 (0.84-1.0)	0.97 (0.84-1.0)	0.85 (0.63-1.0)	0.85 (0.63-1.0)
Male								
Adult	77	0.89 (0.69-1.0)	0.89 (0.69-1.0)	80	0.91 (0.68-1.0)	0.82 (0.53-1.0)	0.91 (0.75-1.0)	0.87 (0.71-1.0)
Subadult	27	0.94 (0.73-1.0)	0.94 (0.73-1.0)	36	1.0 (1.0-1.0)	0.97 (0.83-1.0)	0.95 (0.73-1.0)	0.92 (0.67-1.0)
Yearling	21	0.90 (0.68-1.0)	0.87 (0.59-1.0)	13	0.82 (0.30-1.0)	0.76 (0.24-1.0)	0.86 (0.55-1.0)	0.83 (0.47-1.0)

Unexplained signal loss occurred for 3 subadult females, 2 on the NSA and 1 on the SSA, and these losses were identified as possible illegal kills. Two (67%) signals were last heard just before the start of hunting seasons, suggesting bears may have been unreported legal kills.

Observed yearling female survival was lower on the NSA than the SSA, but sample sizes were relatively small. On the NSA, all mortalities ($n = 3$) were of natural causes. One bear appeared to have died of starvation after emerging from the den with low weight. One bear appeared to have been preyed on by a mountain lion. One bear may have been preyed on by a bear. However, no clear evidence of predation was found, other than the fact the carcass was fed on

by a bear. It should be noted the 2 mortalities attributed to predation might have been affected by our research activities. During 1994, larger collars were put on young bears and the burden of these large collars may have affected their survival. Since that time, we have used smaller, expandable collars on yearling and subadult bears in an effort to reduce our influence on survival. On the SSA, one mortality of a subadult female was attributed to illegal kill. This mortality occurred during the hunting season but no carcass was found (only a cut collar); therefore it may have been an unreported legal kill.

Table 7-3. Cause-specific mortality rates of adult (≥ 5 years old), subadult (2-4 years old), and yearling (1 year old) black bears monitored on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-1999. Rates were obtained using the staggered entry method. Known rates included documented mortalities, while possible rates included known and suspected mortalities.

Sex	Age class	Cause	NSA		SSA		Combined	
			Known	Possible	Known	Possible	Known	Possible
Female	Adult	Hunt	0.04	0.04	0.07	0.07	0.05	0.05
		Depredation	0.01	0.01	-	-	<0.01	<0.01
		Illegal kill	-	-	0.01	0.01	<0.01	<0.01
		Natural	0.01	0.02	-	-	0.01	0.03
		Unknown	0.01	0.01	0.02	0.02	0.02	0.02
		Total	0.07	0.08	0.10	0.10	0.08	0.09
	Subadult	Hunt	0.05	0.05	0.04	0.04	0.04	0.04
		Depredation	0.02	0.02	-	-	0.01	0.01
		Illegal kill	-	0.08	-	0.02	-	0.05
		Unknown	-	-	0.05	0.05	0.02	0.02
		Total	0.06	0.14	0.09	0.11	0.07	0.12
	Yearling	Natural	0.25	0.25	-	-	0.13	0.13
		Illegal kill	-	-	0.03	0.03	0.02	0.02
		Total	0.25	0.25	0.03	0.03	0.15	0.15
Male	Adult	Hunt	0.02	0.02	0.07	0.07	0.05	0.05
		Depredation	0.03	0.03	-	-	0.01	0.01
		Illegal kill	0.03	0.03	-	0.10	0.02	0.05
		Automobile	0.03	0.03	-	-	0.02	0.02
		Hunt (Arizona)	-	-	0.02	0.02	0.01	0.01
		Total	0.08	0.08	0.09	0.18	0.09	0.13
	Subadult	Depredation	0.06	0.06	-	-	0.06	0.06
		Illegal kill	-	-	-	0.03	-	0.02
		Total	0.06	0.06	-	0.03	0.05	0.08
	Yearling	Illegal kill	0.10	0.10	-	-	0.07	0.07
		Natural	-	-	0.08	0.14	0.02	0.02
		Unknown	-	0.03	0.10	0.10	0.05	0.09
		Total	0.10	0.13	0.18	0.24	0.14	0.17

Known adult male survival rates were very similar for the 2 study areas and were above 90%. However, including possible mortalities, the possible

survival rate dropped to 82% on the SSA. Specific causes of death were different between study areas, however all were human-caused. Mortality sources for adult males included hunting, illegal kill, depredation kill, and automobile collision. As expected, male hunting mortality was lower on the NSA than on the SSA, and the single adult male killed by hunters on the NSA was taken after the hunting closure was lifted. One adult male captured on the SSA was killed in Arizona during their hunting season. On the NSA, 2 adult males were illegally killed outside of the hunting season. Radio-collars of these males were disposed of in Eagle Nest Lake and in the Cimarron River. On the NSA, 2 adult males appeared to have died from collisions with automobiles on U. S. Highway 64 in Cimarron Canyon.

Unexplained signal loss occurred for 3 adult males on the SSA, and these losses were identified as possible illegal kills. None of these possible mortalities occurred during the hunting season, suggesting they were not unreported legal kills. Although these mortalities cannot be verified, the documented occurrence of illegal kills of adult males on the NSA, coupled with documented occurrence of illegal kills of other bears on the SSA, indicate a high probability for illegal kill of adult males on the SSA. Inclusion of these possible mortalities doubled the mortality rate of males on the SSA.

Observed survival rates of subadult males were high on both study areas, and no hunting mortality was documented. The single documented mortality was a depredation kill following an incident on Philmont Scout Ranch when the bear entered a camp and scratched a scout inside a tent.

Unexplained signal loss occurred for 1 subadult male on the SSA, and this loss was also identified as a possible illegal kill. This possible mortality occurred during the bear hunting season, suggesting it may also have been an unreported legal kill.

Observed male yearling survival appeared lower on the SSA than the NSA. The single mortality documented on the NSA was an illegal kill during the bear season (the carcass was found). On the SSA, 1 yearling male mortality was due to predation by another bear. Cause of death was not known for the other 2 mortalities, but locations and dates did not suggest they were human-caused.

One SSA yearling bear never left the den following our den investigation. We suspect he may have died as a result of our handling, therefore this bear was censored in analysis of the known survival rates. However, the bear may have also died from natural causes, therefore it was included in analysis of possible mortality. Inclusion of this mortality increased the observed total mortality rate on the SSA from 18% to 24%. Unexplained signal loss occurred for 1 yearling male on the NSA, and this loss was attributed to an unknown cause. The signal was lost from this bear only weeks out of the den, and it was unlikely the possible death was human-caused.

DISCUSSION

Although not statistically distinct, survival rates appeared to differ among sex-age categories during this study. Among adult and subadult bears of both sexes, human-caused mortality was most common. Among yearling bears, most mortality was from natural causes, but human-caused mortality was also observed. Mortality from hunting was lower on the NSA and this difference was probably attributable to the hunting closure in effect from 1992-1997. However, even during the years of closure, hunting mortality was observed on the NSA. Most mortalities occurred outside of the closed area, indicating it was not large enough to allow complete protection for resident bears. However, we suspect 2 of the hunt mortalities occurred within the area of the hunt closure, indicating a possible source of illegal activity. Other sources of human-caused mortality included illegal kill, depredation kill, and automobile collisions. These sources of mortality were substantial, especially on the NSA, where they accounted for as much as 10% mortality.

Within the Southwest, observed adult female survival rates from this study were similar to those reported in Colorado (0.96: Beck 1991) and Mexico (0.94, Doan-Crider and Hellgren 1996), but higher than those reported in Arizona (0.85: LeCount 1990). Observed adult male survival rates were slightly higher than those reported in Arizona (0.85: LeCount 1990) and substantially higher than those reported in Colorado (0.70: Beck 1991).

The lack of documented hunting mortality among subadult males was surprising, given the substantial proportion of subadult males observed in hunter harvests. Relative to adults, and even subadult females, sample sizes were low for subadult males; therefore these results should be interpreted with caution. Our observed subadult male survival was higher than that observed in Colorado (0.76: Beck 1991), but our observed subadult female survival was similar to Colorado (0.94: Beck 1991).

Yearling survival rates appeared lower than those of adults and subadults, however much of the documented mortality was due to natural causes. Due to the small sample sizes associated with this ageclass, these results should also be interpreted with caution. Yearling survival rate was lower than the rate reported for Colorado (0.94: Beck 1991).

MANAGEMENT IMPLICATIONS

Among adult and subadult bears, most mortality was human-caused. In addition to hunting, illegal kills and depredation kills were significant sources of mortality for these bears. Illegal kills were documented on both study areas, and many of the unexplained losses were probably due to illegal kills followed by destruction of the transmitters. We were unable to verify any of these possible

mortalities, therefore these possible rates should be viewed as maximum rates. Depredation mortality was only documented on the NSA. The proximity of the NSA to several towns, as well as the inclusion of Philmont Scout Ranch within its boundaries, increased the likelihood of bear-human interactions.

It is important to recognize that there was no legal hunting on the NSA during 1992 through 1997. Therefore the hunting mortality rates observed may not reflect actual mortality of bears from hunting in northern New Mexico. The possibility of total mortality exceeding the rates we observed must be considered when interpreting harvest data and output from the population model.

CHAPTER 8

DENNING CHRONOLOGY AND DEN SITE SELECTION

As omnivores, New Mexico black bears are faced with reduced foraging opportunities during winter, primarily due to a lack of new plant growth, desiccation of existing plant matter, and accumulation of snow. Like bears throughout most of their range, New Mexico bears respond to this limited food supply by hibernating. Use of dens or shelters during this extended period of immobility provides both security from predators and protection from extreme weather (Nelson and Beck 1984, Beck 1991).

Timing of den entry and emergence is widely variable among populations and between individuals within a population. Typically, female bears enter dens earlier and emerge from dens later than male bears across North America (Tietje and Ruff 1980, Beecham et al. 1983, LeCount 1983, O'Pezio et al. 1983, Beck 1991, Schooley et al. 1994, Weaver and Pelton 1994, Oli et al. 1997). The prolonged denning period of females is usually most pronounced for adults giving birth during that period. Knowledge of the denning chronology of New Mexico black bears may facilitate more effective management of hunting. In many states and provinces, patterns of differential denning chronology afford wildlife managers an opportunity to regulate the demographic composition of bear harvests (Troyer 1961, Lindzey 1981). In addition, interpretation of hunter-kill data also is enhanced with an understanding of the denning behavior of populations (Alt 1977, O'Pezio et al. 1983).

Knowledge of den site characteristics is also valuable. Energetic properties and level of security of the physical site of hibernation may play a role in the success of bear populations. Where quality den sites are limited, forest management practices can be adjusted to increase their availability (Weaver and Pelton 1994, Oli et al. 1997).

Our objectives were to (1) document den entrance and emergence dates by sex-age category and study area, and (2) document den site characteristics by sex and study area.

METHODS

Denning Chronology

We estimated dates of den entrance and den emergence using aerial telemetry data. During appropriate months (1 October–15 December and 15 March–30 May), we intensified our flight schedule in an effort to locate each radio-collared bear once per 7-10 days (weather permitting). We did not attempt to determine exact dates of den entry or emergence by observation because of the possibility of disturbance.

Studies have shown bears often concentrate their movements around den sites days or weeks before den entry, and bears often remain in the den vicinity after emergence in the spring (Lindzey and Meslow 1976, LeCount 1980, Tietje and Ruff 1980, Beecham et al. 1983, Kolenosky and Strathearn 1987). Our observed telemetry error prevented us from distinguishing very small movements associated with a specific den location. Therefore, we defined denning dates as those when bears were in the den vicinity, not dates of actual movement into or out of the den cavity.

For each consecutive location, we assigned active or denned status based on its proximity to the previous location or its proximity to the actual den site (documented during a den visit). Other relevant information, particularly observer notes and "mortality" signal status, also were considered. Denning occurred when a bear was found in the "same" location during 2 or more consecutive flights, or when a bear was located at its documented den site. Locations were considered the same if they were within the median aerial telemetry error radius of 505 m. Bears were considered active the first time they were located more than 505 m from the den site in the spring.

We defined the fall den entry date as the midpoint between the last active location and the first denned location. Similarly, we defined the spring den emergence date as the midpoint between the last denned location and the first active location (O'Pezio et al 1983). For den entry, we limited our analyses to those observations when the period between relevant locations was ≤ 15 days; and for den emergence, we limited the period to ≤ 20 days. These criteria allowed us to use approximately 50% of our data. To eliminate the potential bias of our research activities, we excluded den emergence observations when the first active location occurred following our den visit.

We used analysis of variance (ANOVA) to determine differences in den chronology among the following sex-age categories: pregnant females (with cubs at den emergence), females with yearlings, other females, adult males, and subadult males. We used t-tests to determine differences within distinct categories between study areas.

We determined total denning period for bears with entrance and emergence dates as defined above. Differences in denning period was tested among sex-age categories using ANOVA and tested between study areas using *t*-tests. All analyses were performed using SPSS software (Chicago, Illinois); where appropriate because of variance differences, degrees of freedom are expressed as decimals.

Den Characteristics

We documented den characteristics, site features, and habitat variables during all visits to winter dens. Den type, number of entrances, types of bedding material, and prior use were recorded. Prior use was known when previous visits to the same den were made. Prior use was judged probable based on characteristics such as vegetation growth on the dirt berm of an excavated den, soil compaction of the berm, and old claw marks on hollow trees. We recorded elevation, topographic position, slope, and aspect of each den site. Habitat type was assigned following Brown (1982). We estimated canopy cover above 0.9 m (3 ft), and ground cover at 0-0.3 m (0-1 ft) and 0.3-0.9 m (1-3 ft) in the following categories: 1-5%, 6-25%, 26-50%, 51-75%, 76-100%. For analysis of aspect at the den site, aspect was classified into 9 categories: N, NE, E, SE, S, SW, W, NW, and flat (no aspect).

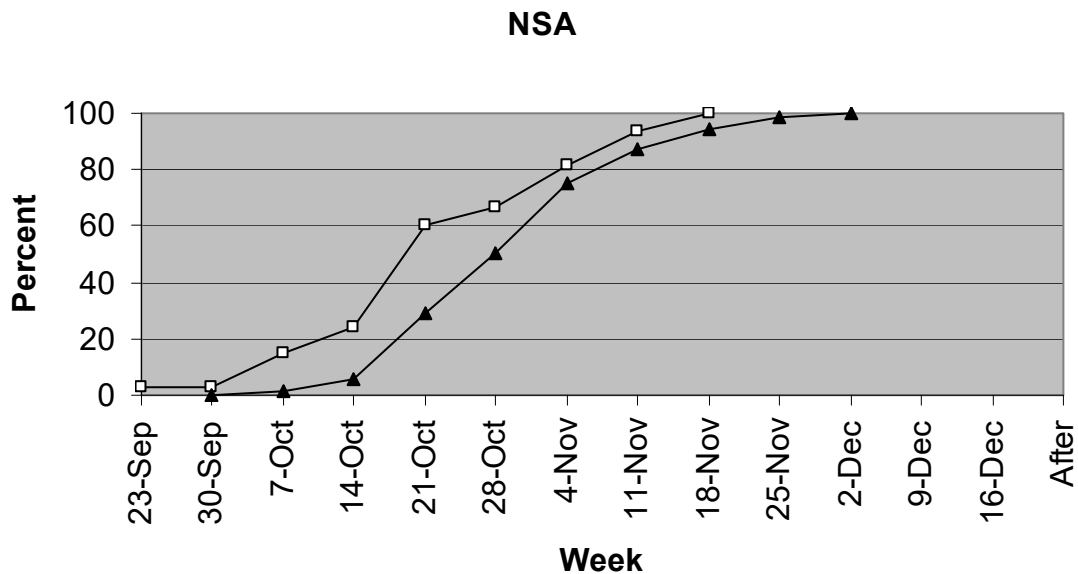
RESULTS

Denning Chronology

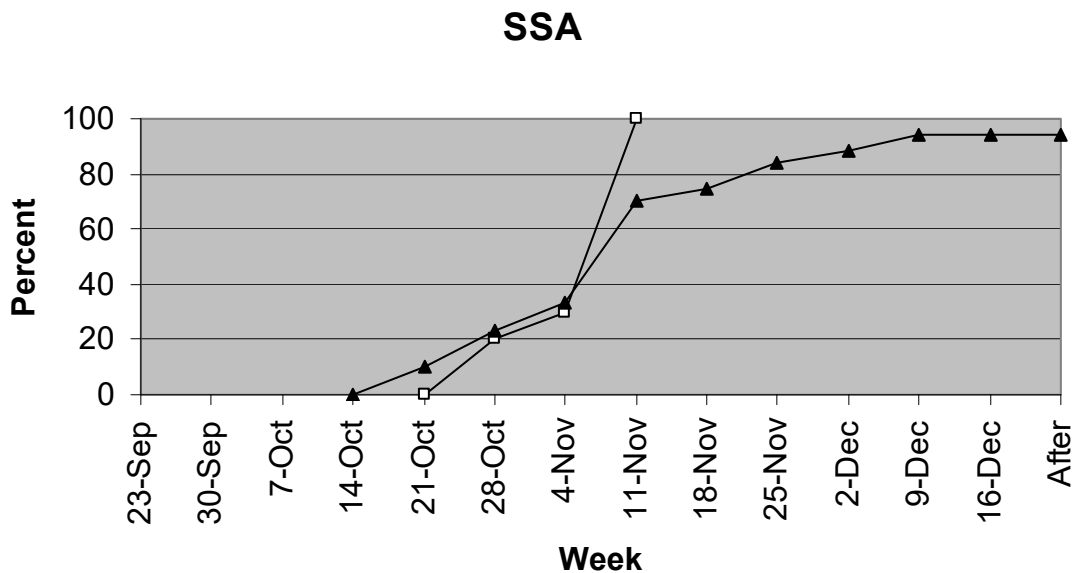
Among all bears on both study areas, observed den entrance dates ranged from 25 September-7 February ($n = 179$). Range of den entrance dates differed among sex-age categories and between study areas (Table 8-1). Among males, the first observed den entrance date was 18 October, while the latest was 29 December. Among females, the first observed den entrance date was 25 September, while the latest was 7 February. Among both sexes, the majority of bears entered dens between mid October and mid November (Figure 8-1).

Table 8.1. Ranges and means of black bear den entrance dates, by sex-age category, observed on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992–1999.

Area	Sex-age Category	<i>n</i>	Earliest	Latest	Mean
NSA	Pregnant females	33	25 September	21 November	26 October
	Females with yearlings	18	12 October	8 December	3 November
	Other females	27	7 October	28 November	2 November
	Adult males	27	18 October	21 November	3 November
	Subadult males	13	19 October	24 November	2 November
SSA	Pregnant females	10	29 October	15 November	11 November
	Females with yearlings	7	3 November	27 January	28 November
	Other females	31	20 October	7 February	8 November
	Adult males	8	29 October	29 December	18 November
	Subadult males	5	2 November	10 December	11 November



—□— Pregnant females (n = 33) —▲— Other females and males (n = 85)



—□— Pregnant females (n = 10) —▲— Other females and males (n = 51)

Figure 8-1. Cumulative percent of black bears that entered dens, by week, on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-1999.

Mean den entrance date differed among the 5 sex-age categories ($F = 2.5$; $df = 4, 174$; $P = 0.05$), but subsets were not distinct. When observations were divided into 3 categories (pregnant females; females with yearlings; other females and males), 2 distinct subsets were identified (SNK, $P = 0.05$). Mean entrance date of pregnant females was 29 October, while that of all other bears was 6 November. Comparison of 95% confidence intervals indicated pregnant females entered dens approximately 1-15 days earlier than all other bears.

Within both groups, mean den entrance date also differed between study areas. Pregnant females entered dens approximately 4-25 days earlier on the NSA (26 October vs. 10 November, $t = -4.3$, $df = 27.9$, $P < 0.001$). Other bears entered dens about 2-19 days earlier on the NSA (3 November vs. 13 November, $t = -3.0$, $df = 68.3$, $P = 0.003$).

On the SSA, mean den entry date differed by oak production for the group of other females and subadult males ($F = 3.4$, $df = 2, 40$, $P = 0.04$, $n = 42$) and for pregnant females ($t = -4.1$, $df = 2.0$, $P = 0.05$, $n = 9$). Other females and subadult males entered dens later during the years of good oak production than all other years (30 November vs. 8 November, SNK $P = 0.05$). Pregnant females entered dens later during years of good oak production than during years of poor production (15 November vs. 31 October). Mean den entry date did not differ significantly by oak production on the NSA.

Among all bears on both study areas, observed den emergence dates ranged from 21 March-5 June ($n = 177$). Range of emergence dates was similar for males and females (Table 8-2). Among males, the earliest observed date was 21 March, while the latest was 20 May. Among females, the first observed den emergence date also was 21 March, while the latest was 5 June. Among both sexes, the majority of bears emerged from dens during April (Figure 8-2).

Table 8.2. Ranges and means of black bear den emergence dates, by sex-age category, observed on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993–1999.

Area	Sex-age Category	<i>n</i>	Earliest	Latest	Mean
NSA	Females with cubs	40	9 April	5 Jun	10 May
	Females with yearlings	19	13 April	19 May	4 May
	Other females	31	1 April	23 May	1 May
	Adult males	20	21 March	20 May	21 April
	Subadult males	7	29 March	20 May	30 April
SSA	Females with cubs	10	28 March	29 April	24 April
	Females with yearlings	3	21 March	6 May	15 April
	Other females	28	21 March	31 May	21 April
	Adult males	12	23 March	6 May	14 April
	Subadult males	7	6 April	6 May	24 April

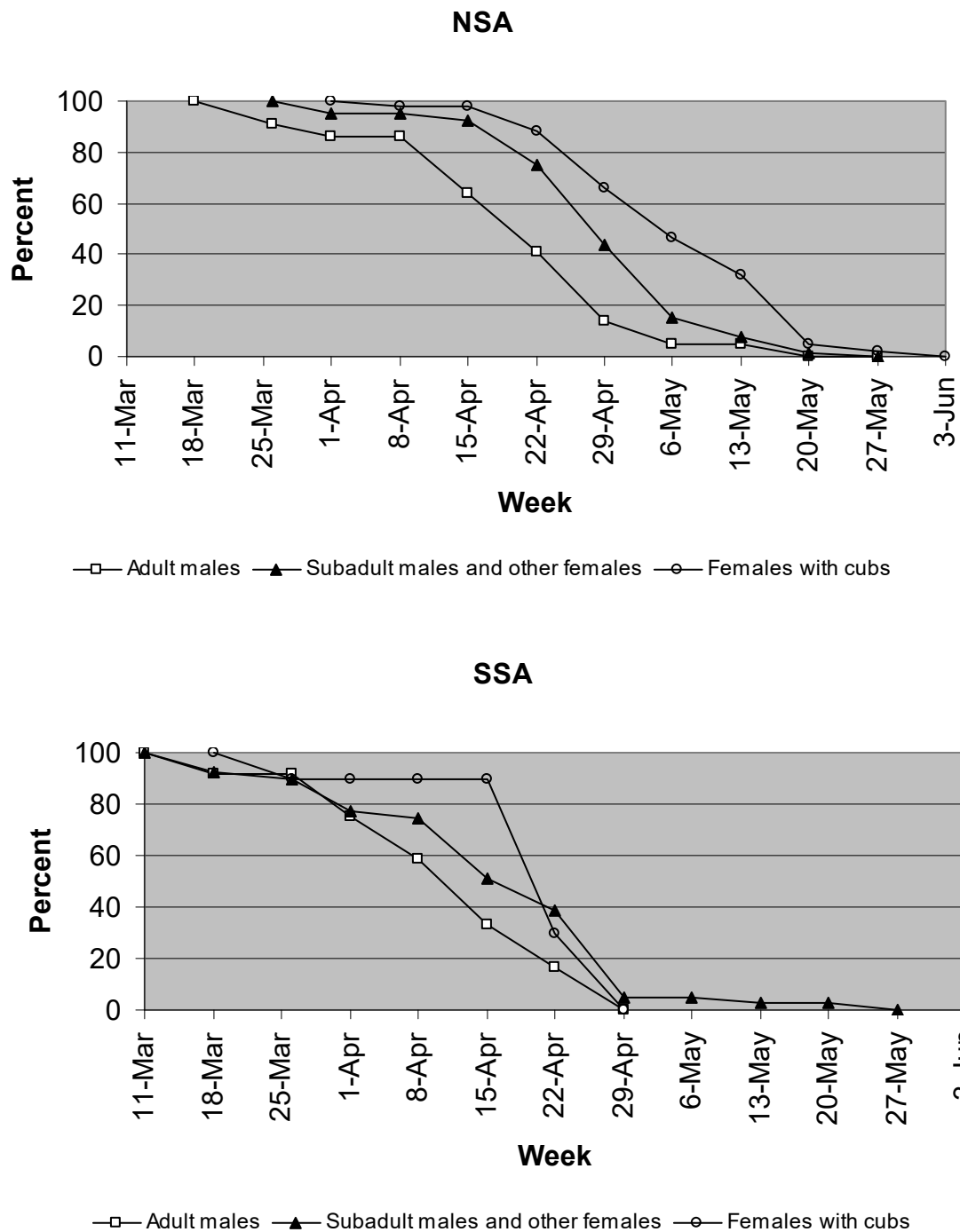


Figure 8-2. Decreasing percent of black bears remaining in dens, by week, on the Northern Study Area (NSA) and southern Study Area (SSA), New Mexico, 1993-1999.

Mean den emergence date differed among the 5 sex-age categories ($F = 9.8$; $df = 4, 172$; $P < 0.001$). Using a SNK test, females with yearlings, other females, and subadult males constituted a homogenous subset. When this combined group was compared to females with cubs and adult males, all 3 categories were different (SNK, $P = 0.05$). Adult males emerged earliest with a mean date of 18 April. The mean date for combined group was 28 April. Females with cubs emerged the latest, with a mean date of 7 May.

Comparing these groups between study areas, we observed some differences in mean date. Among the combined group of other females and subadult males, bears emerged about 2-19 days earlier on the SSA (21 April vs. 2 May, $t = 3.8$, $df = 93$, $P < 0.001$). Females with cubs emerged from dens about 6-27 days earlier on the SSA (24 April vs. 10 May, $t = 4.4$, $df = 48$, $P < 0.001$). Mean date did not differ between areas for adult males (19 April, $t = 1.6$, $df = 32$, $P = 0.12$).

Total denning period for 83 individuals varied significantly among the 5 sex-age categories ($F = 2.6$; $df = 4, 78$; $P = 0.04$), however homogenous subsets overlapped (Table 8-3). Denning period of adult males was different from all other bears combined. Denning period of adult females with cubs also differed from all other bears combined. Combining all sex-age categories, mean denning period was shorter on the SSA than the NSA (165.6 vs. 178.0 days, $t = 2.4$, $df = 81$, $P = 0.02$).

Table 8.3. Ranges and means of black bear total denning period (days), by sex-age category, observed on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993–1999.

Area	Sex-age Category	<i>n</i>	Minimum	Maximum	Mean
NSA	Females with cubs	16	165	229	187.1
	Females with yearlings	10	145	201	172.4
	Other females	13	145	216	173.8
	Adult males	8	155	203	173.8
	Subadult males	3	162	197	178.0
SSA	Females with cubs	3	171	181	174.3
	Females with yearlings	2	151	163	157.0
	Other females	19	42	198	170.6
	Adult males	6	98	170	142.7
	Subadult males	3	171	185	180.3

Den Characteristics

Over 64% of 390 dens visited during 1993-2000 were associated with rock structure, including excavations under rock (35%) and natural rock cavities (30%). Den types associated with tree structure were used to a lesser degree (a

total of 31%), with 20% of dens excavated under trees and 11% in natural tree cavities.

Use of den types differed by sex and study area ($X^2 = 96.1$, $df = 18$, $P < 0.001$, $n = 387$). Females and males on the NSA used dens excavated under rocks more than bears on the SSA (Table 8-4). Females on the SSA used tree cavity dens and dens excavated under trees more than any other group. Males on the SSA used rock cavity dens more than any other group.

Table 8-4. Relative use of den types by female and male bears on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-2000.

Den type	NSA		SSA	
	Females ($n = 173$)	Males ($n = 53$)	Females ($n = 132$)	Males ($n = 29$)
Rock cavity	0.25	0.32	0.24	0.69
Tree cavity	0.06	0	0.24	0
Excavated under rock	0.43	0.60	0.17	0.24
Excavated under tree	0.21	0.08	0.27	0.03
Excavated into ground	0.03	0	0.06	0.03
Ground nest	0.01	0	0.01	0
Other	0.01	0	0	0

Bears denned in a variety of habitats (Table 8-5). The most commonly used habitats were mixed conifer forests (45%), pinyon-juniper woodlands (21%), spruce-fir forests (13%), ponderosa pine forests (9%), and oak shrublands (8%). Other den-site habitats included aspen forests (3%), bristlecone and limber pine forests (2%), desert shrubland (<1%), and subalpine-plains grassland (<1%). On each study area, bears denned most frequently in mixed conifer habitat. Bears of the NSA used pinyon-juniper habitat secondarily, while SSA bears used pinyon-juniper and oak habitats secondarily.

Denning habitat differed by sex and study area ($X^2 = 63.5$, $df = 24$, $P < 0.001$, $n = 380$). Males denned in scrub oak habitat more frequently than females on both study areas (Table 8-5). Females on the NSA denned in spruce-fir habitat more frequently than other groups and SSA females denned in mixed conifer habitat more frequently than other groups. Use of pinyon-juniper and ponderosa habitats did not differ between sexes on either study area.

Certain den types were more closely associated with specific habitats. Over 95% of tree cavity dens were located in mixed conifer or spruce-fir habitat ($n = 42$), with the vast majority (83.3%) located in mixed conifer habitat. Over 82% of dens associated with tree structure were located in mixed conifer or spruce-fir habitats ($n = 120$). All dens located in scrub oak habitat ($n = 28$) and

88% of dens located in pinyon-juniper habitat ($n = 69$) were rock cavity dens or dens excavated under rocks.

Table 8-5. Relative use of habitat types for denning by female and male bears on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-2000.

Habitat type	NSA		SSA	
	Females ($n = 174$)	Males ($n = 50$)	Females ($n = 126$)	Males ($n = 27$)
Grassland	0.01	0	0	0
Oak shrubland	0.01	0.20	0.08	0.26
Pinyon -juniper woodland	0.22	0.24	0.13	0.22
Ponderosa pine forest	0.10	0.06	0.10	0.07
Aspen forest	0.02	0.02	0.02	0.07
Mixed conifer forest	0.41	0.36	0.57	0.33
Spruce-fir forest	0.20	0.10	0.09	0.04
Bristlecone-limber pine forest	0.03	0.02	0	0

Elevation at den sites ranged from 1,636 - 3,576 m (5,400 - 11,800 ft). Elevation differed by study area ($t = 7.5$, $df = 385$, $P < 0.001$, $n = 385$); elevation at NSA den sites averaged 2,657 meters (8,768 feet) whereas SSA den sites averaged 2,427 meters (8,010 feet). Elevation differed by sex on each study area. Males on the NSA denned at lower elevations than females (2,485 vs. 2,706 m, $t = 4.0$, $df = 222$, $P < 0.001$, $n = 224$), as did males on the SSA (2,332 vs. 2,448 m, $t = 2.4$, $df = 159$, $P = 0.02$, $n = 161$).

Aspect at den site differed by sex and study area ($\chi^2 = 51.1$, $df = 24$, $P = 0.001$, $n = 390$) and the significant differences were primarily among females. Female bears on the NSA selected dens with SW aspects more frequently and dens with NW aspects less frequently than other bears. Female bears on the SSA selected dens with NW aspects more frequently and dens with S or SE aspects less frequently than other bears. There was no difference between study areas in use of aspect by male bears ($\chi^2 = 4.7$, $df = 7$, $P = 0.70$, $n = 82$).

Slope at den sites ranged from 0° – 90° and the mean was 28° ($n = 386$). Only 1 den site had a slope of 90° . It was a natural rock cavity den used by a subadult male on the SSA, situated on a sheer cliff face with a narrow path to the entrance. There was no difference in slope at the den site between study areas ($P = 0.173$). However, there was a difference between the sexes, with males using steeper slopes than females (31° vs. 27° , $P = 0.006$).

Bears denned at all categories of topographic position, however few den sites were located on ridge-tops (5%) or bottoms (3%). Most den sites were located at the upper portion of slopes (42%), the mid portion of slopes (37%), or the lower portion of slopes (13%). Bears on the NSA denned most frequently at

mid-slope (43%), while SSA bears denned most frequently on the upper slope (48%).

The number of useable entrances into a den ranged from 1 to 4, but most dens had only 1 entrance (94%, $n = 390$). Twenty-one dens had 2 entrances (5%), 2 dens had 3 entrances (1%), and 1 den had 4 entrances (<1%). Eighteen of 24 (75%) dens with more than 1 entrance were natural rock cavity dens. Only 7% of den entrances were blocked with bedding material ($n = 381$), and this frequency did not differ by study area or sex ($P \leq 0.11$). Snow covered 22% of den entrances ($n = 377$); this frequency did not differ by study area or sex ($P = 0.67$). Snow cover ranged from approximately 15cm to 1.2m. Typically, there was a small hole in the snow (5-15cm diameter) that was kept open by heat generated from within the den.

Bedding material was found in 93% of all bear dens ($n = 360$) and was common to all sex and age categories. Percent of dens with beds was high on both study areas, however SSA females used beds most frequently and NSA females used beds least frequently (98% vs. 89%, $X^2 = 7.5$, $df = 3$, $P = 0.06$, $n = 357$). Common bedding materials found in 351 dens were pine needles (48%), twigs (42%), leaves (39%), and grass (37%). Other materials included conifer boughs, duff, bark, bracken fern (*Pteridium* spp.), yucca (*Yucca* spp.), beargrass (*Nolina microcarpa*), conifer cones, lichen, moss, agave (*Agave* spp.), silktassel (*Garrya* spp.), and remains of rodent midden. An earthen floor, sometimes strewn with stones, characterized dens lacking a bed.

Of 390 dens visited on both study areas, 10% were definitely used in years prior to the visit, and an additional 26% likely were used in years prior to the visit. There was a difference in the frequency of den re-use by study area ($X^2 = 14.8$, $df = 1$, $P < 0.001$, $n = 387$). Definite or probable re-use occurred at 43% of the NSA den sites, but only 24% of the SSA den sites. On the SSA, males denned in sites believed to have been previously used more often than females (38% vs. 21%, $X^2 = 4.0$, $df = 1$, $P = 0.06$, $n = 161$). Rates of probable re-use did not differ by sex on the NSA ($P = 0.27$). Several bears on the NSA were observed to use the same den 2-5 times during the study period. Use of the same den by different individuals also was observed.

DISCUSSION

Johnson and Pelton (1980b) proposed that 2 factors interact to ensure optimal timing of hibernation and denning of black bears. The primary factor is a genetically controlled hormonal response to photoperiod, or day length. This factor is modified by annually variable elements such as weather and food supply. These factors interact to provide the final stimulus to den.

Erickson and Youatt (1961) reported that prolonged feeding delayed denning of captive bears, but when feeding was terminated, denning occurred

promptly. Delayed den entrance by wild black bears has been documented during years of greater fall food availability in Maine (Hugie 1982, Schooley et al. 1994), Alberta (Tietje and Ruff 1980), Tennessee (Johnson and Pelton 1980b), and Idaho (Beecham et al. 1983). In Ontario, bears that fed on acorns, a food with high fat and carbohydrate content (Eagle and Pelton, 1983), denned significantly later than bears not feeding on acorns (Kolenosky and Strathearn 1987). Shorter denning periods observed in mild climates has led to the theory that bears forage until they encounter a decreasing or negative energy return per unit of search effort (Lindzey and Meslow 1976, Johnson and Pelton 1980b).

Timing of den entrance also has been reported to be influenced by various weather factors including snowfall (Jonkel and Cowan 1971), temperature (Johnson and Pelton 1980b, Rogers 1987), and precipitation (Lindzey and Meslow 1976, Johnson and Pelton 1980b). However, Schwartz et al. (1987) and Schooley et al. (1994) reported that variation in den entry was not strongly associated with weather patterns during autumn. Bears have the physical capability to survive brief periods of hostile weather, and onset of hibernation is probably not controlled by changes in weather. Rather, inclement weather typically coincides with decreased food availability, and tends to compound the negative energy return of a dwindling food supply by increasing the foraging effort required to obtain food. In the case of snow cover, food is exponentially more difficult to find and retrieve per unit effort of search.

On average, we observed bears entering dens 1-2 weeks later than usual during a single year of outstanding food production on the SSA. Two females without offspring were observed to delay den entrance until January and February. That year of outstanding mast production also was characterized by mild weather and little snowfall, allowing for increased foraging opportunities. Dates of den entrance were not different among years of oak production ranging from failure to moderate. Overall, our results lend support to the theory of negative energy return and that food availability is the primary proximate cause of black bear den entry. We hypothesize that years of mast failure do not result in earlier den entrance because the endogenous rhythm has not yet prepared bears to den. Weather factors are likely a secondary proximate cause of den entrance.

Smith et al. (1994) summarized denning chronology results of 25 black bear research projects and concluded that populations of more northern latitudes and higher elevations tend to enter dens earlier, remain denned longer, and emerge later. Our data suggest this pattern may exist within New Mexico. Mean entrance dates of the SSA population were very similar to those of central Arizona (LeCount 1983), and were approximately 2 weeks later than those observed on the NSA. Entrance dates of NSA bears were more similar to those of Colorado (Beck 1991) and Idaho (Beecham et al. 1983). Bears inhabiting mountain ranges in New Mexico of lower elevations than our study areas may display this trend to a greater degree. With uniform hunting seasons for black

bears throughout New Mexico, regional differences in denning chronology will likely affect the demographic composition of the harvest and interpretation of population sex and age structure from harvest data.

Differential denning dates among demographic segments of black bear populations has been widely reported in such regions as the Southwest (LeCount 1983, Beck 1991), the Pacific Northwest (Lindzey and Meslow 1976, Schwartz et al. 1987, Smith et al. 1994), the intermountain west (Tietje and Ruff 1980, Beecham et al. 1983), the Northeast (O'Pezio et al. 1983, Schooley et al. 1994), and the Southeast (Johnson and Pelton 1980b, Weaver and Pelton 1994, Oli et al. 1997). Typically, females enter dens earlier than males. Pregnant females enter dens earlier than any other group, and adult males enter dens latest. The reverse sequence is commonly observed at den emergence. Subadult entrance and emergence appears to be more random and has not exhibited the definitive patterns apparent between sex and reproductive groups. Bears of New Mexico exhibited these same demographic variations and fit the overall pattern documented with other research projects. Mean den entrance date for pregnant females was earlier than all other bears on both study areas. The weekly cumulative percentage of pregnant females having entered dens was 5-30% greater than for all other bears on the NSA during peak entrance in October; den entry by pregnant females on the SSA probably was similar but sample size was too small to document this pattern. Den emergence patterns in New Mexico also fit the general pattern of other research findings. Adult male bears on both study areas emerged earliest and females with cubs emerged latest. Mean emergence dates differed by 10-20 days between these groups. The weekly cumulative percentage of adult males that had departed the den vicinity was 20-50% greater than for females with cubs during peak emergence in April and May.

Bears of New Mexico exhibited these same demographic variations and fit the overall pattern documented with other research projects. Mean den entrance date for pregnant females was earlier than all other bears on the NSA and the SSA. Also, the weekly cumulative percentage of pregnant females that had entered the den was 5-30% greater than for all other bears on the NSA during October; den entry by pregnant females on the SSA probably was similar but sample size was too small to assess this pattern. These differences generally agree with other documented populations.

Emergence from dens in New Mexico also fit the general pattern of other research findings. Adult male bears on both study emerged earliest, females with cubs emerged latest; average emergence dates differ by 10 to 20 days between those groups. Also, the weekly cumulative percentage of adult males that had departed the den vicinity was 20-50% greater than for females with cubs during peak emergence in April and May. However this emergence schedule was about 20 days later on the NSA than the SSA. These differences generally agree with other documented populations.

We found that male and female black bears selected different types of den sites and den structure, and that trends were similar between regions in New Mexico. In general, males denned at lower elevations, on steeper slopes, in oak habitats, and in rock dens. Females used dens associated with trees with greater frequency than males and denned at higher elevations, on more moderate slopes, and in spruce-fir and mixed conifer habitats. While some of the variation in the aforementioned den characteristics may be inter-related (primarily site-characteristics), much of the differences that we observed in New Mexico can, in large part, be explained by differing needs of the sexes and the adaptive significance they afford each sex.

Black bears den for periods up to 6 months long and can lose 14-34% of their body weight during the denning period (Hock 1960, Erickson and Youatt 1961, Tietje and Ruff 1980). Females nursing cubs may lose an additional 9% above the 25% that other females lose during denning (Tietje and Ruff 1980). In addition, factors other than metabolic expenditure also influence energy conservation during the denning period. Bears have been documented changing dens within a winter apparently by natural causes (LeCount 1980, Weaver and Pelton 1994). Abandonment of a den site was estimated to cause a doubling of over-winter weight loss (Tietje and Ruff 1980). Considering the intense physiological demands of denning, lactation, and the generally poor forage conditions available to bears upon emergence, the need for den types that favor energy conservation during this period is obvious.

The insulating capacity of snow is well known and of great significance to bears of more northern regions where accumulations are deep enough to cover dens and mid-winter thawing is not frequent (Tietje and Ruff 1980). We found that 22% of dens in New Mexico were covered with snow at our visit date. We did not detect any difference in the frequency with which male and female dens were covered with snow. Interestingly, there also was no difference in frequency of snow-covered dens between study areas even though the NSA was farther north and included areas of higher elevation. Bears on the SSA, particularly females, used NE slopes more frequently which may account for this lack of difference. Female use of higher elevations on both study areas may represent an inclination to use more insulated dens.

Use of tree cavity dens by black bears may result in energetic conservation in regions where snow accumulations are not significant, mid-winter rains occur, or intermittent flooding occurs (Johnson and Pelton 1980b, Weaver and Pelton 1994, Oli et al. 1997). Johnson et al. (1978) simulated winter heat loss of denned black bears and concluded that enclosed tree cavity dens accounted for a 15% energy savings compared to open ground dens. However, Thorkleson and Maxwell (1974) suggested while dens afford protection from conductive, convective, and radiant heat loss, the increased air circulation can greatly reduce their thermal efficiency. Because of its latitudinal position and range of elevations, New Mexico falls somewhere between the typical northern

bear habitats and those with less severe winters. The fact that only 22% of dens were covered with an insulating blanket of snow indicates that thermally insulated dens may have great importance for bears in New Mexico. The need for more thermally efficient dens may be greater for females and younger bears due to their higher surface area to volume ratio. Observed use of tree dens was higher on the SSA, where snow accumulation was more limited. Although male bears have been observed to use hollow trees for denning in other regions (C. Godfrey, pers. commun., 1998), no use of tree cavity dens by males was observed during this study. It is possible that availability of large cavities suitable for adult males is limited in New Mexico.

In addition to energetic conservation, security is another factor of importance related to den type. Predation of denned black bears by wolves (Rogers and Mech 1981), man (Erickson 1964), and other bears (Rogers 1977, Tietje and Ruff 1980, Alt 1984) has been reported. Security of the den site is affected by inaccessibility, defensibility, and cover. Females may seek tree den types because of a greater need for security, due to their smaller size and the vulnerability of cubs. Bears that den in hollow tree cavities above the ground are less accessible to potential predators than those in other den types. During this study, no elevated tree cavity dens were abandoned at our approach, supporting previous contentions that bears denning in trees were less vulnerable to human disturbance than those using ground (Johnson and Pelton 1981, Weaver and Pelton 1994). Den types other than elevated tree cavities appear to be less secure, but similarly inaccessible and defensible to each other. Ninety-four percent of the dens we examined had only 1 entrance. Although lethargic and approachable while denning, bears remain capable of defending themselves. Cover would appear to function for security purposes by reducing the odds that a den could be located, and, as we often found during the research effort, by functioning as an auditory alarm system. Undetected approaches to dens were difficult to achieve in thick scrub oak and mountain mahogany vegetation and/or steep terrain covered with loose rocks.

Craighead and Craighead (1972) suggested grizzly bear use of northern aspects for den sites reduced the likelihood of a flooded den as the result of a mid-winter thaw. Cub mortality from hypothermia and drowning, associated with flooding of dens, has been observed (Alt 1984, Hayes and Pelton 1994, Weaver and Pelton 1994). Although SSA females appeared to favor dens with NW aspects, NSA females tended to avoid this aspect, selecting sites with SW aspects instead. Snowmelt on south-facing slopes was relatively common on both study areas. We observed flooding of a maternal den on the NSA during a den visit in late March. The den was beneath a rock ledge where snow was melting through the roof of the den. The female, her 2 cubs, and all of the bedding material were extremely wet, however the female remained lethargic. Fearing for the survival of the cubs, we dried them, put fresh bedding under them, and attempted to redirect the snowmelt. Fortunately, the bears moved from the den within 2 days after the den visit. It is unknown if the bears would

have moved without our disturbance. On the SSA, females may have selected north-facing slopes to avoid frequent snowmelts that may reduce cub survival; however other factors, such as availability of large tree dens, may have caused them to select these sites.

Relatively high levels of den reuse have been documented in other regions, particularly in western states, such as Colorado (Beck 1991), Idaho (Beecham et al. 1983), and Alaska (Smith et al. 1994). Methodologies used to determine rates of den reuse differed widely among studies, making comparison difficult. Lindzey and Meslow (1976) documented a high degree of den reuse (90% of all bears reused dens) and attributed it to reduced den site availability following logging. Schwartz et al. (1987) documented competition among bears for den sites. The wide variety of den types observed during this study suggested availability of dens was not limiting.

MANAGEMENT IMPLICATIONS

The verified differential in den entry and emergence dates among sex and age groups has application to setting bear hunting seasons to accomplish various objectives. However, den entry and emergence dates are highly variable and generally span a period exceeding 2 months. We observed variation relative to mast production; other factors undoubtedly play a role influencing the timing from year to year. No single timing scenario is appropriate for every use. This information also is valuable for interpreting past and future harvest composition relative to season timing and region. These interpretations are especially important for selecting information to be used in the Population Model as a management tool.

Dens that facilitate security and energy conservation during hibernation period are of significant value to black bears, and female bears exhibit a tendency to select tree cavity dens when available. Retention of large diameter live trees, large snags, and large fallen logs may be a valuable goal to benefit black bears in all forest management plans and programs.

CHAPTER 9

HOME RANGE, MOVEMENTS, AND HABITAT USE

Relative to most North American game species, black bears exhibit very large home ranges, and are known to travel great distances to reach abundant food sources (Amstrup and Beecham 1976, Lindzey and Meslow 1977, Garshelis and Pelton 1981, Warburton and Powell 1985, Smith and Pelton 1990, Wooding and Hardisky 1994). A thorough understanding of the movement patterns of bears may help agencies identify and manage distinct subpopulations within a state, and work with neighboring states to manage inter-state populations. Information about dispersal rates may aid in interpreting hunter-kill data, as it relates to emigration and immigration. Knowledge of the sources of bear-human conflict and effectiveness of translocation may aid in management of nuisance and depredation complaints.

We investigated black bear home range and movements on 2 New Mexico study areas during 1992-2000. Our objectives were to (1) document black bear home range size by sex and study area; (2) investigate seasonal movement patterns by sex and age category; (3) investigate general habitat use patterns on each study area; (4) examine dispersal of subadult males and females; (5) examine patterns of nuisance and depredation activities by sex and study area; and (6) compare movements of translocated bears by sex and age category.

METHODS

For analysis of home range and movements, we used aerial telemetry locations, capture and recapture locations, den locations, and locations of mortalities (including hunter kill or depredation kill locations). Locations were classified by season: den, precast (den emergence to 20 July), and mast (21 July to den entry). To eliminate autocorrelation of locations, we excluded recapture locations if the bear was captured more than once at the same trap site during the same trap period. When the interval between 2 locations was <5 days, we excluded the second location if the distance between the 2 locations was <1000 m for females or <1500 m for males.

Numerous studies of black bears have documented extensive movements to abundant food sources, especially during the fall foraging period. Although these distant locations are a significant part of a bear's lifetime home range, we wished to discriminate them from the locations representing areas of concentrated, multi-annual use. For each bear, we selected den locations and locations from the precast season. For each location, we determined the distance to its nearest neighbor. For each bear, we multiplied the maximum distance by 1.5, and this became our critical value. Any mast season location exceeding this critical distance from any den or precast location was considered a long-range movement. If the maximum distance was ascribed to an outlier

among the den and premast locations and the maximum distance was more than 2 times the second longest distance, we usually reclassified the outlier as a long-range movement, and reanalyzed based on the second longest nearest neighbor distance. In most of these circumstances, the outliers appeared to be associated with movements to summer foods (mostly during July) or return movements from distant den locations (mostly during February to April). For the few subadult bears determined to be dispersing as described below, we used the above criteria only for locations when the bears were resident in their natal range. During years of active dispersal, we did not classify any locations as long-range movements.

Home Range

Multi-annual total home ranges were estimated using all locations, while multi-annual primary home ranges were estimated excluding long-range movements. Home range was estimated using the 100% minimum convex polygon (MCP) method (Mohr 1947) and the 95% fixed kernel (FK) method with the least squares cross validation procedure as the smoothing parameter (Silverman 1986). Estimates were calculated using the Animal Movements extension (P. Hooze, USGS-BRD, Alaska Biological Science Center) developed for use with ArcView software (Environmental Systems Research Institute, Redlands, California). A minimum sample size of 30 locations was required for bears to be included in home range analyses. Mean home range size was compared by sex and study area using *t*-tests.

Movements

We estimated the center of each primary home range using the arithmetic mean. We then calculated an “activity radii” for each bear location as the distance between the location and the home range center (Dice and Clark 1953). To determine the effect of sample size on our ability to estimate the home range center, and thus activity radii, we calculated incremental mean activity radii for each bear by sample size, starting with the first 3 premast locations. We then calculated the percent change in the mean activity radius as sample size increased. Minimum sample size was achieved when the mean percent change fell below 5%. Bears with sample sizes below this number were excluded from analyses using activity radii. Differences in mean activity radius by sex, ageclass, season, and study area were tested using *t*-tests and analysis of variance (ANOVA), with individual bears as a random factor.

Habitat Use

We defined habitats using land cover data obtained from the New Mexico Gap Analysis Project (NMGAP, Thompson et al. 1996). These data included 42 land cover types, primarily based on dominant vegetation and canopy cover. For analysis of general use, we reclassified these land cover types into 6 broad

categories: closed forest/closed woodland, open forest, open woodland, open shrubland, open grassland/tundra, and other land cover.

We used bear location data compiled for home range analyses to document use of these habitat types by the bear populations on each study area. For these analyses, locations outside of New Mexico were excluded. For each bear location, a scan area was created with a radius corresponding to the median telemetry error for each study area (NSA = 200 m, SSA = 505 m). Scan areas were overlaid onto the NMGAP map and habitats found within the buffer area were determined. When more than 1 habitat type was found within a scan area, use was weighted by the inverse of the number of types within the scan area (ranging from 1-3). Percent use was defined by percent of locations within each habitat type by season.

We determined availability of habitat types using composite home range data. We created composites of the 100% MCP and the 95% FK total home ranges for all radio-transmitted bears, excluding the locations outside of New Mexico as described above. We also excluded the single long-range movement to Elephant Butte Lake (observed for a male on the SSA), because this single location would have greatly inflated the available habitat area. Relative distribution of habitat types within the composite home ranges was determined by assigning habitat type to random points generated at approximately 1 point/km². Patterns of selection versus avoidance of habitat types were estimated using use versus availability analyses (Neu et al. 1974).

Dispersal

We estimated dispersal rates using 2 samples of radio-transmitted juvenile bears. The first sample consisted of bears whose natal range was known (those handled as cubs or yearlings in the den). The second sample consisted of bears whose natal range was not verified (those captured as yearlings or subadults). Dispersal was determined by examining annual changes in pre-mast movements. We considered a bear dispersed when it moved from 1 pre-mast range to a second pre-mast range (with no overlap).

Nuisance or Depredation Activity and Post-translocation Movements

We identified areas of potential human conflict for bears on each study area. We restricted analyses to areas of predictable potential food sources, including towns, public campgrounds, and other known sources of garbage or food. Areas of unpredictable potential food sources, such as backcountry campsites, were not assessed. We determined percent of all MCP home ranges of bears >1 year old that overlapped these areas of potential human conflict. In addition, nuisance and depredation complaints reported to NMDGF were recorded for marked study bears. Percent of each study population involved in these complaints was determined by sex.

During the study period, several radio-collared study bears were translocated by NMDGF personnel due to nuisance or depredation activities. We documented post-translocation movements of radio-collared bears to determine rate of return.

RESULTS

Home Range

Mean total and primary home range size was larger for males than females ($P < 0.001$) on both study areas (Table 9-1). Total home range size varied greatly by individual, especially using the MCP method. Total MCP home range size ranged from 104.8 km² to 3,343.8 km² for males. Variation in FK home range size was not as great, but still notable. The largest home range size was that of a SSA adult male (M380) that made a single long-range movement to the vicinity of Elephant Butte Lake. Although this home range size greatly exceeded those of other males, it may actually reflect the potential areas used by SSA bears. Of 8 SSA males with estimated home ranges, 7 (88%) were not found for 1-4 periods exceeding 45 days, indicating many long-range movements were not documented. The single SSA male bear that was consistently located (M326) had a total MCP home range size of 847.1 km² and a FK home range size of 213.4 km². On the NSA, only 3 of 10 (30%) bears were missing for 1-3 periods exceeding 45 days. Therefore, home ranges were probably more accurately documented for NSA males than SSA males. No significant differences were found between NSA and SSA male total home ranges ($P \geq 0.39$), however the higher frequency of missing bears on the SSA may indicate total home ranges were larger.

Total MCP home range size ranged from 10.2 km² to 866.7 km² for females. Among females, the largest total home range size was that of a SSA adult female (F804) that appeared to have 2 distinct primary home ranges. One range was located within the study area, while the other was located within the Gila Wilderness. Most of the large sizes of other female total home ranges were attributable to isolated long-range movements. Mean total home range size was not significantly different by study area ($P \geq 0.25$). On the SSA, 15 of 26 (58%) female bears were not found for 1-2 periods exceeding 45 days, but only 4 of 35 (11%) females were missing for a single period exceeding 45 days on the NSA. This may indicate total home ranges were larger on the SSA.

Mean primary home range size estimates were approximately 3-5 times larger for males than females ($P \leq 0.01$) on both study areas (Table 9-1). Among males, ranges and means of primary home range size were very similar between study areas, and no differences were found ($P \geq 0.96$). Mean primary home range size estimates of SSA females were nearly twice as large as estimates for NSA females. The difference was significant for the MCP estimates ($t = -2.1$, df

= 27.0, $P = 0.05$) and slightly significant for the FK estimates ($t = -1.7$, $df = 24.6$, $P = 0.10$).

Table 9-1. Size (km²) of multi-annual minimum convex polygon and 95% fixed kernel home ranges for black bears monitored on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2000. All estimates differed by sex within study areas ($P < 0.001$) and estimates of primary home range differed between areas for females ($P \leq 0.003$).

			<i>n</i> ^a	Minimum Convex Polygon		Fixed Kernel	
				Mean	Range	Mean	Range
Total ^b	NSA	Female	35	123.3	10.2 - 482.0	70.2	17.2 - 509.1
		Male	11	417.8	104.8 - 855.3	370.1	112.0 - 800.1
	SSA	Female	26	172.4	17.4 - 866.7	116.6	16.4 - 1001.7
		Male	8	769.8	180.6 - 3343.8	383.8	213.4 - 967.9
Primary ^c	NSA	Female	28	24.0	7.2 - 50.4	27.6	10.6 - 45.2
		Male	10	132.1	46.6 - 266.6	162.1	56.4 - 307.7
	SSA	Female	25	43.1	10.7 - 222.7	55.8	13.7 - 430.9
		Male	4	130.1	74.6 - 180.1	163.4	102.3 - 231.4

^aSample included individuals with ≥ 30 locations

^bTotal home ranges included all locations

^cPrimary home ranges excluded long-range movements

Movements

Mean activity radius around home range centers was smaller during the premast season than during the mast season for all sex-age categories, except yearling females and SSA male yearlings ($P \leq 0.05$, Table 9-2). On both study areas, mean activity radii were larger for adult and subadult males than all other sex-age categories during the premast season and during the mast season ($P < 0.001$).

Among adult and subadult males, mean activity radius did not differ between study areas during either season ($P \geq 0.28$). Among all females and yearling males, mean activity radius was larger on the SSA than the NSA during the premast season ($t = -5.1$, $df = 775.2$, $P < 0.001$), but not during the mast season ($t = -0.3$, $df = 1899.0$, $P = 0.79$).

Mean activity radius was larger during years of oak failure than all other years for adult and subadult males on the NSA (16.2 vs. 9.1 km, $P < 0.001$) and the SSA (19.3 vs. 9.5 km, $P < 0.001$). The same was observed for all females and yearling males on the SSA (5.4 vs. 3.9 km, $P = 0.001$), however no difference was observed for that group on the NSA ($P = 0.21$).

On both study areas, mean activity radii of male bears displayed a gradual increase throughout the premast season, while mean activity radii of female bears remained relatively constant (Figure 9-1). On the NSA, both sexes appeared to increase movements during mid-August and continue to move until early October. On the SSA, both sexes increased movements during late August and continued to move widely through late October. Peaks of fall movements appeared to occur earlier for males on both study areas. Peaks also appeared to occur earlier on the NSA than the SSA.

Table 9-2. Activity radii (km) around home range centers for black bears monitored on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2000. Mean activity radius differed by season and sex for all age classes, except yearling males ($P = 0.05$).

			Premast (den emergence - 20 July)			Mast (21 July - den entry)		
			<i>n</i>	Mean	Range	<i>n</i>	Mean	Range
NSA	Female	Adult	561	1.9	0.03 - 23.1	649	4.8	0.08 - 41.4
		Subadult	229	1.6	0.2 - 7.2	298	6.1	0.08 - 35.7
		Yearling	47	1.1	0.04 - 4.7	55	2.1	0.1 - 22.0
	Male	Adult	384	5.3	0.2 - 40.5	382	11.6	0.2 - 53.5
		Subadult	99	3.9	0.2 - 63.2	88	9.7	0.6 - 46.1
		Yearling	53	1.7	0.04 - 5.3	57	4.5	0.2 - 28.1
SSA	Female	Adult	400	2.6	0.09 - 57.1	561	4.5	0.1 - 55.4
		Subadult	137	2.2	0.03 - 10.8	205	4.2	0.04 - 27.5
		Yearling	25	2.2	0.03 - 6.3	50	5.2	0.6 - 17.2
	Male	Adult	174	7.6	0.2 - 59.1	180	14.5	0.3 - 134.9
		Subadult	74	6.1	0.4 - 28.6	82	14.1	0.2 - 75.8
		Yearling	21	4.6	0.8 - 24.9	28	3.1	0.5 - 6.5

Percent of all locations considered long movements (outside of primary home ranges) also increased during the fall mast season (Figure 9-2). On the NSA, from late August until early October, over 40% of male locations and over 30% of female locations were long-range movements. On the SSA, over 25% of female locations were long-range movements from late August to late October. For SSA males, sample sizes were smaller than other categories, therefore that group exhibited more variation, but in general more than 20% of male locations were long-range movements between mid August and late October.

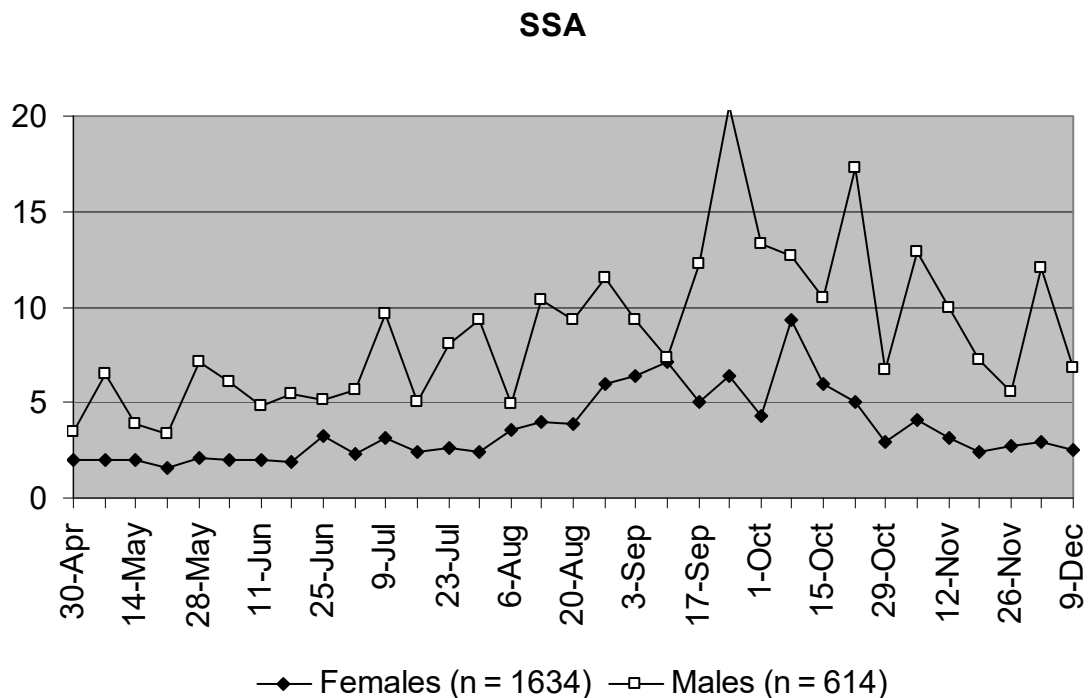
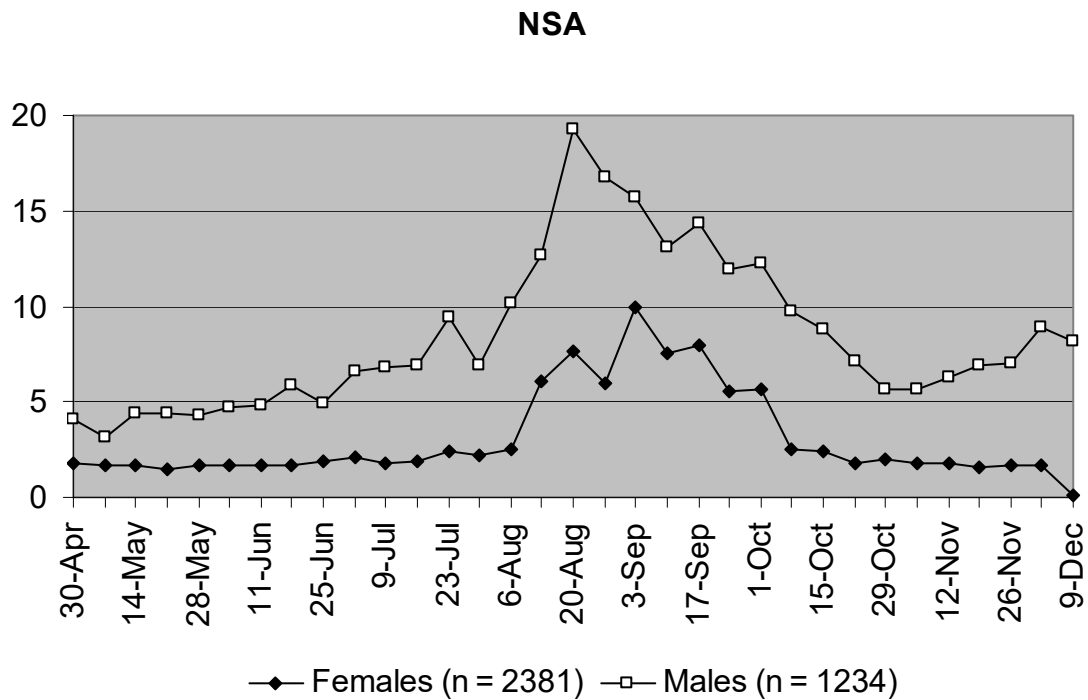


Figure 9-1. Mean activity radius (km) around home range centers, by week, for male and female black bears monitored on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2000.

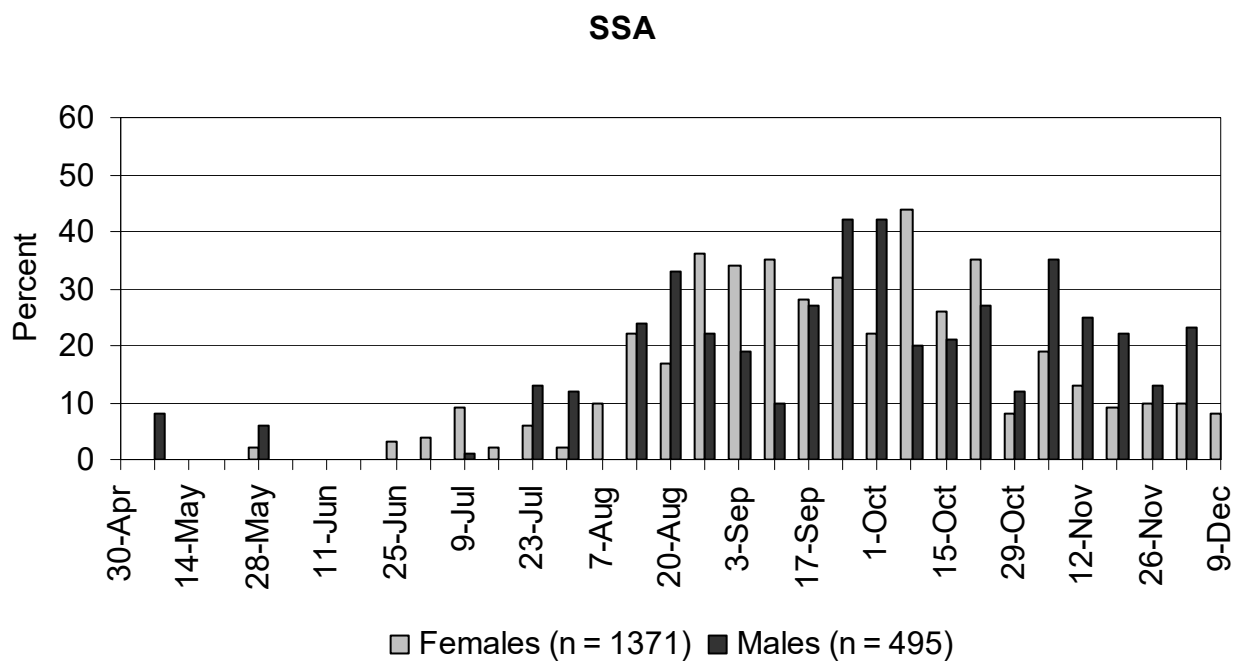
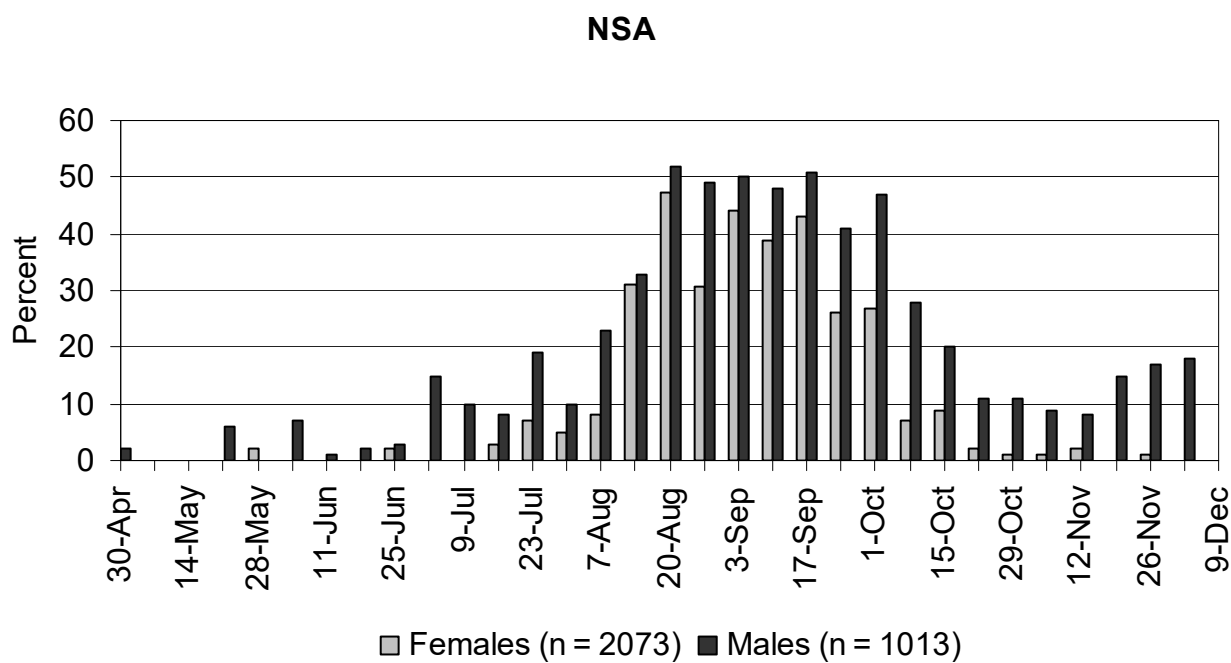


Figure 9-2. Percent of black bear locations considered long-range movements (outside of primary home ranges), by week, on the Northern Study Area (NSA) and the Southern Study Area (SSA), New Mexico, 1992-2000.

Habitat Use

Patterns of habitat use were very similar between the 2 study areas. On both study areas, analyses indicated bears were highly selective of the closed forest and woodland habitat types during all seasons, with >80% of locations occurring in these types (Table 9-3). Areas of open shrubland also were selected, but use and availability of this type was more limited. Areas of open woodland and open grassland were avoided, and most locations (96%, $n = 460$) within these habitats occurred within 500 m of the edge of closed-canopy habitats.

Table 9-3. Observed use versus availability of habitat types by black bears on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-2000.

Area	Habitat type	Observed percent use by season			Percent in composite home range		Result $P < 0.001$
		All year	Premast season	Mast season	MCP	95K	
NSA	Closed forest/ woodland	90	92	87	79	77	Selected
	Open woodland	4	3	4	4	5	Avoided ^a
	Open shrubland	3	2	3	2	1	Selected ^b
	Open grassland	3	3	4	16	16	Avoided
	Agricultural land	0	0	0	1	1	
	<i>n</i>	3085	1883	1203			
SSA	Closed forest/ woodland	85	86	84	76	71	Selected
	Open woodland	3	2	4	11	13	Avoided
	Open shrubland	6	7	6	1	2	Selected
	Open grassland	7	6	7	12	14	Avoided
	<i>n</i>	2444	1176	1015			

^aNot significant relative to MCP composition

^bNot selected during premast season

Habitat use patterns differed slightly by sex during the premast season on both study areas, but closed forest and woodland habitats still accounted for >85% of use for both sexes. On the NSA, more male locations were found in open grassland habitats (4% vs. 2%) and agricultural lands (1% vs. 0%) than females ($X^2 = 13.1$, $df = 4$, $P = 0.01$, $n = 1883$). On the SSA, more male locations were found in open woodland habitats (3% vs. 1%) and open shrubland habitats (6% vs. 3%) than females ($X^2 = 24.0$, $df = 4$, $P < 0.001$, $n = 1170$).

Dispersal

No dispersal was observed among female bears whose natal range was known, however dispersal was observed among male bears (Table 9-4). Radio-telemetry monitoring ended prior to dispersal for most males (76%), due to shed transmitters, collar removal, mortality, or lost contact. Of males monitored until age 4, 100% dispersed from their natal range. Five dispersal movements were documented. Two males (40%) dispersed during fall of their yearling year, 2 males (40%) dispersed during fall of their second year, and 1 male dispersed during the spring of his third year (20%). Dispersal distance ranged from approximately 25-60 km. Interestingly, 2 littermates dispersed at the same time to the same area and made similar movements to fall mast.

In addition to these known dispersal observations, we also documented the probable dispersal of a male bear captured as a subadult. This bear appeared to disperse during late summer of its third year, when it moved approximately 45 km from its previous range and established a new home range. This individual was known to maintain this home range until fall of his fifth year.

Table 9-4. Rate of dispersal, by age, for juvenile black bears monitored with radio telemetry on the Northern and Southern Study Areas, New Mexico, 1993-2000.

	Age	<i>n</i>	Percent Dispersed ^a	Details
Females	1	21	0	
	2	9	0	
	3	8	0	
	4	2	0	
	5	2	0	
Males	1	17	0	
	2	13	15	2 bears left natal range in fall of yearling year
	3	4	100	1 bear left natal range in fall of second year 1 bear left natal range in spring of third year

^aBy end of precast season (20 July)

Nuisance or Depredation Activity and Post-translocation Movements

On the NSA, radio-telemetry data was obtained for 52 females bears and 41 male bears >1 year old. Primary MCP home ranges of 81% of females and 90% of males overlapped areas of potential human conflict. The most common area of overlap was Philmont Scout Ranch, used by 65% of females and 90% of males. Public campgrounds were found within 10% of female and 34% of male home ranges. The towns of Eagle Nest, Ute Park, or Cimarron, or the Eagle Nest Reintegration Center were found within 15% of female and 39% of male home ranges.

On the SSA, radio-telemetry data were obtained for 41 females and 35 males >1 years old. Primary MCP home ranges of 3 (7%) females and 4 (11%) males overlapped areas of potential human conflict. Areas of overlap included 2 public campgrounds at Willow Creek and Snow Lake. None of the home ranges of SSA bears overlapped towns.

On the NSA, 14% of females and 20% of males >1 year old were known or suspected of potential nuisance or depredation activity ($n = 158$), but only 2% of females and 1% of males on the SSA were involved in these activities ($n = 154$, Table 9-5). Of 28 NSA bears involved in nuisance or depredation activities, half (50%) were attracted to towns with unsecured garbage or other available foods. Garbage was made available to bears most often by the use of open dumpsters lacking bear-resistant lids. Foods associated with homes included hummingbird feeders, pet foods, deer feed, and garbage. Nuisance activities of 7 bears (25%) were associated with Philmont camps and activities of 5 bears (18%) were associated with public campgrounds. Three depredation complaints (11%) arose from depredation of domestic pigs or apiaries.

Table 9-5. Percent of marked black bears >1 year old known or suspected of nuisance or depredation activities on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1992-1999.

Area	Sex	<i>n</i>	Percent suspected of nuisance activity	Percent causing nuisance or depredation complaints by management action			Total percent
				Hazed	Translocated	Killed	
NSA	Females	57	7	2	4	2	14
	Males	101	4	3	8	5	20
SSA	Females	56	0	0	2 ^a	0	2
	Males	98	1	0	0	0	1

^a Both bears were translocated into the study area from outside its boundary

On the SSA, both female bears translocated because of nuisance activity were actually moved onto the study area from outside its boundary. One incident arose at a public campground and the other was associated with a backcountry camp. The single male bear suspected of depredation activity was found shot dead near a cattle carcass. It was unknown if the bear was responsible for the death of the cow.

Post-translocation movements were documented following 11 translocations of 8 bears (Table 9-6). Translocation distances ranged from 26-84 km and overall rate of return was 73%. Return movements took from approximately 1-328 days. Return rate of adult bears was 100%, and each individual appeared to begin return movements immediately following

translocation. Return rate of subadult bears was 57%, and 3 of 4 bears that did not attempt return movements were males.

DISCUSSION

Evidence indicated bears on the SSA, in general, moved over larger areas than bears on the NSA. Mean premast activity radii and primary home range size was larger for females on the SSA. Although no differences in male home range size or activity radii were found between study areas, the higher frequency of missing bears on the SSA suggested they may have moved greater distances than documented. Many have postulated home range size is an indication of habitat quality. The premise is when food is abundant and evenly distributed animals do not need to search far for food. When food is scarce and distribution is patchy, animals need to move more widely in search of food. We do not have detailed information on the distribution of food plants on each study area, but examination of habitat data showed that availability of mast-producing habitats did not differ between study areas. However, relative consumption of premast foods did appear to differ between study areas (see Chapter 5). On the NSA, the premast diet was dominated by grasses. On the SSA, the premast diet was characterized by less consumption of grasses, and greater consumption of mast and woody plants. The more arid conditions of the SSA, coupled with livestock grazing, may limit the availability of grasses to bears, and compel individuals to search more widely for other foods, such as juniper berries.

Table 9-6. Rate of return, by sex-age category, for nuisance bears translocated into or away from the Northern and Southern Study Areas, New Mexico, 1993-2000.

Sex	Age class	<i>n</i>	Percent Returned	Distance Moved	Details
Female	Adult	2	100%	38-47 km	Both bears previously moved as subadults, both returned
	Subadult	4	75%	25-58 km	The bear that did not return moved to another human development
Male	Adult	2	100%	45 km	One individual moved twice
	Subadult	3	0%	65-85 km	All bears appeared to establish home ranges in new area, no further nuisance activity documented

The fall foraging period lasted for over 2 months. On the NSA, bears ranged widely beginning in early August and ending during early to mid October. On the SSA, fall movements were less well-defined, but ranged from mid August

to late October. On both study areas, peaks of male movements appeared to occur earlier than those of females, and initiation of long-range movements was earlier for males on the NSA. Earlier initiation of fall movements to oak stands by male black bears also was observed in Great Smoky Mountain National Park (Garshelis and Pelton 1981).

Increased fall travel distances during years of food shortage have been reported in other bear studies (Garshelis and Pelton 1981, Beck 1991). Most season activity radii of black bears in New Mexico were significantly larger during years of oak failure for most sex-age categories, indicating bears may have had to travel farther in search of food when oak production failed. The increased movements and unfamiliarity of distant areas may make bears more vulnerable to hunting. Higher bear harvest levels have been associated with shortages of natural foods in Massachusetts (McDonald et al. 1994) and Minnesota (Noyce and Garshelis 1997). This has important ramifications for interpreting and predicting fall harvest of bears.

Analyses of habitat use indicated bear movements were strongly associated with closed forest and closed woodland habitat types. Open habitats, including grasslands and open woodlands, appeared to be avoided, particularly by female bears. Use of the open shrubland habitat was relatively low, but was higher than expected given its low occurrence. Oak species are an important component of many montane shrubland communities in New Mexico, and general observations throughout the study period indicated bears sought these habitats during the fall foraging period. Based on ground knowledge of the study areas, we believe shrubland communities were under-represented in the NMGAP landcover map (Thompson et al. 1996) we used for habitat analysis (see Chapter 11). This probably limited our ability to assess actual use of shrubland habitat. Selection for closed canopy habitats, avoidance of open habitats, and use of edges by black bears have been reported in other black bear studies in the West (Lindzey and Meslow 1977, LeCount and Yarchin 1990).

Overlap of bear home ranges with areas of potential human conflict was very different between the 2 study areas. Most bears on the NSA had 1 or several sources of human-related food within their primary home ranges, but few bears on the SSA had access to predictable human-related foods. Given these circumstances, it is easy to explain the substantial depredation mortality observed on the NSA and the lack of such mortality on the SSA (see Chapter 7).

Despite the potential for conflict on the NSA, most bears did not engage in nuisance or depredation activities. At least 35 female study bears had home ranges partly or entirely within Philmont Scout Ranch, however only 3 of these bears created nuisance problems requiring management action. Likewise, at least 37 male study bears used areas of Philmont, but only 2 were involved in nuisance complaints. Throughout the study period, Philmont maintained strict

guidelines for storing foods in established camps and on the trail. These precautions appeared to be effective at minimizing bear-human conflict.

Compared to bears using areas of Philmont, far fewer study bears (9 females and 17 males) had home ranges encompassing towns or campgrounds. However, the majority of documented conflict was associated with these areas. In each of the 3 towns close to the NSA and the Eagle Nest Reintegration Center, garbage disposal was achieved using non bear-resistant dumpsters, often distributed throughout residential areas. These dumpsters were probably the initial attractant drawing bears into human-populated areas. The reward of high-calorie food obtained from dumpsters was probably enough to overcome the natural wariness of bears to humans (Herrero 1989). Human habituation, or loss of innate fear of humans, has been directly associated with use of human-related foods by black and grizzly bears (Hastings et al. 1989, Herrero 1989). In human-populated areas of the NSA, the transition from wariness to human habituation probably fit the circumstances described by Herrero (1989), whereby over time, when use of human-related foods did not result in harm or harassment to the bear, habituation developed. Increased use of other human-related foods, such as hummingbird feeders or pet food, was a predictable outcome of this progression. In the end, bears and humans can be negatively impacted by these events. Mortality of male and female bears was observed on the NSA due to nuisance and depredation problems. In most cases, bears were destroyed because they were considered a threat to human safety. In addition, many incidents of human injury and fatality from black and grizzly bears have been attributed to human habituation (Herrero 1989).

Increases in black bear nuisance problems have been correlated with shortages in natural foods (Rogers 1976, Rogers 1987). The small number of depredation complaints recorded on an annual basis, and the occurrence of only 1 oak failure on the NSA prevented us from drawing any conclusions about the effect of natural food availability on bear problems in New Mexico. However, general observation in the region of the NSA hinted at an association of bear problems with spring and summer periods lacking rainfall. Analyses of bear complaints relative to fall mast production and spring to summer conditions is needed in New Mexico.

Use of translocation as a means of solving nuisance or depredation complaints had variable success. All translocated adult bears returned to their original home range within days or months of their translocation. However, in most cases the time elapsed before their return did allow for immediate resolution of the problem. Some translocations of subadult bears, especially males, were successful in that bears remained in the new area, and did not resume nuisance behavior. This was probably due to behavioral differences between sex-age categories. Subadult male bears may not have attempted return to their previous home range, because of the dispersing behavior characteristic of this age class. On the contrary, adult bears, and even subadult

females displayed a high degree of home range fidelity during our study, indicating they would most likely show homing behavior following translocation. Homing behavior of translocated bears has been widely reported and an inverse relationship between distance moved and probability of return was evident in all studies (Sauer et al. 1969, Beeman and Pelton 1976, McArthur 1981, Rogers 1986). In general, bears translocated more than 65 km from the capture site were less likely to exhibit homing behavior. Despite some success, translocation is not without cost to bears. Survival rates of translocated bears were found to be only 23% in Virginia and the primary cause of death was automobile collisions (Comly-Gericke and Vaughan 1997).

MANAGEMENT IMPLICATIONS

Analyses of bear movement data and distribution among habitat types on the 2 study areas illustrated the importance of distinguishing how male and female bears use the landscape differently. These analyses also indicate the importance of considering the season and condition of food supply when drawing conclusions about the presence of bears in specific locations.

Three of the largest tracts of bear habitat in New Mexico (the San Juan complex, the Sangre de Cristo complex, and the Gila complex) are contiguous with bear habitat in Colorado or Arizona (see Chapter 11). Two small tracts (the Bootheel region and the Guadalupe region) share habitat with Arizona or Texas. Evidence indicates bears commonly cross state boundaries during fall foraging and dispersal. Therefore, bear management in New Mexico is not independent of these other states. Some understanding of the population trend in these other states is vital for estimating the potential impact of immigration and emigration on New Mexico black bear populations.

Analysis indicated a small percentage of individuals within a bear population engage in nuisance and depredation activities. Most documented bear problems were associated with human-related foods, especially garbage. Efforts to reduce accessibility of human-related foods will be instrumental in reducing the likelihood of bear problems on an annual basis. More information is needed on the relationships of natural food availability and bear problems. Increase in nuisance problems have been associated with food shortage in other regions. Therefore, during years of low natural food abundance, problems can be expected to increase above the average level in New Mexico.

There is an apparent differential between subadult and adult bears regarding homing after translocation. This difference suggests that choices about relocating nuisance or depredating bears need to consider age and sex of the animal in addition to other factors surrounding the complaint.

CHAPTER 10

POPULATION DENSITY AND SEX-AGE COMPOSITION

For wildlife managers, 2 of the most desirable facts about a wildlife population are a firm estimate of total number of individuals and a tally by sex and age category. Sound wildlife management can be, and most often is practiced in the absence of these data. Nonetheless, population data are invaluable for monitoring population trend, setting hunt regulations, and providing adequate suitable habitat. Estimates of density and sex-age composition are among the most difficult values to obtain for wild populations, and black bears present some special challenges. Their solitary nature, forest-dwelling habit, and low densities make them difficult to enumerate using survey methods common for other big game species. Most often mark-recapture methods have been used to estimate black bear density (LeCount 1982, Beecham 1983, Miller et al. 1987, Garshelis 1992, Clark and Smith 1994).

At the beginning of this study, reliable information on population size and structure was lacking in New Mexico. The NMDGF had a long-standing populations estimate of 3000 bears statewide; however the means by which this estimate was deduced were not available. Our objective was to determine density and sex-age composition of study populations annually and with all years combined. This information would be valuable in estimating statewide and regional population numbers and for comparison of the sex-age composition of the live population to that of hunter-killed bears.

METHODS

Although the number of captures and recaptures were numerous, our trapping effort was primarily designed to capture an increasing sample of unmarked adult females. For this reason, it did not lend itself to a traditional capture-recapture analysis. We used population reconstruction (Eberhardt and Knight 1996), or backdating, to estimate a minimum population size of bears on each study area. This technique simply counts each individual as part of a study population during years when it was known or presumed to be resident, based on knowledge of its age. To translate this count into a density estimate, the critical element becomes the size of the area occupied by the individuals.

We defined a multi-year "effective sampling area" based on distribution of trap sites (Caughley 1977, Clark and Smith 1994). For each sex, we applied a buffer around each trap site equal to the mean activity radius of adult bears. We used the mean activity radius for the time period before most bears began to make long-range movements to fall mast (1 May – 12 August, see Chapter 9). We also restricted trap sites to those trapped within this period. The buffer areas around each trap were merged into a composite, and this became our effective sampling area. On the NSA, sampling areas used were 297.1 km² for females

and 545.4 km² for males. On the SSA, areas used were 538.6 km² for females and 969.2 km² for males. In essence, size of the area differed by sex, based on observed differences in movement patterns. Because males ranged over larger areas than females, we were able to sample a larger area for males than females using a single trap site.

We constructed a table of bears known alive during each year, by backdating from the last known observation of each study bear. Because no dispersal was observed among females (see Chapter 9), we counted bears as resident during all years if they were captured during the 1 May-12 August season. If they were captured during the mast season, they were counted only if they were known from radio-telemetry monitoring to reside within the effective sampling area. Female offspring of resident females were counted as residents. Due to observed dispersal patterns of males (see Chapter 9), we used different criteria. For males captured as adults, we could not assume they were born on the effective sampling area, therefore we counted them as resident only back to the age of 4 years. For males captured only as subadults and not monitored with radio-telemetry, we counted them as resident only during years when they were captured. For males captured as yearlings, we backdated until birth. Male offspring of resident females were counted as resident only as yearlings or until dispersal was observed through radio-telemetry monitoring.

We determined annual and mean population densities of bears ≥ 1 year old based on these counts. We did not assume we captured all resident bears within the sampling area; therefore these estimates were considered minimum. Because more female bears were monitored with radio-telemetry than male bears, more information on residency and survival was obtained for female bears. Therefore, although we used this method to estimate the sex-age composition of the populations, we recognized it could be biased toward females. Relative proportions of yearlings were also probably underestimated. Because capture probabilities appeared to be lower for this age class, and most bears were captured as adults, bears that did not survive their yearling year would not appear in our analyses.

RESULTS

Estimates of adult and subadult densities remained relatively constant from year to year, on both study areas (Table 10-1). Number of females, particularly adult females, varied little between years. Number of males generally decreased over the years of study; however this decrease may have been due to a reduction in trapping effort rather than an actual change in numbers. Densities of yearlings were more variable. Bear density appeared to be higher on the NSA than the SSA. Mean estimates of adult bears were 45% lower for females on the SSA and 29% lower for males.

Relative proportions of sex-age categories varied annually, with most of the changes observed in the yearling age class. Proportions of subadult males also varied, with peaks observed during 1993-95 on the NSA and 1994-95 on the SSA.

Table 10-1. Density (bears/100 km²) of adult (≥5 years old), subadult (2-4 years old), and yearling (1 year old) black bears sampled on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-1999^a.

Area	Sex	Age class	Year							All years	
			1993	1994	1995	1996	1997	1998	1999		
NSA	Female	Adult	4.7	5.0	5.0	5.4	6.7	7.7	7.4	6.0	
		Subadult	3.4	4.0	4.7	3.7	3.4	2.7	2.4	3.5	
		Yearling	2.0	1.7	0.7	2.0	0.7	2.4	1.7	1.6	
		Total	10.1	10.8	10.4	11.1	10.8	12.8	11.4	11.1	
	Male	Adult	3.3	3.1	3.3	3.9	3.3	2.6	2.2	3.1	
		Subadult	2.9	4.6	2.8	1.1	1.3	1.5	0.9	2.1	
		Yearling	0.4	0.4	0.0	1.1	0.7	0.9	1.3	0.7	
		Total	6.6	8.1	6.1	6.1	5.3	5.0	4.4	5.9	
	Grand Total		16.7	18.8	16.5	17.2	16.1	17.7	15.8	17.0	
	SSA	Female	Adult	2.6	2.8	2.8	3.5	3.2	3.9	4.1	3.3
			Subadult	2.0	2.2	3.2	2.2	1.9	1.1	1.1	2.0
			Yearling	0.4	1.9	0.6	0.2	1.1	0.7	1.1	0.8
			Total	5.0	6.9	6.5	5.9	6.1	5.8	6.3	6.1
Male		Adult	2.7	2.6	2.4	3.1	2.0	2.0	0.7	2.2	
		Subadult	0.3	1.7	1.9	0.7	0.4	0.4	0.4	0.8	
		Yearling	0.1	0.3	0.0	0.0	0.9	0.4	0.7	0.4	
		Total	3.1	4.5	4.2	3.8	3.3	2.8	1.9	3.4	
Grand Total		8.1	11.4	10.7	9.8	9.4	8.5	8.2	9.4		

^aEstimates were derived using population reconstruction within an effective sampling area based on distribution of traps.

Population sex-age composition was very similar for the 2 study areas (Table 10-2). Adult females constituted approximately 35% and adult males accounted for 18-23% of study populations. Relative proportions of yearlings varied annually.

DISCUSSION

Although this method had limitations, we believe the estimates derived were relatively accurate, particularly for adult and subadult bears. The raw numbers of individuals counted within the sampling areas were similar for the 2 study areas, as expected considering the nearly equal trapping success (see Chapter 4). The primary factors contributing to differences in density estimates

were observed difference between study areas in activity radius and the differences between study areas in total area sampled. The smaller activity radii observed on the NSA, coupled with the more restricted study area boundary, resulted in smaller effective sampling areas, thus higher densities. The activity radius values used to generate the effective sampling error appeared to be fairly accurate, based on comparisons with the composite primary MCP home ranges (see Chapter 9) for the individuals counted as residents (Figures 10-1 and 10-2). For females, the composite home range areas were only 5-6% larger than the effective sampling area, and most individual home ranges were well within its boundary. For males, the composite home range area was 28-59% larger, but most individual home ranges were still contained within the sampling area. A high degree of home range overlap was observed between individuals, especially males. Therefore, the composite home range areas would likely contain more unsampled individuals, especially on the outer edges, well away from trap sites.

Table 10-2. Estimated proportions of adults (≥ 5 years old), subadults (2-4 years old), and yearlings (1 year old) within black bear populations sampled on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico, 1993-1999^a.

Area	Sex	Age class	Year							All Years
			1993	1994	1995	1996	1997	1998	1999	
NSA	Female	Adult	0.28	0.27	0.31	0.31	0.42	0.44	0.47	0.35
		Subadult	0.20	0.21	0.29	0.22	0.21	0.15	0.15	0.20
		Yearling	0.12	0.09	0.04	0.12	0.04	0.13	0.11	0.09
		Total	0.60	0.57	0.63	0.65	0.67	0.72	0.72	0.65
	Male	Adult	0.20	0.17	0.20	0.22	0.21	0.14	0.14	0.18
		Subadult	0.18	0.24	0.17	0.06	0.08	0.08	0.06	0.13
		Yearling	0.02	0.02	0.00	0.06	0.05	0.05	0.08	0.04
		Total	0.40	0.43	0.37	0.35	0.33	0.28	0.28	0.35
	SSA	Female	Adult	0.32	0.24	0.26	0.36	0.33	0.46	0.35
		Subadult	0.25	0.20	0.29	0.23	0.20	0.13	0.14	0.21
		Yearling	0.05	0.16	0.05	0.02	0.12	0.09	0.14	0.09
		Total	0.62	0.60	0.61	0.61	0.65	0.67	0.77	0.64
	Male	Adult	0.33	0.23	0.22	0.32	0.21	0.23	0.09	0.23
		Subadult	0.04	0.14	0.17	0.07	0.04	0.05	0.05	0.09
		Yearling	0.01	0.03	0.00	0.00	0.10	0.05	0.09	0.04
		Total	0.38	0.40	0.39	0.39	0.35	0.33	0.23	0.36

^aEstimates were derived using population reconstruction within an effective sampling area based on distribution of traps.

Although density estimates were quite different by study area, estimates of sex-age composition were remarkably similar. Given similar survival rates observed on the 2 study areas (see Chapter 7), our estimates of density and composition appear relatively accurate. However, densities observed on the NSA may have been higher than in similar habitat where hunting was not restricted. Our data are not sufficient to rigorously assess that question.



Figure 10-1. Size of the effective sampling area used for estimating black bear density, relative to primary minimum convex polygon home ranges of resident bears on the Northern Study Area, New Mexico, 1992-2000.

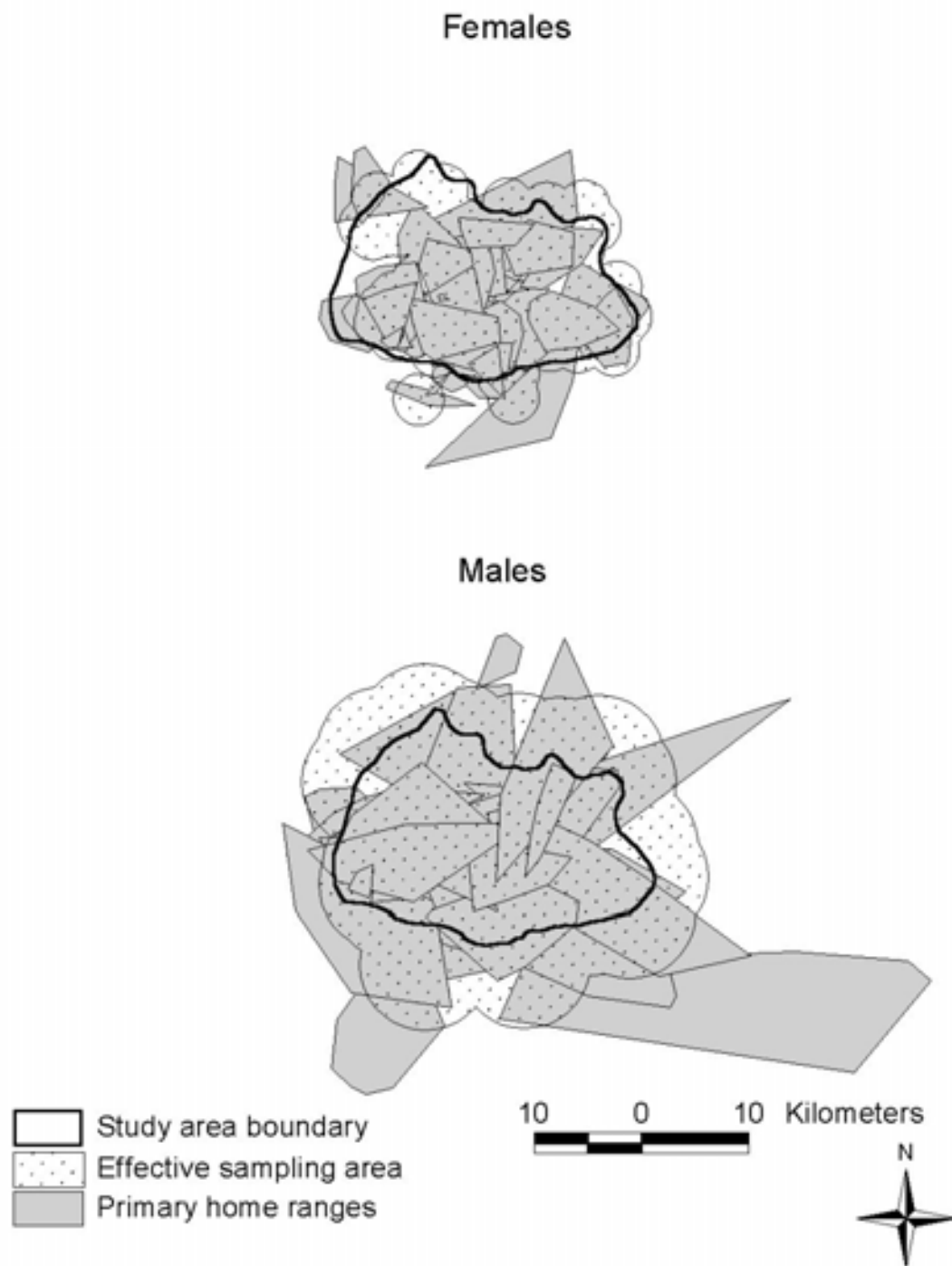


Figure 10-2. Size of the effective sampling area used for estimating black bear density, relative to primary minimum convex polygon home ranges of resident bears on the Southern Study Area, New Mexico, 1992-2000.

Densities and proportions of yearlings were quite variable among years. For each study area, the years of lowest yearling density (1995 on the NSA, 1996 on the SSA) corresponded to years following oak failure (see Chapter 6). On both study areas, the densities and proportions of yearlings were lower for males than for females. We suspect this was a product of the sampling and estimation method, and did not accurately reflect true values. In any given year, most yearlings counted within the sampling area were offspring of resident females, not trapped bears. Because the male sampling area was larger than the female's, there were likely unsampled females within it. Because we could not count their offspring, the resulting density estimates for male yearlings were lower than those of females. The density estimates for females in these age classes were probably more accurate.

Black bear density has been estimated in many regions of North America, primarily using mark-recapture or mark-resight methods. The variability of these estimates is tremendous, with densities as low as 1.8 bears/100 km² in the Snowy Mountains of southeast Wyoming (Grogan and Lindzey 1999) to 149 bears/km² on a coastal island in Washington (Lindzey and Meslow 1977). Within the Southwest, density estimates have ranged from 12-16 bears/100 km² in west-central Colorado (Beck 1991) to 71 bears/100 km² in north-central Arizona (LeCount 1987). Our density estimates appeared reasonable in the context of these other studies.

MANAGEMENT IMPLICATIONS

The density estimates obtained for the study areas can be used in conjunction with habitat data (see Chapter 11) to estimate statewide and regional population sizes. However, these estimates must be used with caution. Arguably, our study was conducted within some of the most productive bear habitat in New Mexico, particularly the NSA. Direct extrapolation of these density values to all areas of bear habitat would not be realistic.

The sex-age composition estimated for the study areas also can be compared to the structure of hunter kill data and simulated population structures generated using the bear population model (see Chapter 14). These analyses may aid in current and future interpretation of bear population trend, as reflected in the harvest data.

CHAPTER 11

A MODEL OF STATEWIDE HABITAT SUITABILITY AND POPULATION SIZE

Understanding the population status and trend of large carnivores, such as bears, over large landscapes is constrained by limited availability of detailed empirical data and few approaches to analysis and display of spatial information (Merrill et al. 1999). Habitat analysis using GIS technologies has proven useful for management of wildlife in general (Scott et al. 1993, Horino and Miura 2000) and black bears in particular (Clark et al. 1993, van Manen and Pelton 1997). These approaches can be useful to forecast future impacts of human population growth or habitat alteration. Van Manen et al. (1997) considered forecasting capabilities fundamental to the management process.

In this chapter, we describe the New Mexico landscape from the perspective of bear habitat suitability. Specifically, we make spatial predictions as to potential availability of mast species and the potential for human interaction. Our objectives were to: (1) predict suitable black bear habitat in New Mexico, (2) derive associated statewide and regional population estimates, and (3) analyze potential human influences on bear habitat. These objectives involved GIS analyses of bear habitat associations based on habitat use and movements observed on the 2 study areas. These associations were applied to a land cover map of New Mexico and other spatial criteria to depict predicted suitable bear habitat. Factors (roads, human population density, hunter kills) known to affect bear populations were overlaid with suitable habitat to develop spatially explicit perspectives on potential hunting mortality and bear-human conflict.

Information gathered from these exercises should help managers better understand the status of black bears across the state and serve as the basis for black bear management. The bear habitat model is a tool that identifies where bears have the potential to occur, the spatial boundaries of distinct populations, the degree of isolation between populations, and whether landscape characteristics differ among populations. These perspectives can aid in forecasting bear management needs and challenges.

METHODS

Habitat Model Development

A spatial model predicting the extent of suitable black bear habitat was developed using a rule-based system with GIS technologies, based on the New Mexico Gap Analysis (NMGAP) land cover map (Thompson et al. 1996) and biological information derived from field studies during 1992-2000. The habitat model was developed using ESRI Arc/View script language. The NMGAP land cover map includes 42 cover classes, described by dominant vegetation and canopy cover. Each of these cover classes was assigned to 1 of 4 categories of

relative suitability for bears based on habitat use observed on the 2 study areas (see Chapter 9) and cover type descriptions. Suitability was rated as primary, secondary, edge use, and no use (Table 11-1). Cover classes rated as primary included all closed-canopy forest and woodland types, because more than 80% of bear locations were found within these types. Cover classes rated as secondary included shrubland types used more than expected, but accounting for <10% of total use. Cover classes rated as edge use included open woodland and grassland types used less than expected. Analyses indicated these types were used by bears, but usually in close proximity to more suitable habitats. Cover classes associated with humans, such as agriculture or urban, were rated as no use. Desert cover types also were classified as no use.

Each land cover class also was assigned to 1 of 3 categories of relative mast production potential, based on cover type descriptions (Thompson et al. 1996) and occurrence of oak, juniper, or pinyon species within cover classes. Categories were high, poor, and no mast production potential.

The habitat model first selected all land cover classes classified as primary. Secondary types were then selected only if they were adjacent to a primary type. Edge use types were then selected if they were adjacent to a primary type, and only that portion within a 500 m buffer from the primary type was included in predicted habitat.

When these areas were identified, we used GIS analyses in the model determine the area of each contiguous tract of suitable habitat (regardless of its habitat suitability score). Tracts >300 km² were selected as suitable habitat. This size represented the approximate area supporting 50 individual bears based on density data from the NSA (see Chapter 10), and we deemed this a “minimum sustainable population”. Also, tracts >20 km² (large enough to support 1-2 bears based on home range data) were selected only if they were within 15 km of a habitat tract large enough for a minimum sustainable population.. All other tracts were considered too small or too isolated to be included in the final model.

The model was designed to allow users to vary the habitat scores for each land cover class, minimum tract size for a sustainable population, minimum tract size for a single individual, and maximum distance that an individual must be from viable population before it is considered too isolated from the population. Predictions of bear habitat reported here were based on values described above.

The model was designed to generate 2 maps of black bear habitat. The first was the detailed map described above. The second was a generalized distribution map that identified major regions of bear habitat. To develop this map, internal, unselected polygons were absorbed and the boundaries were simplified by expansion and shrinking of the boundary. This eliminated much of the reticulation and complexity of the polygon boundary. We found that doing this process twice resulted in a better generalization.

Table 11-1. Habitat suitability and mast potential assignments used in the statewide black bear habitat model for New Mexico; land cover classes are from Thompson et al. (1996).

NMGAP Code	Description	Suitability	Mast potential
1111	Rocky Mountain Alpine Graminoid Tundra	EdgeUse	None
1112	Rocky Mountain Alpine Forb Tundra	EdgeUse	None
2111	Subalpine Conifer Forest	Primary	None
2112	Subalpine Broadleaf Forest	Primary	None
2121	Rocky Mountain Upper Montane Conifer	Primary	Poor production
2122	Rocky Mountain Lower Montane Conifer	Primary	High production
2211	Madrean Lower Montane Conifer Forest	Secondary	High production
3111	Upper Montane Open Conifer Woodland	EdgeUse	None
3121	Rocky Mnt/Great Basin Closed Conifer	Primary	High production
3122	Rocky Mnt/Great Basin Open Conifer	EdgeUse	None
3211	Madrean Closed Conifer Woodland	Primary	High production
3222	Madrean Open Oak Woodland (Encinal)	Secondary	High production
4110	Rocky Mountain Montane Scrub & Interior	Secondary	High production
4111	Rocky Mountain Montane Deciduous Scrub	Secondary	High production
4121	Broadleaf Evergreen Interior Chaparral	Secondary	High production
4131	Plains-Mesa Broadleaf Sand-Scrub	None	High production
4211	Great Basin Microphyllous Desert Scrub	None	None
4212	Great Basin Broadleaf Deciduous Desert	None	None
4220	Chihuahuan Desert Scrub	None	None
4221	Chihuahuan Broadleaf Evergreen Desert	None	None
4222	Chihuahuan Broadleaf Deciduous Desert	None	None
5110	Rocky Mountain Subalpine and Montane	EdgeUse	None
5121	Short Grass Steppe	EdgeUse	None
5122	Mid-Grass Prairie	EdgeUse	None
5123	Tall Grass Prairie	None	None
5211	Great Basin Foothill-Piedmont Grassland	EdgeUse	None
5212	Great Basin Lowland/Swale Grassland	None	None
5220	Chihuahuan Desert Grassland	EdgeUse	None
5221	Chihuahuan Foothill-Piedmont Desert	EdgeUse	None
5222	Chihuahuan Lowland/Swale Desert	None	None
6110	Rocky Mountain Montane Forested/Shrub	Secondary	None
6120	Southwest & Plains Forested/Shrub Wetland	Secondary	None
6131	Arroyo Riparian Scrub	None	None
6210	Persistent Emergent Wetlands	Secondary	None
6211	Graminoid Wetlands	EdgeUse	None
9110	Dryland Agriculture	None	None
9120	Irrigated Agriculture	None	None
9210	Barren	None	None
9220	Mine/Quarries	None	None
9230	Rock Outcrop	None	None
9310	Urban	None	None
9320	Urban Vegetated	None	None
9410	Riverine/Lacustrine	None	None
9420	Basin/Playa	None	None

Estimates of statewide and regional black bear population size were derived by extrapolating mean density estimates from the 2 study areas (see Chapter 9) to areas of primary habitat. Density estimates from the NSA were used to estimate population size on the San Juan and Sangre de Cristo complexes. Density estimates from the SSA were used for all other regions.

GIS data and related metadata (Appendix B) and the habitat model (Appendix C) are included on a CD associated with this report. The habitat model is written in ESRI Arc/View script language and this package, with Spatial Analyst is needed for its use. The script language used for the New Mexico bear habitat model is contained in a file on the CDs associated with this report.

Hunter-Kill Locations

We used locations (UTM coordinates reported to the nearest 1000 m) recorded for hunter-killed bears obtained from the NMDGF harvest data (see Chapter 13) to compile a point file of bear kill locations. Accuracy of data was verified by comparing the recorded GMU with the recorded location, and obvious mistakes were corrected. Records for which the numeric portion of the GMU did not match with valid coordinates were discarded from analyses.

A total of 3,047 records of hunter-killed bears were available for the years 1990-1999, but 420 records (14%) were discarded due to a lack of UTM coordinates or UTM coordinates inconsistent with the GMU recorded. Examination of relative numbers of discarded records by year and GMU did not indicate any bias in the remaining sample of 2,627 records.

Human Interface

We created a coverage depicting total road length within the mean activity radius for female and male bears during the fall season (1 September-den entry, see Chapter 9). Mean activity radii were calculated for bears on both study areas, and a radius of 7.0 km was used for females and 12.0 km was used for males. A coverage depicting New Mexico roads was obtained from the U.S. Census Bureau (<http://www.uscensus.gov>). Road length was tabulated for each region. Analysis of total length of secondary roads within female (7 km) and male (12 km) fall activity radii was designed to estimate the potential length of road a bear might encounter during months of fall hunting. These data were derived by calculating the length of roads within 7-km or 12-km radii of points distributed at 1-km intervals across all of New Mexico.

A coverage of U.S. census blocks was used to evaluate distribution of bear habitat relative to human populations. Population blocks with human residential density >1 person/ha and >5 households were identified. Buffers created around these population centers represented areas within 5-20 20 km.

Conceptually, we viewed human activity relative to potential effect on the bear population. Bear hunters pose the greatest relative direct effect on a bear population, therefore we tried to obtain available information on distribution and magnitude of bear hunting activity statewide. Secondly, human activity on the landscape can cause significant indirect and direct influence on bear distribution and mortality (e.g., interaction with or avoidance of recreationists, bear mortality to depredation complaints or vehicle collision). In addition to bear mortality, interactions with humans can be highly visible events. We sought spatial data that would identify the degree of human use (not including recreationists) on the landscape. Recreationists were considered a separate group. Their interactions with bears are varied but generally present seasonal and dispersed effects. Residential and recreational uses were conceptually separated not only because of their effect on the bear population but to the social aspects of management. A nuisance bear is different to a resident versus a recreationist regarding the type of mitigation possible.

With this conceptual framework we searched for data to develop indices of human use of the landscape. We directed our search toward data that were statewide in scope. NMDGF harvest survey data were obtained, compiled, and linked to GMU coverages to depict relative hunter occurrence on the landscape. Similarly, angler survey data obtained from NMDGF were linked to a coverage of New Mexico fishing waters. We anticipated that these data will represent areas of possible hunter/angler-bear interaction. We also made attempted to obtain United States Forest Service (USFS) Lands spatial data as they contain a significant portion of bear habitat in New Mexico. We looked for spatially explicit measures of use and locations of facilities. We acquired recreation data from the USFS including limited recreation user days data and point locations of recreation facilities. In addition, we acquired recreation user days data from the New Mexico State Parks and the National Park Service.

RESULTS

Predicted Suitable Habitat

The habitat model prediction depicted prospective distribution of suitable black bear habitat (Figure 11-1) across approximately 58,939 km² (5.9 million hectares or 14.6 million acres). Simplification of the boundaries identified 10 distinct regions of predicted black bear habitat: 4 large regions including the San Juan complex, the Sangre de Cristo complex, the Gila complex, and the Sacramento region; 3 smaller, relatively isolated tracts including the Zuni region, Mt. Taylor region, and Sandia/Manzano region; and 3 small regions connected to larger range outside New Mexico, including the Chuska region, Bootheel region, and the Guadalupe region. The simplification process did not distinguish the San Juan complex and the Sangre de Cristo complex. We artificially separated these complexes, with the boundary defined as the Rio Grande. All applicable summaries reported here use this stratification of the state.

Predicted Suitable Habitat for Black Bears in New Mexico

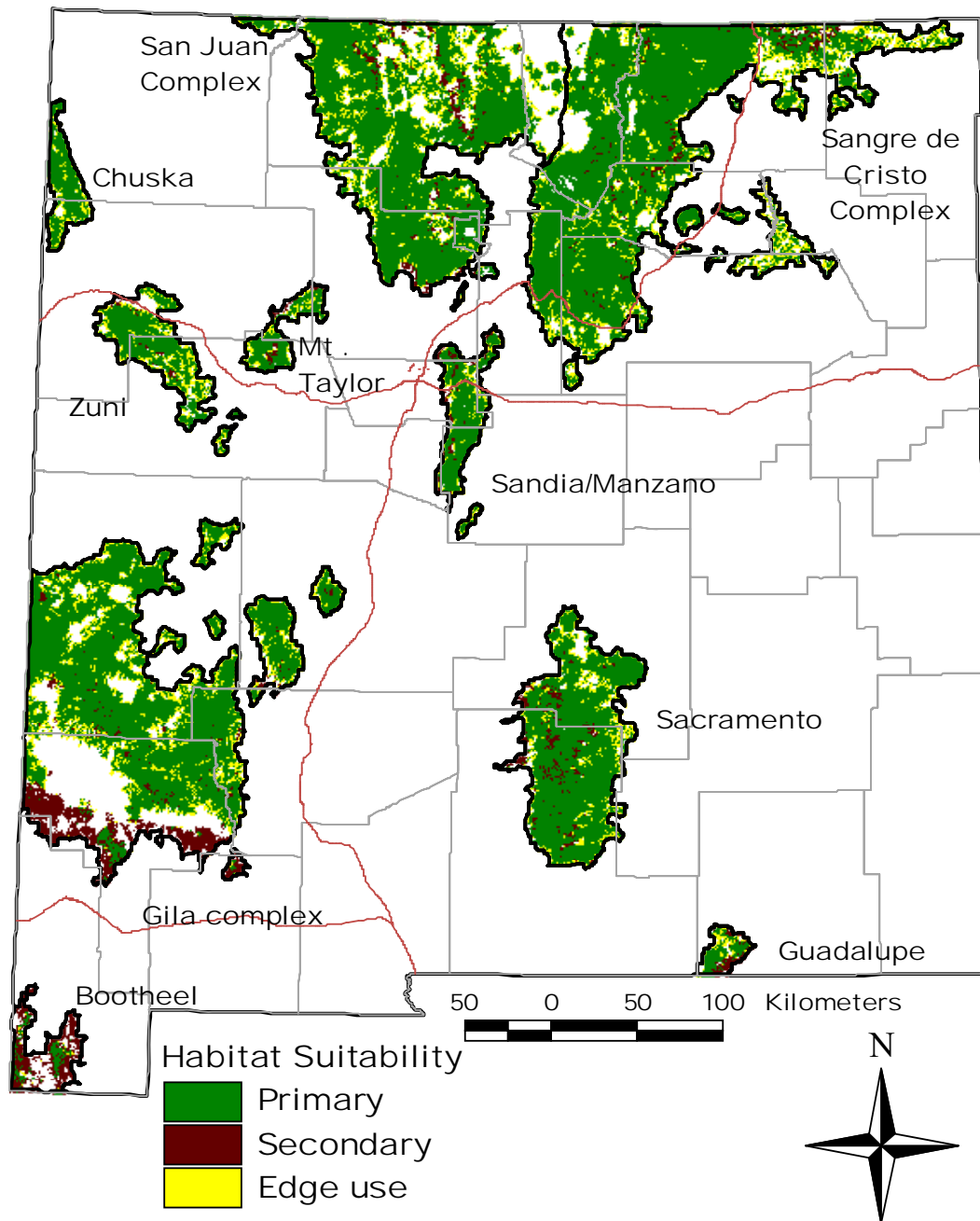


Figure 11-1. Map of predicted suitable habitat for black bear in New Mexico.

Of the 5.9 million ha of suitable habitat, 75% was comprised of primary cover types, 7% was comprised of secondary cover types, and 18% was comprised of edge use cover types (Table 11-2). Relative proportions of these types varied among regions. Most notably, the Bootheel region was comprised of relatively little primary habitat. Among the 4 large regions, the Gila complex had less primary habitat and more secondary habitat (Table 11-2).

Mast potential within suitable bear habitat showed some variability among regions (Figure 11-2). Areas of poor mast production potential were associated with higher elevations, especially in the San Juan complex, the Sangre de Cristo complex, the Gila complex, and the Sacramento region. When primary habitat was overlaid with mast production potential, only 280 km² was found to be >7.0 km from areas of high mast production potential. This distance corresponds to the observed mast season activity radius of female bears. That limited area with no mast production potential was located within the highest elevations of the Pecos Wilderness in the Sangre de Cristo complex.

Land ownership differed among the regions (Table 11-2). Nearly half of the predicted suitable bear habitat was managed by the USFS (Figure 11-3). Private landowners were the second most predominant stewards bear habitat, with about one third of all lands under private ownership. Tribal lands comprised about 10% of bear habitat, but it was concentrated in 3 regions. All of the Chuska range was situated within the Navajo Reservation, and large portions of the San Juan complex and the Sacramento region were found within the Jicarilla Apache and Mescalero Reservations, respectively. State lands and Bureau of Land Management properties constitute a relatively small portion of New Mexico bear habitat (Figure 11-3).

Human Interface

Locations of hunter-killed bears overlaid with the predicted habitat indicated strong corroboration of the habitat model predictions of habitat distribution (Figure 11-4). Significant tracts with no recorded bear kills were tribal lands and the Guadalupe and Bootheel regions. The Sandia range found within the north part of the Sandia/Manzano region also lacked records of bear kills. Overall, 95% ($n = 2,488$) of the bear kills occurred within the regional boundaries of predicted bear habitat. Of the 5% occurring outside boundaries, most were located north of the Gila complex. Bear kills are expected outside of predicted habitat because of occurrence of transient bears and slight errors in the predictive model.

Total road length within a female activity radius was highly variable statewide (Figure 11-5), but relatively uniform for a male activity radius (Figure 11-6). Approximately 40% of the bear habitat had >120 km of road within a

female activity radius, while greater than 80% of the habitat had >120 km of road within a male activity radius.

Table 11-2. Summary of habitat model predictions and bear population estimates statewide and by region in New Mexico (see text and Figure 11-1 for description of regions).

	Statewide	Sangre de Cristo complex	San Juan complex	Gila complex	Sacramento region	Zuni region	Mt Taylor region	Sandia / Manzano region	Bootheel region	Chuska region	Guadalupe region
Predicted habitat (km²)											
Total range	70,680	19,350	16,006	19,594	7,123	2,584	988	1,969	1,363	1,139	564
Suitable habitat	58,939	16,960	12,495	15,472	6,642	2,242	887	1,788	895	1,060	499
Type of suitable habitat (%)											
Primary	75.10	79.74	77.70	71.25	80.21	68.86	64.85	72.66	21.29	75.79	53.31
Secondary	6.95	2.08	4.02	11.26	5.90	2.84	9.15	8.19	74.96		28.83
Edge use	17.96	18.18	18.28	17.49	13.89	28.29	26.00	19.15	3.75	24.21	17.86
Most potential of suitable habitat (%)											
None	21.93	26.34	24.33	18.47	14.35	28.29	26.61	19.88	3.75	24.74	17.86
Poor	11.84	19.47	10.19	8.16	13.47	0.25	2.42	8.83		5.81	
High	66.23	54.19	65.48	73.37	72.19	71.46	70.97	71.29	96.25	69.45	82.14
Stewardship of suitable habitat (%)											
USFS ^a	49.89	27.32	49.19	82.86	45.05	50.72	50.60	40.77	23.22		58.49
Private	31.60	62.88	22.57	10.15	22.03	19.23	35.84	47.03	55.22		5.19
Tribal	10.61	2.14	20.30		27.01	15.97	1.57	7.35		100.00	
BLM ^b	3.79	1.98	5.38	4.22	2.67	4.14	11.79	0.86	15.25		9.12
State	3.18	5.55	1.04	2.75	2.93	1.55	0.20	3.89	6.31		3.58
NPS ^c	0.61	0.03	0.76	0.01		6.31					23.62
DOE ^d	0.15		0.72								
DOD ^e	0.12				0.31	2.09		0.10			
USFWS ^f	0.03	0.10									
BOR ^g	0.01	0.00	0.06								
Population estimate (bears ≥1 year old)											
Total bears	5947	2299	1651	1047	506	147	55	123	18	76	25

^aU.S. Forest Service

^bBureau of Land Management

^cNational Park Service

^dDepartment of Energy

^eDepartment of Defense

^fU. S. Fish and Wildlife Service

^gBureau of Reclamation

Predicted Mast Production Potential in Black Bear Habitat

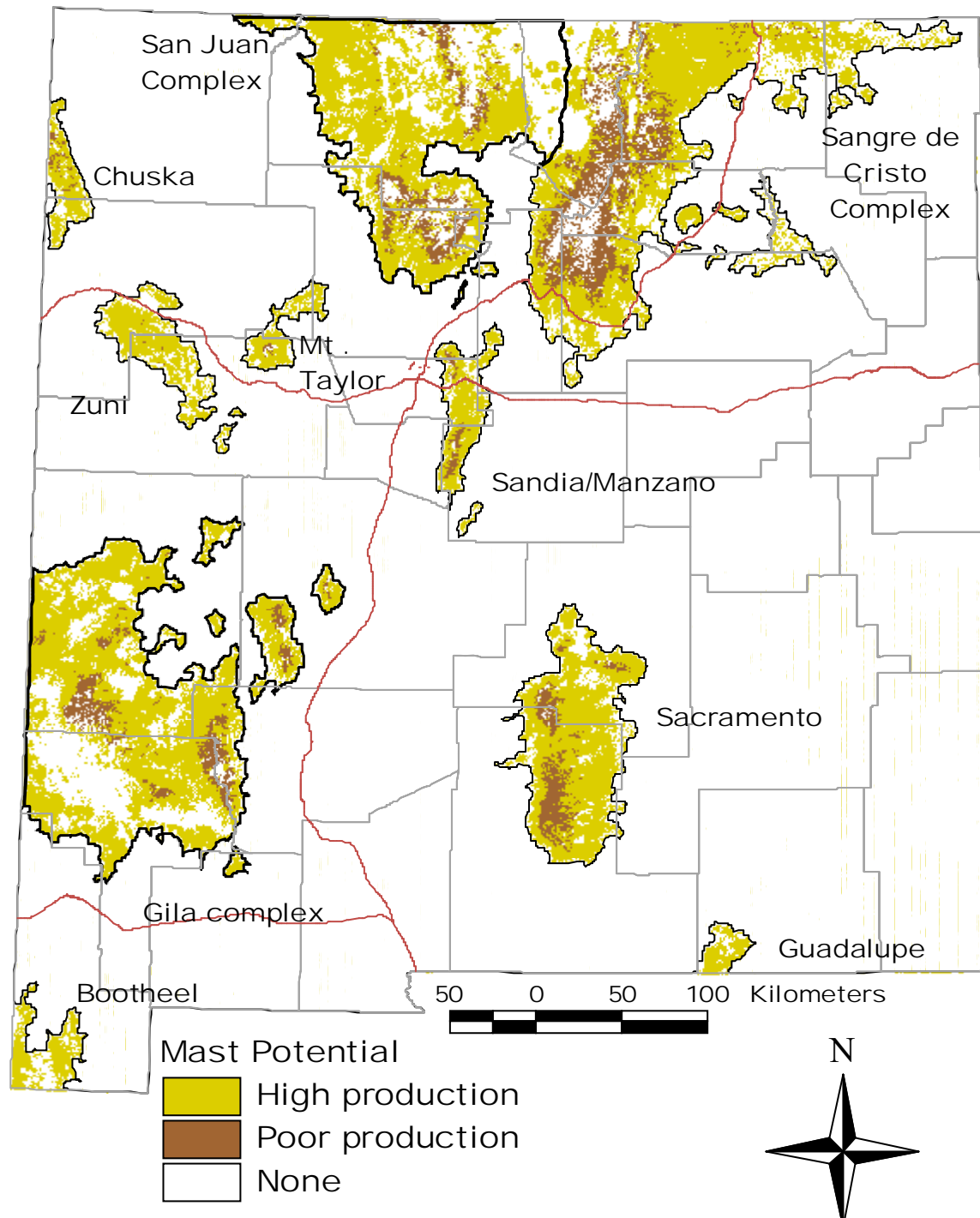


Figure 11-2. Distribution of mast production within predicted black bear suitable habitat.

Land Stewardship

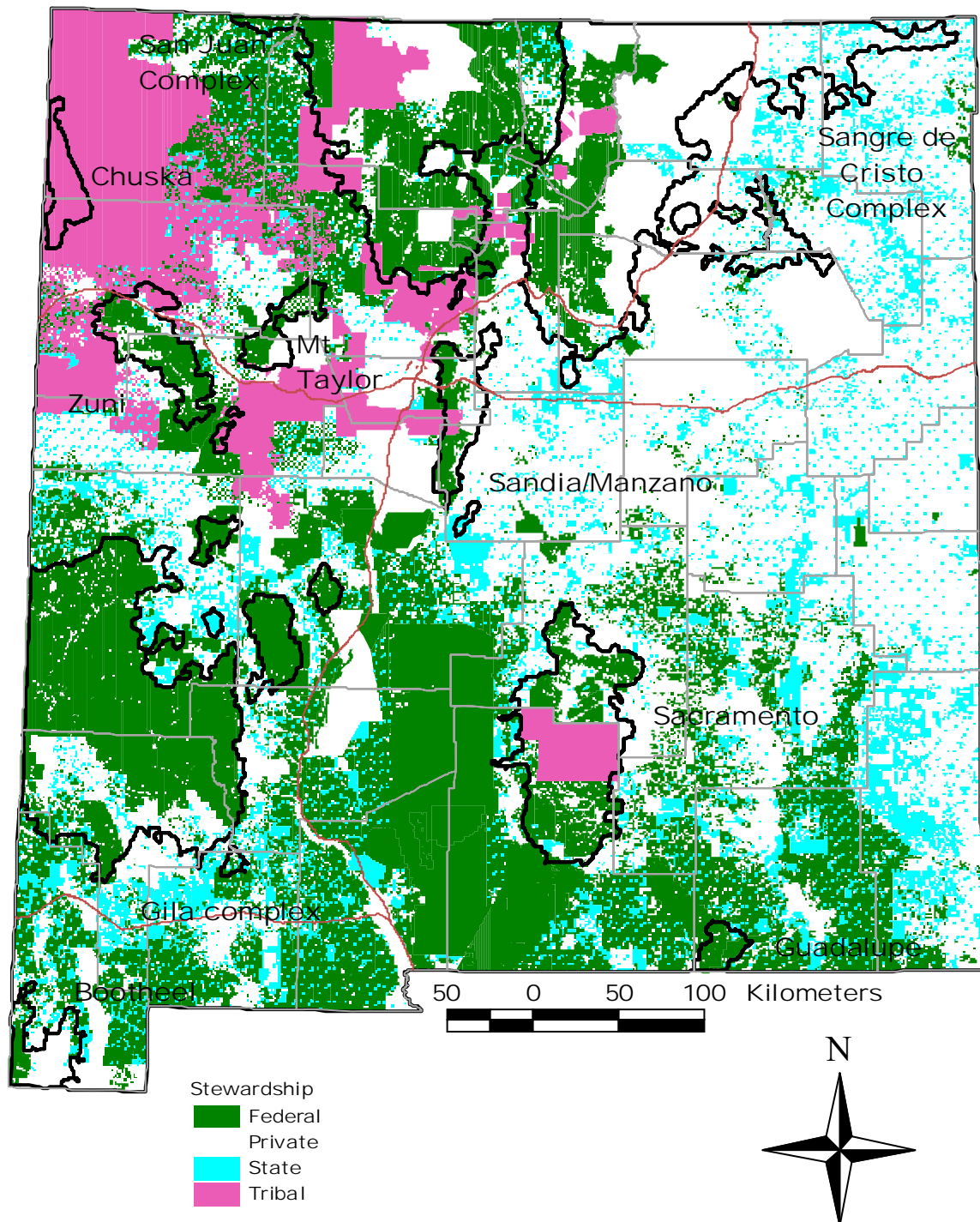


Figure 11-3. Federal, state, tribal, and private land stewardship (ownership) relative to predicted suitable black bear habitat in New Mexico.

Location of Bear Kills by Hunters 1990-1999

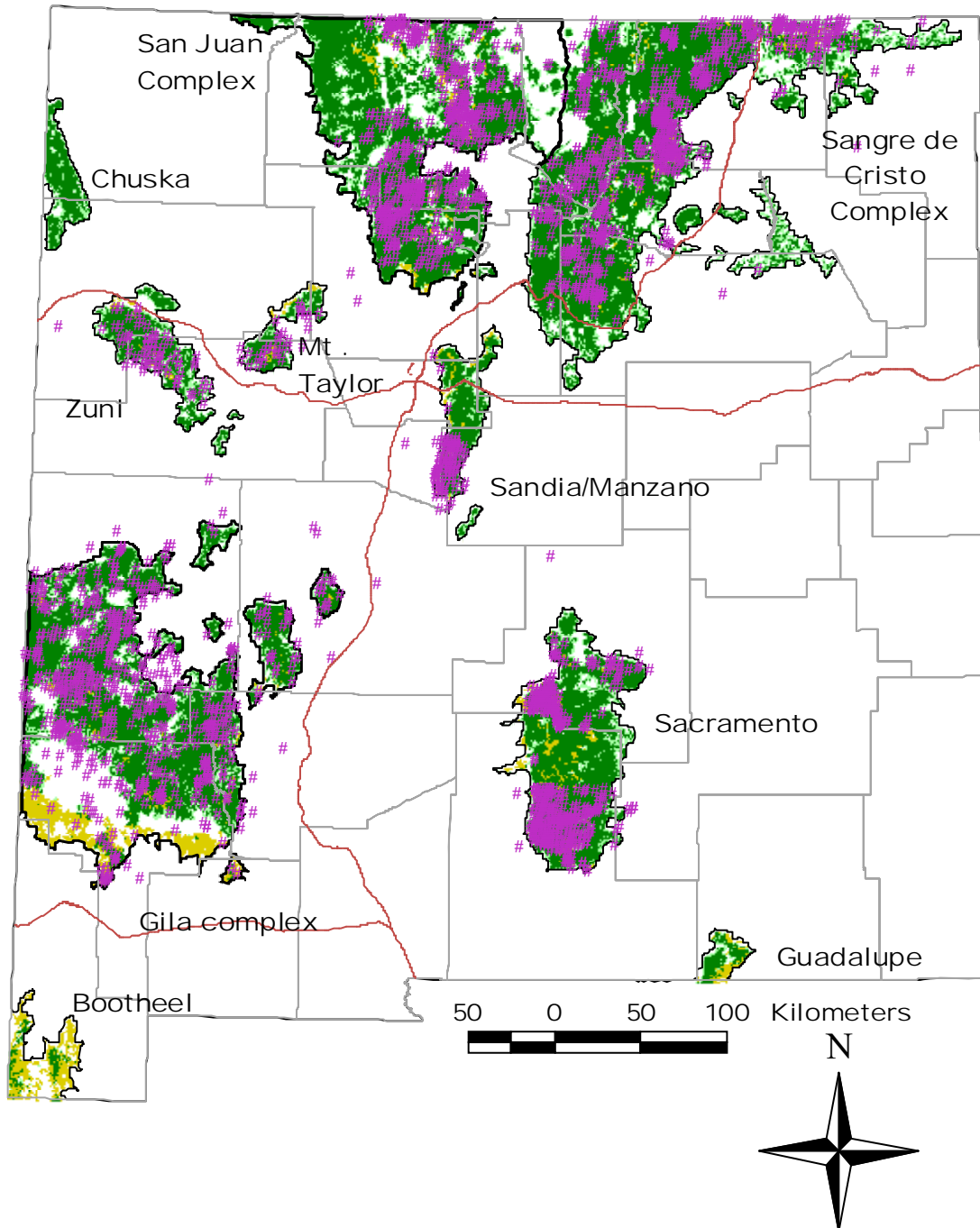


Figure 11-4. Distribution of reported bear kills by hunters from 1990 to 1999.

Relative Extent of Roads within Female Black Bear Fall Activity Radius

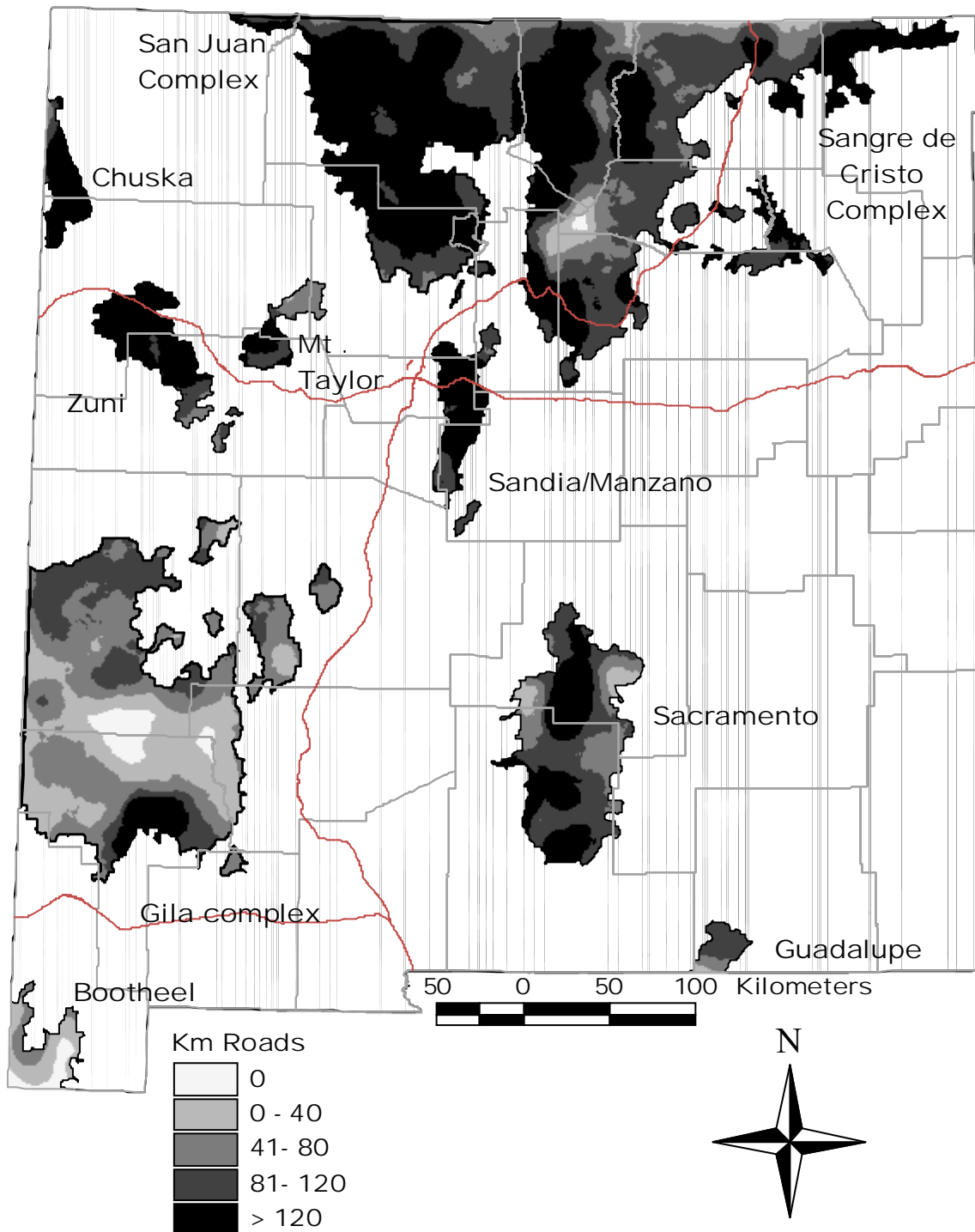


Figure 11-5. Extent of secondary roads within a female black bear fall activity radius (7 Km) in New Mexico.

Relative Extent of Roads within Male Black Bear Fall Activity Radius

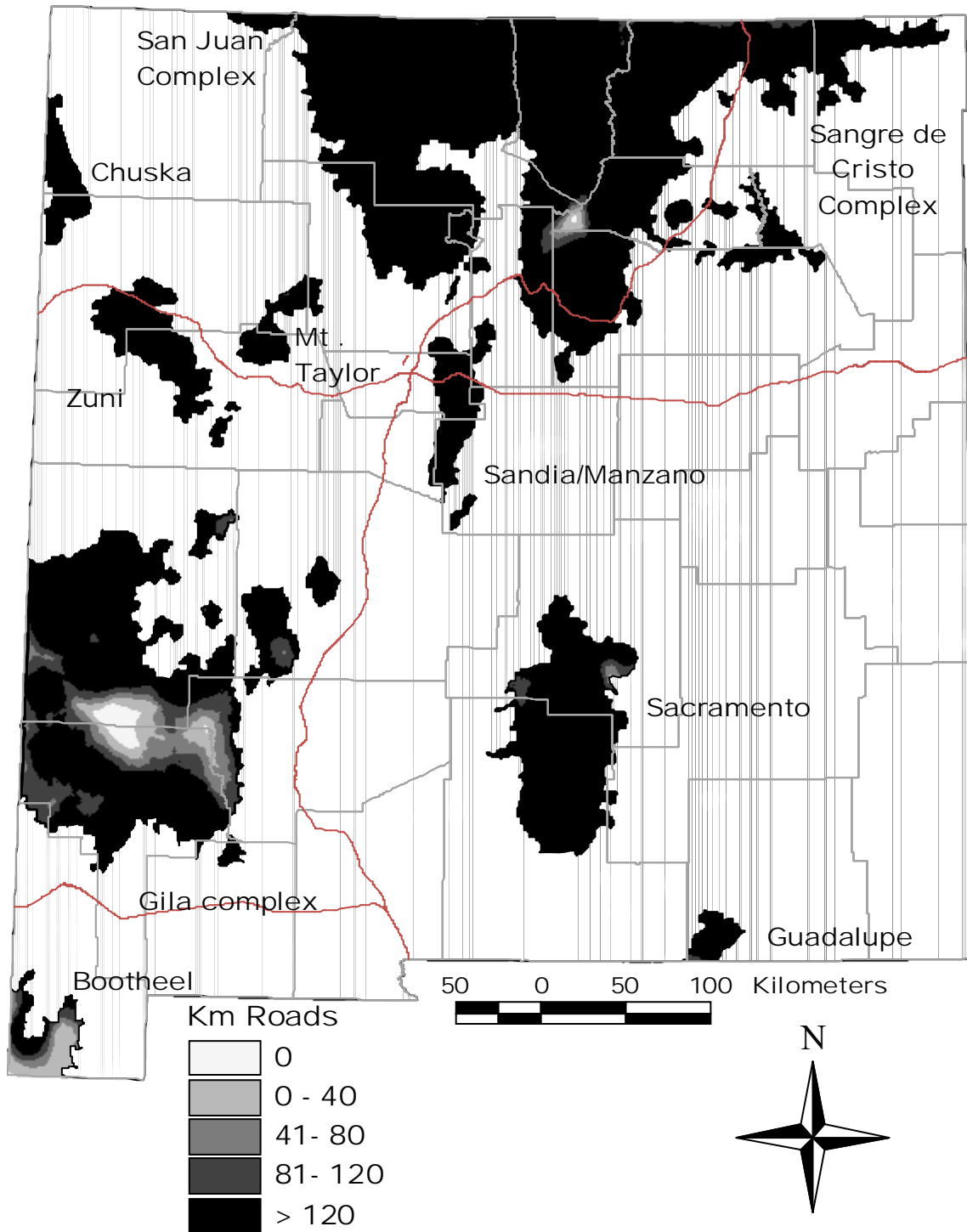


Figure 11-6. Extent of secondary roads within a male black bear fall activity radius (12 km) in New Mexico.

All predicted regions of bear habitat displayed areas that were in proximity to human populations (Figure 11-7). Statewide, 17% of bear habitat was within 5 km of human populated areas. Percent of bear habitat within proximity to human populations differed regionally, with the highest proportions observed in the Sandia/Manzano region, the Sacramento region, and the Sangre de Cristo complex (Table 11-3). Within the Guadalupe region and the Bootheel region, more than 60% of bear habitat was >20 km from human populated areas.

Table 11-3. Percent of predicted suitable black bear habitat within 0 to 20 km of human-populated areas (> 1 person/ha and > 5 households) in New Mexico, based on 2000 U.S. Census Bureau block data and sorted by area of bear habitat.

Region	Area (km ²)	< 5 km	< 10 km	< 15 km	< 20 km	>20 km
Sangre de Cristo	16,960	23.16%	48.77%	66.66%	80.15%	19.85%
Gila	15,472	6.49%	19.69%	36.47%	53.98%	46.02%
San Juan	12,495	14.96%	38.71%	60.96%	75.35%	24.65%
Sacramento	6,642	28.15%	57.50%	74.82%	87.77%	12.23%
Zuni	2,242	17.73%	45.29%	69.15%	86.19%	13.81%
Sandia/Manzano	1,788	50.76%	79.79%	95.63%	98.68%	1.32%
Chuska	1,060	10.30%	43.39%	79.03%	94.64%	5.36%
Bootheel	895	0.89%	4.89%	9.63%	14.18%	85.82%
Mt Taylor	887	1.47%	14.59%	38.16%	60.88%	39.12%
Guadalupe	499	0.10%	5.37%	17.27%	34.38%	65.62%

Predictions for proximity to secondary roads and proximity to human populations did not necessarily coincide. Some areas with relatively higher length of road within activity radii were situated in areas of low human populations, particularly private and USFS lands in the Gila complex and private and tribal lands in the San Juan complex.

Our compilation of various coverages and data sets regarding distribution of human recreation produced information of varied completeness, quality, and spatial resolution. We judged that these data in current form were insufficient to perform detailed analyses relative to distribution of bear habitat and population estimates. Nonetheless, we anticipate that these data, if further compiled with specific objectives in mind, can be used to depict areas of possible human-bear interactions. Thus, we provide these data digitally (see Appendix C) for future users of this report and the associated modeling tools. Those data include consolidated NMDGF hunter and angler survey results for hunt year 1990-1991 through 1999-2000 (hunt year generally is April-March). We were unable to collect spatially explicit results for small game and birds (except turkey). The finest spatial resolution available for all hunts is the GMU. Because some data are missing, care must be taken not to make literal interpretations of absolute hunter days from these data. However, this data set can provide a fair indication of the spatial distribution of hunting activities in New Mexico with further editing.

Distance of Predicted Black Bear Habitat to Human-Populated Areas

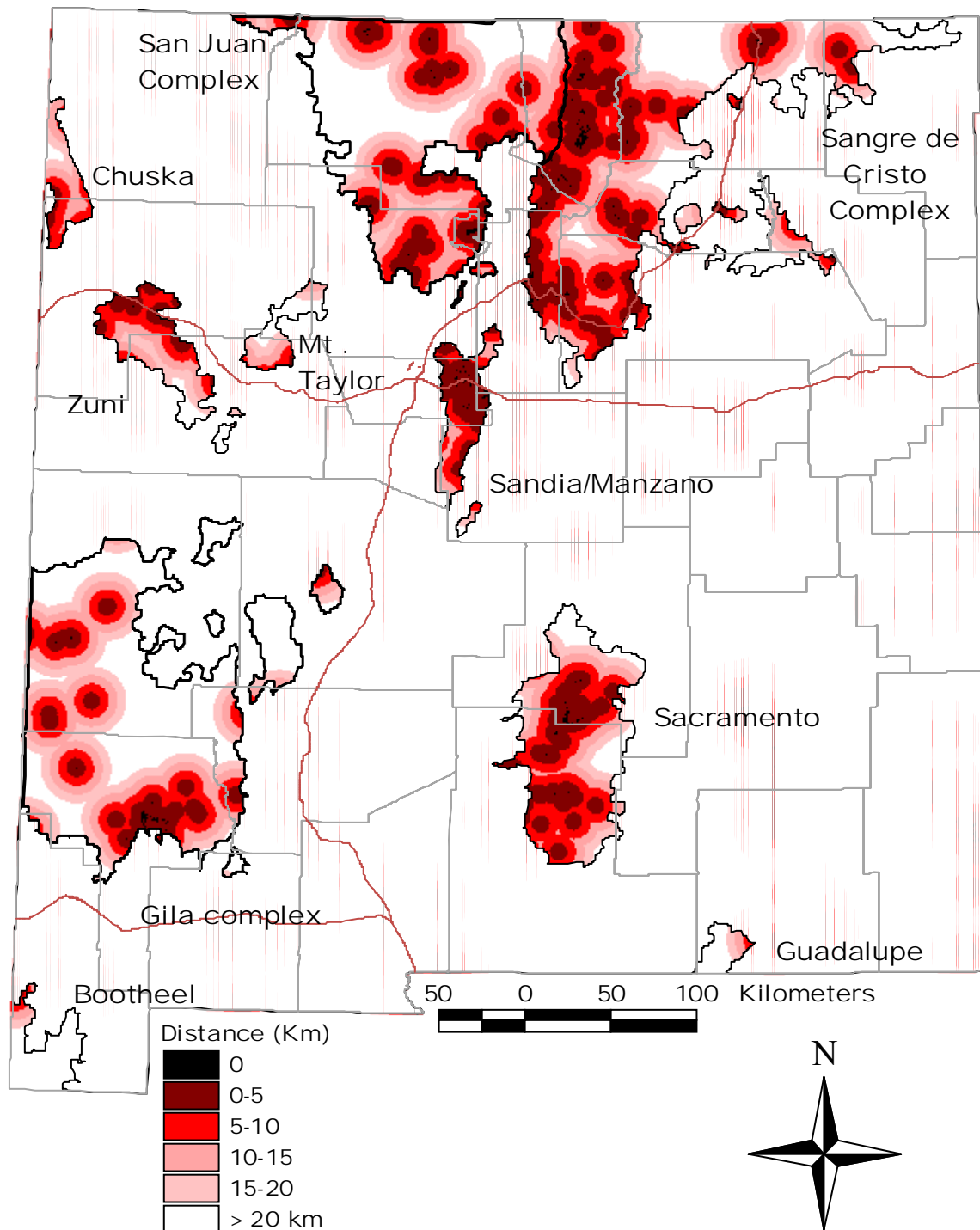


Figure 11-7. Distance of predicted black bear habitat to human-populated areas (>1 person per hectare and >5 households) in New Mexico.

Bear Population Estimate

Extrapolating observed density estimates (see Chapter 10) to areas of primary habitat yielded a statewide population estimate of 5,947 bears >1 year old, pertaining to the premast season (Table 11-2). Regional estimates ranged from 18 bears in the Bootheel region to 2,299 bears in the Sangre de Cristo complex. The small populations (<50 bears) estimated for the Bootheel and Guadalupe regions reflect areas of contiguous habitat with Arizona and Texas

DISCUSSION

In the NMGAP methodology (Thompson et al. 1996), prediction of suitable habitat for a species was based on the premise that a species distribution was all suitable land cover categories within that species general range. Other ancillary variables, such as elevation or soil classification also were included in the habitat modeling when those values were represented on spatially-registered maps. This methodology has proven useful for developing landscape and regional scale maps of species occurrence (Edwards et al. 1996). Another approach is to assign a numeric score to habitat rather than assignment to categories (Boyce and McDonald 1999, Kliskey et al. 1999). In constructing the statewide black bear habitat model for this study, we enriched the modeling process by classifying suitable habitat into multiple categories (e.g., primary, secondary, edge, and no use) rather than the Boolean response (suitable or not) used in NMGAP (Thompson et al. 1996). Our more enriched approach provided greater realism in identifying occupied habitat.

As with all modeling exercises, our habitat prediction results were a compromise between realism, practicality, and data limitations. The largest impediment to a “true” habitat map was the size and scale of this objective. Scaling is probably the most difficult aspect of landscape ecology and the subject of intense research. Large, mobile animals function at a relatively larger scale (Wiens, 1982). Scale is also not independent of spatial pattern (O'Neill et al. 1988). Changing of scale can greatly change perceived landscape patterns. When inappropriate scales are used, true biological relations can become masked or false patterns can emerge (Scott et al. 1996).

Our model was limited to data available as of summer 2001. To our knowledge, NMGAP is the only statewide coverage of land cover (42 themes at 2-100 ha resolution) that exists. There are other vegetation coverages that are more detailed in thematic and spatial resolution but they are not statewide in scope. For example, databases and digital vegetation coverages developed by the USDA Forest Service may provide more comprehensive information appropriate for analysis of black bear habitat quality. Although not statewide, these data would provide insight into a majority of the bear habitat in New Mexico. However, although the data are publicly accessible, at present they are not compiled in a single archive to our knowledge.

Bear reproduction is inherently stochastic with its variability tied to mast crop variability, particularly oaks. Our ability to define this variability statewide was limited because there is no temporal variability in the land cover map. In addition, the land cover map does not differentiate on the basis of subdominant species in each land cover class. Most oak species in New Mexico exist as understory species in several different cover types, therefore the actual abundance of these species cannot be predicted using the current data. Although general predictions of mast potential were developed, more detailed data would be necessary to assess actual habitat productivity between regions.

We were purposely careful to identify suitable habitat and this map should be considered potential habitat rather than actual bear distribution on any given day or in a single year. It is very important to recognize that bears (e.g., transients) can occur in New Mexico outside of the predicted habitat areas. The key consideration is that we modeled conditions on the landscape that are considered to be reliably associated with routine occurrence of reproductively sustaining bear population.

As the human population increases, human-bear interactions have the potential for increase. This raises the value of human-bear interface data. These data serve as a tool to increase the ability of a game/land manager to predict areas of interactions between bears and humans. Spatial data provide a means to “visualize” these areas of interaction on the landscape.

The study area density estimates were derived in productive bear habitat that arguably represents some of the best habitat within their prospective regions. These values may not be applicable to areas of low quality habitat. However, some of this difference was accounted for in the habitat suitability analysis, where secondary habitat was identified. Because the population estimate was derived by extrapolating to primary habitat only, lower quality habitat did not unduly influence the population estimate.

MANAGEMENT IMPLICATIONS

The statewide estimate of 5,947 bears derived from habitat-density extrapolation is similar to the independent estimate derived from population modeling (see Chapter 14). That estimate of 5,200 bears was for the state, excluding the Zuni, Mt. Taylor, Sandia/Manzano, and Chuska regions. Both estimates are for the pre-mast season (May-early August) and excluded cubs of the year.

Statewide population estimates derived from this study refute previous estimates. Our estimates indicate a statewide population of approximately twice the long-standing estimate of 3,000 bears previously used by the NMDGF. However, these estimates do not suggest a doubling of the bear population in the

past decade. Rather, these estimates are based on better information including demographics, density, and habitat extent.

Annual trends in black bear reproductive success were highly influenced by fall mast crops, especially the abundance of acorns. Within predicted bear habitat, mast producing land cover types were found within 7 km (female activity radius) of primary habitat throughout New Mexico except for about 300 km² in the Sangre de Cristo complex. This indicates that nearly all bears have access to habitat with potential for producing important mast producing species. However, the actual abundance of oak, juniper, and pinyon within different regions remains unknown. In the future, incorporation of more detailed data, especially on distribution of oak species, may provide valuable insight into the relative productivity of habitats throughout the regions of New Mexico.

Estimated statewide bear habitat encompasses approximately 14.6 million acres, of which 75% is primary habitat. Primary habitat represents about 13.5% of the state. Approximately 17% of bear habitat is situated within 5 km of human populations. These dimensions clearly illustrate the extent of bear exposure to human influences. More detailed analyses of the dataset provided can be used to target bear conflict and nuisance reduction efforts.

The modeling algorithm is intentionally constructed to alter the criteria so managers can examine different habitat assumptions and land management scenarios. Further, the modeling approach allows incorporation of future, improved spatial data sets (e.g., more resolved land cover) with minimal adaptation or cross-walking of habitat categorizations. Accordingly, it will be interesting and wise to perform sensitivity analyses of conclusions based on this coverage and future modifications.

CHAPTER 12

RELIABILITY OF HARVEST DATA

INTRODUCTION

In New Mexico, as in many states, interpretation of black bear population trend is based primarily on harvest data. Annual harvest data include the total number of hunter-killed bears and sex-age composition in the kill. Given the complexities associated with documenting population trend (Miller 1990, Garshelis 1991), determining the accuracy and consistency of current methods is important.

Age composition of NMDGF harvest data is determined using the cementum annuli aging technique on teeth collected from each bear. This method involves counting the layers of cementum deposited in teeth. Each year, 2 types of cementum are produced which are visible when stained. The first layer is a dark narrow band deposited during the winter months. The second layer appears broad and lightly-stained and is produced during the growth seasons of spring, summer, and fall (Harshyne et al. 1998). When a thin cross-sectional segment of the tooth is viewed, these layers can be counted as an estimate of the animal's age, similar to growth rings on a tree. This method was first developed using canine teeth collected from hunter-killed bears (Sauer et al. 1966, Stoneberg and Jonkel 1966). The technique was further refined by use of the small vestigial premolar tooth, which can be collected from live animals as well as hunter-killed bears (Willey 1974). Accuracy of the cementum annuli aging technique has been tested in only a few locations across North America (McLaughlin et al. 1990, Harshyne et al. 1998). Diet and variability in food supplies are known to affect deposition of cementum layers, therefore accuracy rates from other regions may have no bearing on New Mexico bears. Our objective was to determine the accuracy and consistency in estimating age using teeth from New Mexico black bears. A second objective was to determine the comprehensiveness of the NMDGF harvest data and to document any error with regard to reporting of sex.

METHODS

Harvest-data

We tested the completeness and accuracy of reported sex for the NMDGF hunter-kill (pelt tag) harvest records. These records were tested by comparing them to known hunter-kills of study bears, verified by radio-telemetry monitoring and direct reports from NMDGF personnel.

Cementum Annuli Data

An upper premolar tooth was extracted from most study bears ≥ 1 year of age during initial capture, and a second tooth was collected from some bears during recapture or den investigations, particularly during the final year of fieldwork (see Chapter 4). For hunter-killed study bears, a second tooth also was collected by NMDGF as part of the mandatory check program (see Chapter 11). During 1993, NMDGF personnel removed 2 teeth from each hunter-killed black bear specifically for examining consistency in aging black bear teeth.

All collected teeth, from study bears and hunter-killed bears, were processed by Matson Laboratory (Milltown, Montana) for age determination using cementum annuli counts. Pairs of teeth from the same bears were assigned different numbers to create a blind sample. Date of extraction, sex of bear, and comments relevant to tooth condition (e.g., broken or rotten) were reported to Matson's Laboratory for most tooth samples.

Matson's Laboratory provided us with age estimates with corresponding accuracy limits. These accuracy limits were based on the determined age of the bear and the condition of the tooth sample. In general, they found that error increased with age. Thus, determined ages were grouped into 1-7 years, 8-15 years, and ≥ 16 years. "Certainty codes", based on tooth condition, were superimposed on these age groupings. Assigned certainty codes were (A) result nearly certain, (B) some error possible, and (C) error likely. The combination of the tooth age grouping and the certainty code resulted in an age estimate with a corresponding range of error in years.

We tested the consistency of the aging technique by comparing 2 or more age estimates obtained for a single individual. Two samples were used for consistency analysis: (1) paired teeth collected from hunter-killed bears on the same day, and (2) pairs of teeth collected from study bears on different dates (often years apart). We tested accuracy of the aging technique by obtaining age estimates from known-age study bears. The sample of known-age bears consisted of individuals handled as cubs or yearlings in the den, and individuals confidently aged from tooth eruption when captured as cubs or yearlings.

Using Chi-square tests and Pearson's correlation, we evaluated consistency relative to estimated age class (or mean age class of pairs), sex, tooth condition, certainty code, and season of extraction (den = January-April, active = May-October). Probability levels are reported for all test outcomes reported.

RESULTS

Harvest Data

From 1992-1999, 42 marked study bears were known harvested by hunters, including 16 radio-transmitted bears and 26 marked bears. Three bears (7%) were not included as records in the NMDGF harvest database. In all instances, the bears were known to have been checked by a NMDGF officer, however record of the kill was not present in the central database. Sex was accurately recorded for all study bears present in the harvest database.

Cementum Annuli Aging

Age estimates were obtained for 236 pairs of teeth collected by NMDGF personnel in 1993. All teeth were collected during the mast season. Most age estimates (83%, $n = 472$) were assigned a certainty code of A (result nearly certain), while 16% were assigned as B (some error possible) and 1% were assigned C (error likely). Among the 96 teeth that were broken (20% of total), most were assigned a certainty code of B (61%), while 32% were assigned as A and 6% were assigned as C.

Teeth were consistently aged for 74% of pairs ($n = 236$). Among pairs inconsistently aged ($n = 96$), discrepancies ranged from 1-6 years, with a mean of 1.6 years. Percent inconsistency among pairs differed by certainty code ($X^2 = 28.7$, $df = 2$, $n = 236$). Among pairs with both age estimates assigned A, 83% of pairs were consistently aged ($n = 168$). Only 52% and 33% of pairs were consistently aged when ≥ 1 assignment was B ($n = 62$) or C ($n = 6$), respectively.

Discrepancy in estimated age, in years, was positively associated with mean estimated age of the pair (Pearson $r = 0.51$, $P = 0.001$, $n = 236$). Compared to intermediate groups, percent inconsistency was significantly lower (9%) for pairs with a mean estimated age of 1 and significantly higher (46%) for pairs with a mean estimated age of ≥ 5 ($X^2 = 34.7$, $df = 4$, $n = 236$).

Percent consistency also was lower when teeth were broken (50% vs. 83%, $X^2 = 27.8$, $df = 1$, $n = 236$), however percent tooth breakage was positively associated with estimated age class ($X^2 = 29.3$, $df = 5$, $n = 472$) and with higher certainty codes ($X^2 = 214.4$, $df = 2$, $n = 472$). Only 8% of ages designated with A ($n = 392$) were broken, while 88% and 100% of ages designated with B ($n = 62$) or C ($n = 6$) were broken.

Percent consistency differed by sex ($X^2 = 6.6$, $df = 1$, $n = 231$). Percent consistency was 65% for females and 80% for males. However, mean estimated age of tooth pairs was higher for females than for males ($t = 4.8$, $df = 174$, $P < 0.001$, $n = 231$).

Extraction of improper teeth (e.g., molars, incisors) did not appear to affect consistency, however sample size was very low. Inconsistency in estimated ages was 33% for these teeth ($n = 6$), however the patterns of inconsistency relative to estimated age and certainty codes appeared similar to other teeth.

The observed inconsistencies in aging did not appear to affect the estimated age composition of the harvest (Table 12-1). Comparing the 2 blind samples (obtained independently), estimated age composition of the harvest did not differ statewide ($\chi^2 = 1.4$, $df = 5$, $P = 0.92$, $n = 472$) or for any region ($P \geq 0.55$).

Table 12-1. Estimated age composition of hunter-killed black bears, by region, using the cementum annuli technique applied to 2 blind samples of premolar teeth in New Mexico, 1993.

Region	Sample	n	Percent composition by age category ^a					
			Cub	1 year	2 years	3 years	4 years	≥ 5 years
Statewide	1	236	0	14	26	13	5	42
	2	236	0	14	28	12	6	41
San Juan complex	1	55	0	11	26	18	7	38
	2	55	0	13	24	18	11	35
Sangre de Cristo complex	1	77	0	14	22	9	3	52
	2	77	0	14	23	8	3	52
Zuni and Mt. Taylor regions	1	20	0	10	20	0	0	70
	2	20	0	10	20	10	0	60
Sandia/Manzano region	1	10	0	20	0	0	20	60
	2	10	0	20	0	0	20	60
Gila complex	1	29	3	14	35	14	3	31
	2	29	0	17	35	14	3	31
Sacramento region	1	56	0	16	29	14	5	36
	2	56	0	14	34	11	5	36

^a Percent composition did not differ between samples for any region ($P \geq 0.55$).

We obtained age estimated for 61 pairs of teeth from study bears (actual ages not known). Most age estimates (85%, $n = 122$) were assigned a certainty code of A, while 11% were assigned as B and 3% were assigned C. Among the 20 teeth that were broken (16% of total), most were assigned a certainty code of A (80%), while 10% were assigned as B and 10% were assigned as C. Pairs of teeth were extracted 0-9 years apart, with a mean of 4.0 years ($n = 61$).

Teeth were consistently aged for only 46% of pairs ($n = 61$). Among pairs inconsistently aged ($n = 33$), discrepancies ranged from 1-12 years, with a mean

of 2.8 years. Percent inconsistency among pairs did not differ by certainty code ($X^2 = 1.0$, $df = 2$, $n = 61$). Discrepancy in estimated age, in years, was positively associated with mean estimated age of the pair (Pearson $r = 0.50$, $P < 0.001$, $n = 61$).

Percent consistency was lower when teeth were broken (46% vs. 80%, $X^2 = 5.4$, $df = 1$, $P = 0.04$, $n = 61$), however percent tooth breakage was positively associated with higher certainty codes ($X^2 = 21.9$, $df = 3$, $n = 122$). Only 13% of ages designated with A ($n = 103$) were broken, while 21% and 100% of ages designated with B ($n = 14$) or C ($n = 4$) were broken. Percent consistency was lower for tooth pairs when 1 or both teeth were removed in the den (34% vs. 62%, $X^2 = 4.5$, $df = 1$, $P = 0.04$, $n = 61$). Percent consistency did not differ by sex ($X^2 = 1.0$, $df = 1$, $P = 0.40$, $n = 61$).

For 26 of 31 (84%) inconsistent pairs of teeth extracted during different years, the age estimate from the tooth extracted at an older age was lower than the age estimate for the tooth extracted at a younger age (accounting for the difference in years). In other words, compared to earlier ages estimated, older ages were underestimated most of the time.

Accuracy Analyses

We obtained age estimates for 29 known-age bears, including 15 yearlings, 10 subadults, and 4 adults. Twenty-eight of 29 age estimates (97%) were assigned a certainty code of A, and 1 age estimate (3%) was assigned B. No teeth were broken among this sample.

Most of these teeth (83%) were accurately aged ($n = 29$). Among age estimates designated with A, 86% were accurate, but the single age estimate designated with B was inaccurate. Difference between estimated age and actual age ranged from 1-2 years, with a mean of 1.2 years ($n = 5$). All inaccurate age estimates were underestimates.

Percent accuracy differed by age class ($X^2 = 6.9$, $df = 2$, $P = 0.03$). All yearlings were aged accurately, while 60% of subadults and 75% of adults were aged accurately. Percent accuracy did not differ by sex ($X^2 = 0.08$, $df = 1$, $P = 1.0$).

Accuracy of age estimates differed by season ($X^2 = 13.4$, $df = 1$, $P = 0.001$). Estimates from teeth extracted during the active season were 100% accurate, while estimates from those extracted during the den season were only 55% accurate, however only sub-adult and adult teeth were extracted during the den season.

DISCUSSION

Harvest Data

Results revealed both negative and positive aspects regarding usefulness of the harvest data obtained by the NMDGF. Our analyses indicated the harvest data were incomplete, underestimating the annual bear kill by as much as 7%. This proportion not only limits the usefulness of these data for monitoring total kill, but also hinders reliable estimation of sex-age composition of the kill.

On the other hand, analyses indicated age estimates using the cementum annuli method were relatively accurate and consistent for New Mexico bears. Accuracy and consistency were negatively associated with age and tooth breakage, however these 2 factors were correlated. These results supported earlier findings that consistency and accuracy declined with age (Willey 1974, McLaughlin 1990, and Harshyne et al. 1998). Sauer et al. (1966) suggested cementum annuli were more difficult to count in older teeth because annuli become thinner as the tooth ages.

Differences in the patterns of annuli deposition have been noted for male and female black bears (Coy and Garshelis 1992). Cross-sections of male teeth have displayed dark accessory lines that can be confused with annuli, especially in late summer and fall. On teeth from female bears, narrow bands associated with cub rearing can make distinction of adjacent annuli difficult to observe, leading to miscounts. Despite these potential differences, our analyses did not indicate sex affected accuracy or consistency of aging, and these findings were consistent with Harshyne et al. (1998). Although female teeth were less consistently aged in the sample of study bears, evidence indicated age was the factor likely causing the difference.

Accuracy and inconsistency were also affected by season. Age estimates from teeth extracted in the den were less consistent than those from teeth extracted during the active season. When the den-extracted teeth were removed from the known-age sample, accuracy improved to 100%. This may have been due to the fact that black bears deposit annuli during the winter and new annuli may not appear visibly until late spring (Sauer et al. 1966, Coy and Garshelis 1992).

MANAGEMENT IMPLICATIONS

Accuracy and consistency of the cementum annuli method appeared adequate for estimating age of New Mexico black bears. Among adult bears, our findings indicated the cementum annuli method was not precise enough to identify specific age cohorts. However, accuracy and consistency was relatively high for bears with known or estimated ages <5 years old. Identification of specific cohorts is only required for these younger age classes, therefore the

method appeared adequate to classify bears into age classes and to estimate the age composition of the kill.

According to Matson Laboratory, 2 types of tooth breakage occurred. The first occurred when the root tip was broken off during extraction. The second occurred when the tooth was removed intact, but the tools used for extraction damaged the cementum annuli. Breakage probably cannot be completely avoided, especially when extracting teeth from older bears. However, extra care in tooth extraction, use of proper tools, and improved training of personnel responsible for tooth extraction will aid in the consistency of aging teeth.

CHAPTER 13

PATTERNS IN HARVEST DATA

INTRODUCTION

New Mexico has more than 2 decades of black bear harvest data, a rich information resource. Harvest data document harvest numbers and provide a historical perspective on new information accumulating year by year. Relationships among harvest, regulations, effort, and environmental conditions provide valuable insight for managers that is useful for regulating harvest numbers and composition.

Black bear harvest data alone do not provide a window onto populations; changes in harvest size and composition do not indicate trends in the living resource population (Garshelis 1990). This study provides an opportunity for limited comparisons of live populations and harvests.

Our objective in this chapter is to describe relationships between the harvest sample and the sex-age composition of study populations. We do this from the standpoint of hunter supplied information, kill records, and results of field investigations.

METHODS

Harvest Data

Tagging of bear pelts and reporting of all hunter-killed bears has been mandatory in New Mexico since 1978. NMDGF officers have recorded proof of sex and collected a tooth for estimating age of bears since 1985. Other information recorded included date and Game Management Unit (GMU) of kill, use or nonuse of dogs, and use or nonuse of guides. Pelt tag records were complete through 1999.

A card survey has been mailed to all licensed bear hunters with usable mailing addresses since 1990. Information requested included whether they hunted, used guides or used dogs, days hunted in up to 3 different GMUs, killed a bear, and sex and GMU location of kill. Statewide effort and success projections by hunt method were based on individual responses with use or nonuse of guides and dogs reported. For the 1994 survey, use of guides and use of dogs could not be separated, so projections were made for using aids (guides or dogs or both) and no aids (neither).

Hunt regulations and license costs were obtained from annual NMDGF Proclamations. Numbers of licenses sold were obtained from NMDGF fiscal records.

Regional summaries were compiled for contiguous game management units including mountain ranges. The Gila complex, containing the SSA, consists of GMUs 13, 15-17, 21-24, 26, and 27. The Sangre de Cristo complex, containing the NSA, consists of GMUs 41-49 and 53-58.

Years in summary tables are calendar years of hunting seasons, not fiscal year or license year designations. Harvest numbers in summaries are derived from pelt tag reports, considered more reliable than projections from the hunter card survey. Correlation coefficients were calculated from annual statewide total harvest numbers and license sales.

Effort, Success, and Hunting Method

Estimates of hunter success were based on reported numbers of hunters and kills by GMU from card survey returns for each year. Hunters reporting days in multiple GMUs were included in each unit reported. Unit hunter and bear harvest numbers using guides, dogs, both, or neither, were summed over GMUs for regional totals. Success by year and method was calculated as total reported harvest divided by total reported hunters for each region.

Proportions of hunters or harvests by hunting method were based on the subset of records with hunting methods known. Numbers of hunters or harvests by hunting method were calculated as the product of total hunters or harvests and calculated proportions. Most pelt tag and hunter card survey records contained information on hunting methods used.

Regional harvests and resident study populations were compared for 1993-1997; later years are excluded because hunt regulations and effort changed substantially in 1998, potentially confounding any change in the relationship of live and harvest sample composition. We looked at age composition of females only, because reproductive females are important to population trends, and migrant subadult males may confound male age structure and sex ratios. Study area live population proportions were recalculated excluding cubs, because cubs do not appear in harvest data. We examined proportions of yearlings of all females, yearlings and subadults of all females, and subadults of all females aged ≥ 2 years.

Years of mast failure were determined from combined oak mast index measured on the study areas (see Chapter 5).

Age and Sex Composition

Ages of hunter-killed bears were based on cementum annuli analysis of collected teeth (see Chapter 12). Age class proportions were calculated only from records with age estimates. For total numbers by age class, the un-aged subset was prorated among age classes using the proportions derived from the aged subset for each sex. Most pelt tag records had associated age estimates. Year of birth for hunter-killed bears was calculated from age estimates. Virtually all pelt tag records included sex of kill.

Age and sex composition of study area live populations was based on population reconstructions (see Chapter 10). Year of birth for study area bears aged ≥ 1 year was known from den observations or calculated from tooth age estimates. Sex was known for all study area bears.

Relative numbers of bears by year of birth were compared for the study area populations and hunter-killed bears from the surrounding regions. From live population data, bears were counted by cohort year. All study bears observed at age ≥ 1 were included, regardless of age at first observation, date of capture, or den observation. Individual study bears were counted only once, regardless of frequency of observation. For harvest data, bears from a cohort year were represented by kills during the 3 hunt years following the birth year of the cohort. Proportions of 1, 2, or 3-year-olds of all-aged hunter-killed bears were calculated for the appropriate hunt year, to eliminate distortion from annual variation in total harvests. An index of harvest abundance for each cohort was calculated as the sum of its representative year class proportions at ages 1-3. For example, the index for bears born in 1991 was the sum of the proportion of 1-year-olds in the 1992 harvest, 2-year-olds in the 1993 harvest, and 3-year-olds in the 1994 harvest.

RESULTS

Patterns in Harvest, Effort, and Success

Statewide bear harvest fluctuated (Figure 13-1). The largest annual number of hunter kills for both sexes was reported in 1994, with declining numbers in each of the following 4 years. Year to year variation in statewide harvest numbers was similar for the sexes. Detailed statewide and regional information from pelt tag reports and card survey projections is presented in the Pelt Tag Notebook (Appendix D) that describes black bear harvest data history through 1999. Fall and spring hunts occurred in New Mexico from 1978-1991. Early fall hunts, beginning by 1 September and ending 31 October, occurred from 1992-1997. Late fall hunts, beginning 1 or 15 October and ending 15 December, occurred from 1998-2000.

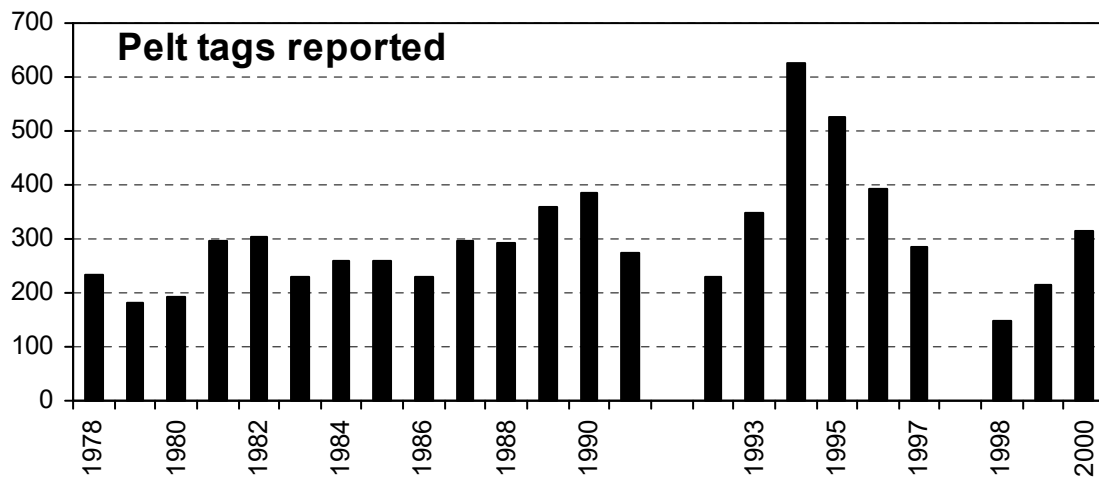
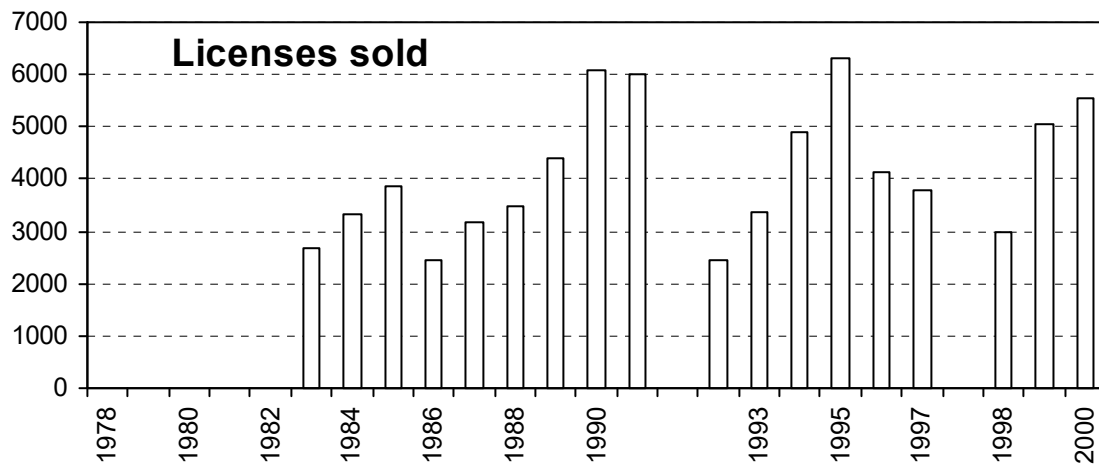


Figure 13-1. Numbers of black bear hunting licenses sold and pelt tags reported in New Mexico for years with both spring and fall hunts (1978-1991), early fall hunts only (1992-1997), and late fall hunts only (1998-2000).

License sales and statewide harvests increased during the 1990s (Table 13-1). Average license sales and average total females harvested for 1990-2000 were 38% greater than for 1983-1989. Because of the peak harvest in 1994, average harvests increased out of proportion to license sales for 1994-1997 compared to previous 4-year averages, both regional and statewide. Average harvests decreased for 1998-2000 because of the shift to late fall hunt dates.

Table 13-1. Average license sales and harvest reports for female (F) and male (M) black bears in New Mexico for 1978-2000.

Years	Licenses sold statewide	Harvests reported					
		Statewide		Sangre de Cristo complex		Gila complex	
		F	M	F	M	F	M
1978-1981 ^a	not available	87	139	33	57	19	43
1982-1985	3290 ^b	99	162	31	49	23	41
1986-1989	3381	98	195	33	63	27	65
1990-1993	4471	123	185	39	63	26	43
1994-1997	4782	188	267	51	75	50	71
1998-2000	4529	70	154	22	56	20	29

^a 4-year averages make long-term changes easier to see;

^b averaged over 1983-1985

Bear hunters in New Mexico consistently harvested more males than females (Table 13-2). The female proportion of annual statewide harvest ranged from 29 to 46%. The proportion of females averaged 37% during the years of combined spring and fall hunts, 41% during early fall hunts, and 36% for late fall hunt years.

Harvest patterns differed by region (Figure 13-2). Harvests in the Gila and Sangre de Cristo complexes fluctuated, but Gila numbers were more variable. The 1994 female harvest in the Gila complex was 4 times the average from previous years, and more than twice the harvest from any other year. In contrast, Sangre de Cristo regional female harvests were elevated for 1993-1995, at about twice the average from previous years.

From 1983-2000, annual statewide license sales varied more than 2-fold (Appendix D, Table 2). License sales decreased in years with regulation or cost changes. License sales dropped 36% and total black bears harvested dropped 11% in 1986, when spring season dates were shifted 1 month earlier and the fall season was closed during elk firearm hunts. License sales decreased 59% and total harvest decreased 17% in 1992, when spring hunting was discontinued and

the fall season was shortened to September and October only. License sales decreased 35% and harvest decreased 25% in 1996, when license cost for residents increased from \$10 to \$30. License sales decreased 22% and total harvest decreased 52% in 1998, when the fall season dates were shifted 6 weeks later and no licenses were sold after the hunting season began.

Table 13-2. Numbers and mean ages of female (F) and male (M) black bears harvested statewide and in 2 regions of New Mexico where study areas were located, 1985-1999.

Year	Statewide				Sangre de Cristo complex				Gila complex			
	No. kills		Mean age		No. kills		Mean age		No. kills		Mean age	
	F	M	F	M	F	M	F	M	F	M	F	M
1985	94	160	5.2	4.4	21	49	5.4	3.5	27	39	5.0	5.4
1986	84	145	5.5	4.6	28	72	6.3	4.8	22	26	6.0	4.8
1987	104	192	5.6	4.6	43	62	5.8	4.8	27	68	5.8	4.8
1988	101	188	5.0	4.2	39	62	5.6	4.8	24	49	4.8	4.6
1989	103	254	6.2	5.0	21	57	5.3	5.8	36	115	7.5	5.5
1990	151	232	5.9	5.3	40	67	5.9	6.3	47	64	6.9	4.9
1991	99	176	6.4	5.9	26	62	5.3	5.5	23	47	7.7	7.1
1992	91	137	6.4	4.8	29	55	7.0	4.6	16	30	6.9	5.0
1993	152	196	6.3	4.0	61	67	6.9	4.1	18	30	5.8	3.7
1994	259	364	7.0	5.3	60	75	6.3	5.3	103	138	6.8	5.9
1995	213	313	7.0	5.0	62	114	6.7	5.0	39	49	8.4	6.1
1996	171	216	6.7	5.7	43	72	6.2	5.5	36	50	8.0	6.1
1997	110	175	6.3	5.6	38	52	7.0	5.3	22	48	5.9	6.3
1998	51	97	5.3	4.4	20	50	5.8	4.0	10	12	7.4	7.4
1999	60	150	6.1	4.5	20	59	5.4	5.8	14	26	7.1	2.4

Total hunt effort influenced total harvest. Correlations between statewide annual total legal kills and total licenses sold were 0.68 for 1983-1991 with both spring and fall seasons, 0.82 for 1992-1997 with early fall seasons, and 0.90 for 1998-2000 with late fall seasons.

Success rates for all black bear license buyers were relatively low, ranging from 5-9% for years with spring and fall hunts, from 7-10% for early fall hunts except for 13% in 1994, and from 4-6% for late fall hunts. The exceptional success rate in 1994 coincided with the largest statewide annual harvest.

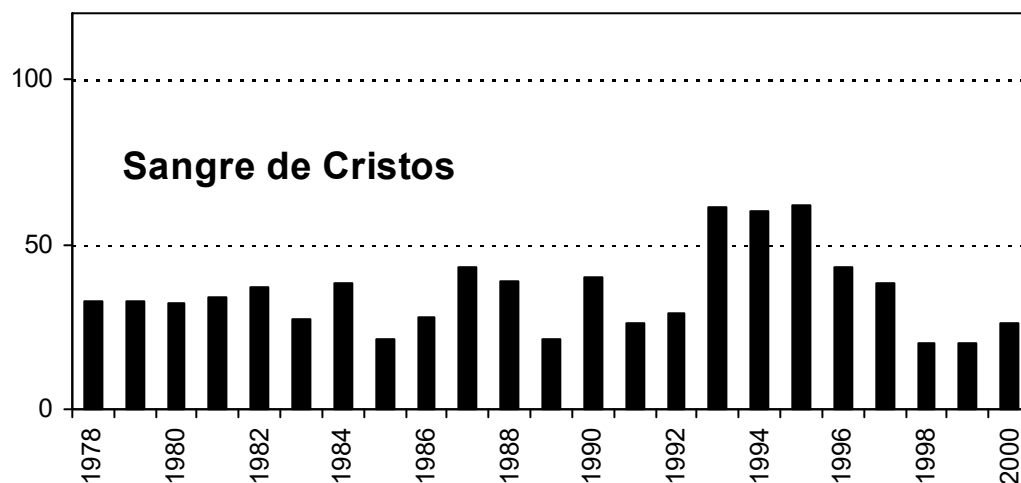
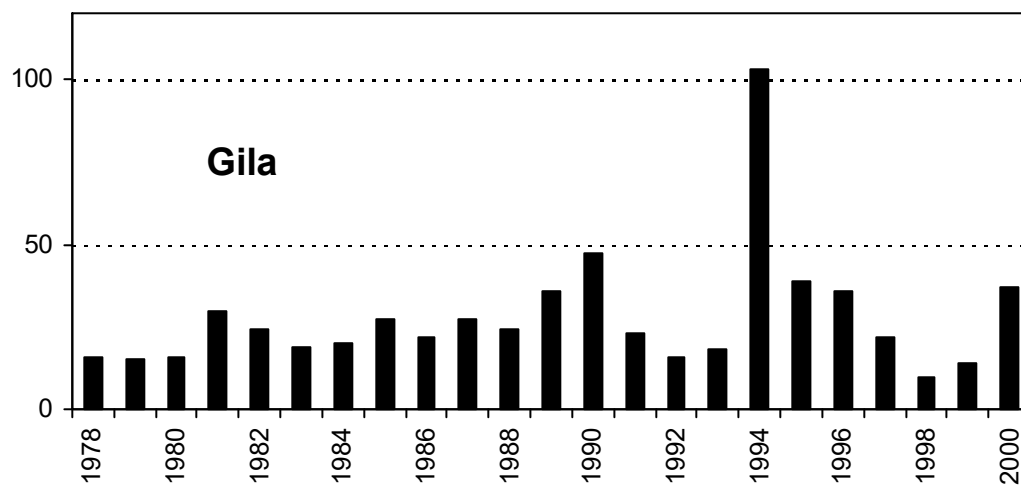


Figure 13-2. Number of female hunter-killed black bears reported from the Gila and Sangre de Cristo complexes of New Mexico, 1978 – 2000.

Patterns by Hunting Method and Season Timing

Hunters using dogs were about 3 times as successful as hunters not using dogs (Table 13-3). Using dogs doubled success for unguided hunters, and increased success 2 to 5 fold for guided hunters. Using dogs increased success more in spring and late fall hunts than in early fall hunts.

Table 13-3. Average annual participation and hunter success by hunting method and season timing from card survey data and pelt tag reports from black bear hunting in New Mexico, 1990-1999.

	Hunt season timing			
	Spring 1990-1991	Early fall 1990-1993 1995-1997	Early fall 1994	Late fall 1998-1999
Comparison by hunting method				
Percent of hunters using each method, from hunter card survey				
Guides and dogs	17	8		7
Guides only	2	4		10
Dogs only	19	10		10
Neither	63	78	73	74
Percent success by method, from hunter card survey				
Dogs	22	28		21
No dogs	3	9		6
Percent of females in harvest by method, from pelt tag reports				
Dogs	23	46	40	35
No dogs	22	37	43	30

Fall season hunters using dogs took a higher proportion of females than hunters not using dogs, except for 1994 when hunters not using dogs took an unusually high proportion of females (Table 13-3). Hunters using dogs took about 4 times as many female bears per hunter as hunters not using dogs (Table 13-4).

Most hunting effort was without dogs (Table 13-3). In fall hunts, an average of 18% of all hunters used dogs; in spring, 36% used dogs. However, hunters using dogs took 45% of the female bears killed during fall hunts and 71%

of the few females killed during spring hunts, because of higher success rates and higher percentages of females taken with dogs.

The proportion of females in early fall hunter kills was double that in spring kills. Overall, 41% of early fall harvests, 32% of late fall harvests, and 21% of spring harvests were female. The same pattern held for all hunting methods (Table 13-3).

For all hunting methods, success rates were higher for early fall hunts than for late fall or spring hunts (Table 13-3). Overall success from card survey reports was 13% for early fall hunts (except for 1994 with 48% success reported), 11% for spring hunts, and 9% for late fall hunts.

Table 13-4. Relationships of hunting method and season timing to female black bear harvest in New Mexico, 1990-1999.

Comparison by hunting method	Hunt season timing			
	Spring 1990-1991	Early fall 1990-1993 1995-1997	Early fall 1994	Late fall 1998-1999
Average no. females killed / 100 hunters / year				
Guides and dogs	7.7	21.6		11.2
Guides only		7.8		3.1
Dogs only	2.1	7.2		4.2
Neither	0.8	3.3	17.2	1.8
Dogs	4.8	12.9		7.4
No dogs	1.1	3.3		1.8
Average percent of all F bear kills taken by each method				
Guides and dogs	59	32		28
Guides only		6		11
Dogs only	18	13		15
Neither	23	48		47
Dogs	71	46		45
No dogs	29	54		55

Patterns by Mast Availability

The NSA did not experience a mast failure during the late fall season hunt years 1998-2000, and experienced only a single year of mast failure during the early fall hunt season years from 1993-1997. The SSA experienced mast failure in 2 of the 5 early fall hunt season years and in 2 of the 3 late fall hunt season years.

In the Gila complex, more bears were killed in years of mast failure during early and late fall seasons (Table 13-5). This pattern was observed with or without guides and dogs. In the Sangre de Cristo complex early fall hunts, the proportion of females in the total harvest was higher during the mast failure year. In the Gila complex, hunters using dogs or guides killed the same proportion of females in mast failure years as other years. However, on average 78% of the hunting effort in the Gila complex was by hunters not using aids, who took a higher proportion of females in mast failure years. Statewide, the largest bear harvest in early fall hunts occurred in 1994, and the largest harvest in late fall hunts occurred in 2000, both probably years of widespread mast failure.

Table 13-5. Hunter success, sex composition, and total harvest of black bears in New Mexico by hunting method for years with and without mast failures, 1993-1999.

Parameter by hunting method	Early fall hunts				Late fall hunts	
	Sangre de Cristo complex		Gila complex		Gila complex	
	Oak on NSA		Oak on SSA		Oak on SSA	
	Fail	Not fail	Fail	Not fail	Fail	Not fail
Average percent hunter success from card survey						
Guides or dogs or both	46	34	24	18	12 ^a	5
No aids	13	14	16	10	4 ¹	4
Average percent females in harvest from pelt tag reports						
Guides or dogs or both	54	42	44	44	40	56
No aids	44	36	37	33	27	38
Average annual bear kills from pelt tag reports						
Guides or dogs or both	48	61	57	34	29	9
No aids	80	68	106	34	34	13
Total	128	129	163	68	63	22
Years included	1993	1994 1995 1996 1997	1994 1996	1993 1995 1997	1999 2000	1998

^aValue for 1999 only; card survey projections for 2000 not yet available

For the Gila complex, the contrast in average harvest was exaggerated by an exceptionally high harvest in the mast failure year 1994 (with 242 bears reported), and an exceptionally low harvest in the non-failure year 1998 (with 22 pelts reported) when regulations changed significantly and effort and harvest decreased statewide.

Live Population and Harvest Age Composition

More individual bears born in 1991 were captured on both study areas than bears born in 1990 or 1992; bears born in 1988-1990 were observed less frequently than those born in 1987 or 1991. A similar pattern occurred in hunter-killed bears from the surrounding regions (Figure 13-3). The 1994 cohort in the SSA and Gila region, and the 1995 cohort in the NSA and Sangre de Cristo complex, were relatively small in harvests and live captures. No yearlings were observed in dens from the 1992 and 1994 cohorts on the NSA, and only 1 yearling was observed from the 1993-1995 cohorts on the SSA (Table 13-6).

Table 13-6. Yearlings per adult female (F, aged ≥ 5 years) from den observations on the Northern Study Area (NSA) and Southern Study Area (SSA) in New Mexico, 1993-2000.

Year of observation	Cohort year	NSA		SSA	
		No. adult F dens observed	Yearlings / adult F	No. adult F dens observed	Yearlings / adult F
1993	1992	5	0		
1994	1993	8	0.63	6	0
1995	1994	12	0	9	0.11
1996	1995	16	0.63	15	0
1997	1996	23	0.22	15	0.67
1998	1997	27	0.48	18	0.33
1999	1998	23	0.59	19	0.58
2000	1999	21	0.52	16	0.56

In both live study populations, adults comprised 54% of resident females ≥ 1 year old on average (Table 13-7). Adults comprised 58% of female harvests in the Sangre de Cristo complex and 70% of female harvests in the Gila complex on average for 1993-1999 (Table 13-7). Both live populations averaged 65% females of all resident bears, with little annual variation, from 1993-1999.

Regional harvests varied from 26 to 48% females in the Sangre de Cristo complex, and from 31 to 48% female in the Gila complex.

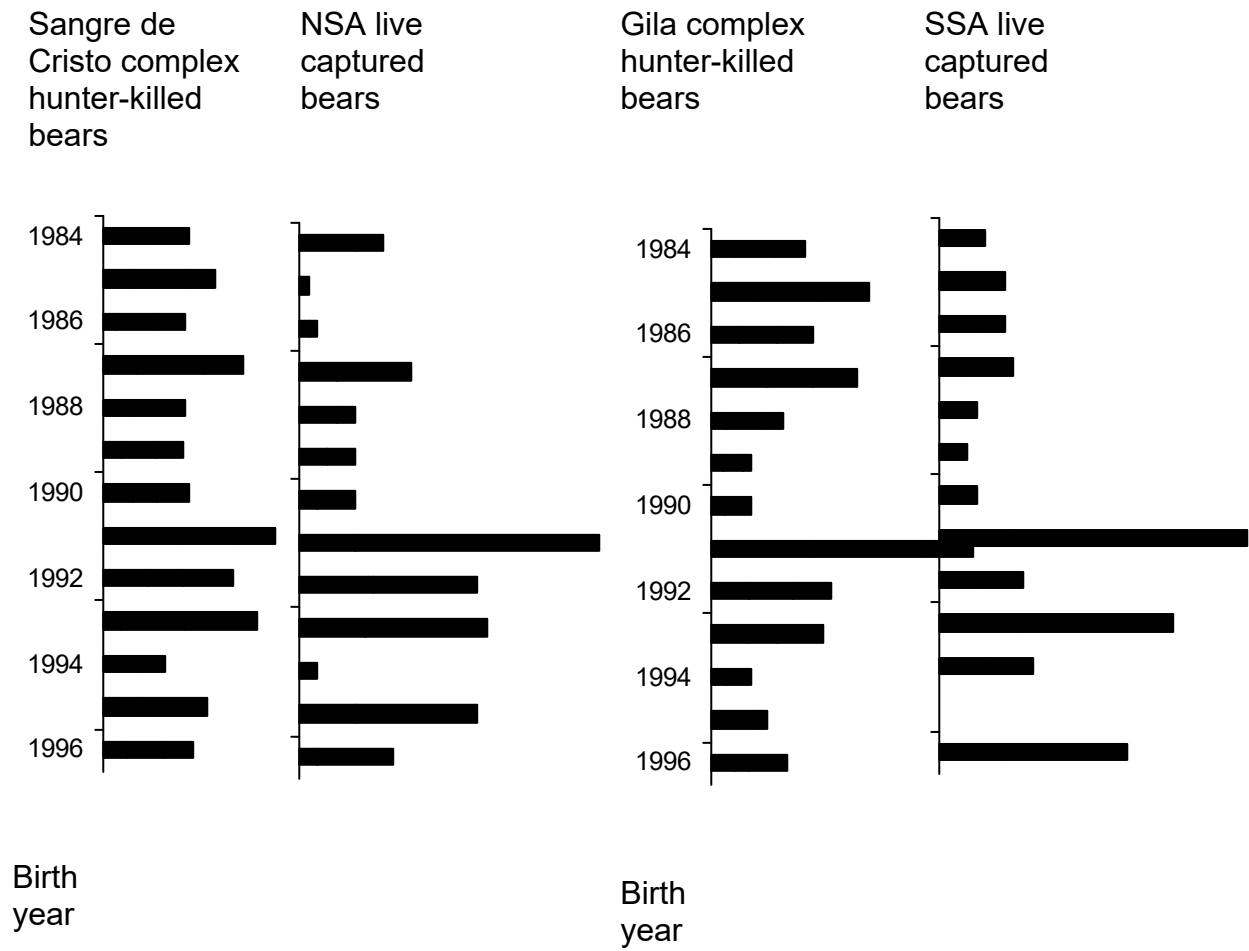


Figure 13-3. Relative numbers of black bears born in the indicated years and subsequently killed by hunters at ages 1-3 in the Sangre de Cristo and Gila complexes of New Mexico, 1985-1999, or captured live at any age on the New Mexico black bear study areas within the regions, 1993-1999.

Yearling proportions of females were higher in study area live populations than in early fall season harvests from the surrounding regions. From 1994-1997 subadults comprised 42% of live population resident females aged ≥ 2 years on the NSA and 44% on the SSA. In contrast, subadults comprised 38% of reported female hunter kills aged ≥ 2 in the Sangre de Cristo complex, but only 27% in the Gila complex, during the same years. In 1993, the NSA live population had 43% subadults, but the Sangre de Cristo harvest had only 24%; both SSA and the Gila harvest had 44% subadults.

Table 13-7. Proportions of adults (≥ 5 years old), subadults (2-4 years old), and yearlings (1 year old) in black bear harvests from the Sangre de Cristo and Gila complexes of New Mexico, 1993-1999.

Region	Sex	Age class	Year							All Years
			1993	1994	1995	1996	1997	1998	1999	
Sangre de Cristo	F	Adult	0.32	0.25	0.18	0.21	0.25	0.14	0.10	0.21
		Subadult	0.12	0.16	0.16	0.14	0.12	0.09	0.13	0.13
		Yearling	0.04	0.02	0	0.02	0.01	0.05	0.03	0.02
		Total	0.48	0.43	0.34	0.37	0.39	0.28	0.26	0.36
	M	Adult	0.18	0.32	0.24	0.29	0.32	0.23	0.33	0.27
		Subadult	0.24	0.20	0.39	0.33	0.23	0.33	0.30	0.29
		Yearling	0.11	0.05	0.04	0.01	0.07	0.16	0.11	0.08
		Total	0.52	0.57	0.66	0.63	0.61	0.72	0.74	0.64
Gila	F	Adult	0.18	0.28	0.29	0.30	0.21	0.48	0.26	0.28
		Subadult	0.16	0.12	0.14	0.12	0.06	0	0.06	0.10
		Yearling	0.02	0.05	0	0.01	0.03	0	0.03	0.02
		Total	0.36	0.44	0.43	0.44	0.31	0.48	0.35	0.40
	M	Adult	0.18	0.26	0.29	0.34	0.45	0.38	0.10	0.28
		Subadult	0.36	0.22	0.27	0.21	0.19	0.10	0.26	0.23
		Yearling	0.11	0.08	0.01	0.01	0.05	0.05	0.29	0.09
		Total	0.64	0.56	0.57	0.56	0.69	0.52	0.65	0.60

DISCUSSION

Harvest Patterns

In 1994, statewide harvest jumped to a record peak, and then dropped steadily during the following 4 years. Harvests for 1994-1998 differed from the fluctuating, but gradually increasing, pattern of harvests from previous years. Such a dramatic change should get the attention of managers. We cannot determine from harvest data alone whether the 1994-1998 numbers reflect overharvest and subsequent population decline. Examination of factors associated with the pattern can illuminate the information that is embedded in harvest data.

Higher harvests in the 1990s than the 1980s were associated with increased license sales. The record harvest in 1994 was not a statewide phenomenon, but derived from an anomalous harvest from the Gila complex, large enough to affect the statewide total. Return to a normal harvest size in the Gila complex in 1995 accounted for most of the decrease in statewide harvest for that year. License sales were lower in 1996-1997 than in 1994-1995, probably accounting for some of the reduction in total harvest. The decrease in statewide harvest in 1998 likely resulted from a change in hunt season from early to late fall, and an associated reduction in license sales. While these observations do not rule out a population change as the reason for decreasing bear harvests, they do suggest reasonable alternative explanations.

Harvest data history for the Gila complex implied that the impact of the 1994 hunt on the black bear population was unusual, but its effect on the population trend is not known. The high number of females removed from the population is a significant management consideration. The harvest data can provide useful indicators for managers, even without providing certainty about populations.

Why was the 1994 harvest in the Gila complex so large? Regional hunter numbers were not unusual, but success rates were extraordinary. Cub survival on the SSA was very low in 1994, and many adult females may not have been accompanied by cubs, thus not protected from hunting. Oak mast failed in 1994, and a dry summer and wildfires may have increased food stress. Bears moved longer distances during years of oak failure (see Chapter 9), and may have been more likely to encounter hunters as a result. Average annual harvest totals, hunter success rates, and percent of females harvest by unaided hunters were higher in years of oak mast failure in the Gila complex during both early and late fall hunt seasons. The proportion of females in the total harvest was also higher during the mast failure year in the Sangre de Cristo early fall hunts. Hunter success, percent of females in the kill, and mean age of females killed were inversely related to fall food abundance in Minnesota (Noyce and Garshelis 1997). Higher harvest levels also were associated with shortages of natural foods in Massachusetts (McDonald et al. 1994).

Patterns of harvest over time differed by mountain range region for New Mexico. Environmental conditions may not be uniform statewide in any given year. Harvest data should be examined by region, and regional differences in management objectives and strategies are appropriate.

The timing of hunt seasons influenced the size and composition of the harvest. Early fall hunts in New Mexico resulted in higher effort, success, and proportion of females in the harvest compared to late fall or spring hunts, and produce larger total harvests and female harvests.

Hunters using dogs harvested more bears per hunter, and proportionally more female bears, than hunters not using dogs. Most hunters in New Mexico did not use dogs. In early fall hunts, about 20% of hunters used dogs, but took almost 50% of the females harvested. The influence of hunting method on harvest depends on the combination of effort, success, and proportion females taken by different hunting methods, and is not simple to predict.

Live Population and Harvest Comparisons

In the study design, we planned to relate the live population sample represented by study bears to the killed sample represented by harvests, to explore what harvests could indicate about populations. This proved difficult in practice. Ideally, the size and composition of harvests from the study populations would be compared to the size and structure of the study populations over time. However, too few study bears were killed by hunters for meaningful comparisons.

As an alternative, harvests from the mountain range regions surrounding the study areas were used for the killed samples. The study area populations were used to represent the population structures for the larger regions, a problematic assumption. The unhunted status of the NSA during much of the study weakened its comparison with the hunted Sangre de Cristo complex. During the record high 1994 harvest in the Gila complex, no SSA hunting mortalities were observed, suggesting that hunting on the study area was not typical of hunting in the larger surrounding region. These limitations apply to the remaining discussion.

Relative Cohort Sizes

Examination of year classes of hunter-killed bears over time revealed striking and persistent differences in relative numbers by year of birth. Some cohorts were virtually absent from the harvest records. Bears born in 1988-1990 were relatively scarce in New Mexico harvest data, reflective of the decrease in proportion of subadults in the early 1990s and part of the concerns that prompted this study.

Age distributions from harvests (killed samples) and study area captures (live samples) showed similar variation in apparent cohort size from year to year (Figure 13-3). Because live captures began in 1993, cohorts born in earlier years were represented on the study areas only by older survivors and residents, and more recent cohorts were exaggerated in number compared to earlier ones in the live samples. Because harvest age collection began in 1985, pelt tag records contained information on cohorts born since 1984.

Apparent cohort size variation suggested underlying reproductive variation. A pattern of alternating larger and smaller cohorts appeared in the harvest data for the 1980s and 1990s, and from the live sample for the 1990s, consistent with moderately synchronized reproduction. In both the NSA and SSA samples, the alternating year pattern failed in 1989, with a small cohort where a larger one would be expected. The cohorts from 1988-1990 were smaller than the 1987 and 1991 cohorts. This combination suggested that bear reproduction may have been lower than normal during the late 1980s.

Correspondence between apparent relative cohort size and natality can be examined for the years of the study. The 1992 NSA cohort and the 1993 SSA cohort were missing in den observations (Table 13-6) but not in study live captures or regional harvests. The discrepancy may be attributable to the very small sample sizes for natality observations for the first year on each study area. Cohorts on the NSA from 1994 and 1996 appeared small relative to 1993 and 1995 in den observations, live captures, and harvests. The same was observed for cohorts on the SSA from 1994 and 1995 compared to 1996. For years with higher sample sizes, study natality data were consistent with apparent cohort size differences in the harvest.

The relative proportions of bears from different birth years in harvest data appeared to reflect the relative proportions of bears from different birth years in the study area live populations. The patterns of variation do not imply the causes of variation. Cohorts may appear relatively large when they are not absolutely large if mortality in adjacent cohorts was high. But absence of a cohort in harvest records for several years may indicate low reproductive success for that birth year. A missing cohort is a flag indicating possible poor reproduction; other evidence such as associated mast abundance must be considered. Missing cohorts in harvest data records are more useful for interpreting historical records than for evaluating current populations, because several years of data collection are needed to detect the differences in cohort representations in the harvest.

MANAGEMENT IMPLICATIONS

Harvest patterns and environmental conditions differ among mountain range regions in New Mexico. Analysis of harvest data and related factors on a regional basis is appropriate.

Changes in black bear populations cannot be detected from harvest data alone. However, patterns in harvest data may flag areas of concern to managers. Missing cohorts and associated decreases in proportions of subadults in the harvest over several years suggest poor reproduction. Other evidence such as mast availability should be examined, and the possible population consequences can be factored into management considerations.

Hunting method appears to affect proportion of females in the kill. During 1990-1999, hunters using dogs were 3 times more successful and took 4 times as many female bears per hunter than those not using dogs. However, the impact of hunting with dogs on the total harvest for a region depends on the proportion of hunters using dogs.

Timing of hunting seasons influences the total black bear harvest and the proportion of females in the harvest. During 1990-1999, later fall seasons were associated with lower total harvest and lower proportions of females in the harvest, compared to earlier fall seasons and spring seasons.

Environmental conditions can influence the effect of a hunt on harvest magnitude and composition. During 1993-1999, failures in oak production were associated with increases in hunter effort, hunter success, and the proportion of females in the kill.

CHAPTER 14

THE BLACK BEAR POPULATION MODEL

Our objective in this chapter is to develop and describe the bear population model as a tool for integrating harvest and biological information, and forming interpretations that are consistent with existing knowledge. This approach is intended to help managers to interpret harvest data in the context of bear population biology, make inferences about bear population size and status consistent with available harvest and biological information, and evaluate consequences of management options to bear populations. The model is designed to simulate population behaviors that are realistic for conditions in New Mexico.

CONCEPTUAL BACKGROUND

Information available to managers about black bears in New Mexico has traditionally been limited to data from hunter-killed bears. This study augments management information with biological data on New Mexico's black bear populations, improved understanding of the influence of annual variation in mast abundance, and estimates of potential bear density in different habitats. How can a manager use this diverse information to make inferences about the status of regional black bear populations and the potential consequences of harvest regulations? The population model is the tool for integrating harvest numbers, vital rates, and environmental relationships into a coherent whole.

Models of bear populations have been used for estimating population parameters, projecting population trends from vital rates, determining upper limits on sustainable mortality, and demonstrating various relationships between population and harvest composition. Treatment of biological detail and temporal variability has differed, depending on modeling objectives and information available.

Taylor et al. (1987) developed the ANURSUS model for estimating natality rates for polar bear populations from age specific litter size and family group observations. They emphasized the importance of accounting for the effect of whole litter loss on reproductive eligibility and litter intervals for animals with multi-year reproductive cycles.

Whether a population is increasing or decreasing, and why, are more important to management than population size (Eberhardt and Knight 1996). Assessment of population trends for Yellowstone grizzlies has been approached through comparison of female survival before and after sexual maturity, age of first reproduction, and reproductive rates, rather than through direct population size estimation (Eberhardt 1990, Eberhardt et al. 1994). These models use

detailed biological information, and infer trends from average rate estimates. For small populations, perturbations of age and sex structure influence dynamics for many years (Knight and Eberhardt 1985). Such perturbations can affect estimates of and projections from vital rates.

A simple model with detailed reproduction (average age of first reproduction, litter size, breeding interval) and constant mortality was described by Bunnell and Tait (1981). They related maximum sustainable mortality to reproductive characteristics for several documented populations of grizzly, polar, and black bears, and aided other insights into bear population dynamics.

Consequences of food related variation in natality, particularly synchronized or alternating reproductive schedules, were modeled by McLaughlin (1998). He imposed patterns of variable parturition on an individual based, stochastic simulation model with detailed reproductive biology and density dependent mortality, and found a substantial impact on sustainable mortality rates for females.

Population viability assessment models (e.g., Weigand et al. 1998) and other stochastic, individual based models (Knight and Eberhardt 1985) are useful for small or endangered populations where chance is a significant contributor to population variability and probability of extinction is a management concern.

Abundant, detailed biological information is not available to many bear managers, but almost all have harvest data. However, inferring population trend from harvest data alone is nearly impossible (Bunnell and Tait 1980, Garshelis 1991, Miller 1990). A stable age and sex composition in both the live population and the harvest can occur when the live population is stable, but also when it is increasing or declining (Miller 1990). A predominantly male harvest is possible from a predominantly female population (Bunnell and Tait 1980). The erroneous assumption of a constant harvest mortality rate can lead to misinterpretation of harvest data (Garshelis 1991). However, models can be used to demonstrate counterintuitive relationships between simulated populations and harvest data, warning managers of the possibility of drawing false conclusions from pelt data.

Modeling with constant rates can provide useful insights on the boundaries of possible bear population behavior. However, vital rates are variable in real populations, and the particular patterns of variation influence population structure for long time periods. Stochastic modeling provides implicit variation in vital rates over time, but the time pattern of the variation is not related to observed habitat conditions, cohort size, or harvest numbers. Selected general patterns of cohort variation have been examined. The consequences of hypothetical variation in survival over time to population age structure have been used to demonstrate problems in relating harvest data to population status. However, bear models have rarely dealt with the implications of specific

population histories. The perils of population assessment from harvest data alone are well documented. Modeling tools for integrating harvest data, biological information, and population history are needed.

METHODS

The bear population model was designed to simulate a black bear population through time, with biological realism, hunting, and environmental influences. Choices for population structure and for life history events accommodated population concerns, hunting patterns, and age of first reproduction for New Mexico. Input requirements were based on information anticipated from the field study for vital rates and bear densities, information routinely collected by NMDGF from hunters on effort and kills, and readily obtained environmental information important to bears. Outputs were chosen to track changes in population numbers and composition, as well as realized mortality rates and harvest predictions for comparison with observations. A set of functions with vital rates as arguments was developed to describe annual births, deaths, and age shifts. Additional functions related annual vital rate changes to environment (mast index, den entry timing) and hunting (effort and season timing). Functions for migration and population size constraints were added last.

Sets of vital rates from the study areas and regional pelt tag (hunter-kill) records were developed and stored with the model. A library of regional history simulations and teaching (hypothetical) model scenarios was developed.

Model software was programmed in APL (Array Processing Language, APL2000 APL+Win version 3.6) with a user interface in Windows Graphic User Interface (GUI) format. Installation is from CDDOM, programmed with Install Shield Express version 2.13. Automated output graphics are displayed using Microsoft Excel (version from Office 97 or later).

The model is implemented in a Windows Graphics User Interface (GUI) program, with a user shell to facilitate inputs, outputs, and scenario saves. Outputs are in both table and graphic formats. The model installation program is provided on CDROM with this report. The model CDROM also contains a library of scenarios, user manual, and documentation for the core model calculations.

The model user interface provides an assortment of aids to choosing input values, including stored characteristic rate sets for geographic regions of New Mexico, and hunt season and pelt tag (hunter-kill) report historic data sets.

RESULTS

Conceptual Model Structure

Overview. The bear population model (Appendix E) simulates a hunted bear population, tracking changes in numbers and sex-age composition over time based on births, deaths, and migrants (Figure 14-1). The initial population, characteristic vital rates, and annual variation in environment and hunting are inputs to the model. The core model equations are a calculation engine to change population numbers based on varying rates over time (Appendix F). Details of bear reproductive biology are incorporated into the model calculations. The model extrapolates population changes based on the conditions described by the full set of model inputs. Outputs are detailed population and harvest numbers and realized total mortality rates over time.

Vital rates are age and sex specific, and vary from year to year in response to environment and hunting. Vital rates are not explicit functions of density dependence or social structure. Migration of subadult males is optional and depends on threshold population sex proportions. Optional upper limits on total population and total adult females approximate density dependence at high population levels.

Population composition. The model's population age structure has separate age classes for each year from cub through 4 years, and an adult class containing ages 5 and above combined. Each age class also is separated by sex. Adult females are partitioned into groups with cubs, with yearlings, and with no offspring.

Scale. The modeled population should represent a large geographic area with a reasonably well-defined bear population, such as a mountain range. The model is not suitable for very small areas or small population subsets. Model runs typically simulate a population for 20 years or longer.

Annual variation. Mast availability index and den entry timing represent annual variation in environmental conditions. Hunting occurs in the fall, with annual variation in effort and season start dates. Fall mast index (poor, fair, or good) may be input for each year, or randomized based on input frequencies for each index level. Annual den entry is input as normal or late for each year. Hunt season dates may be loaded from historic data files; annual low, average, or high effort must be input for each year. Although the model is deterministic, it allows for unlimited patterns of variation over time.

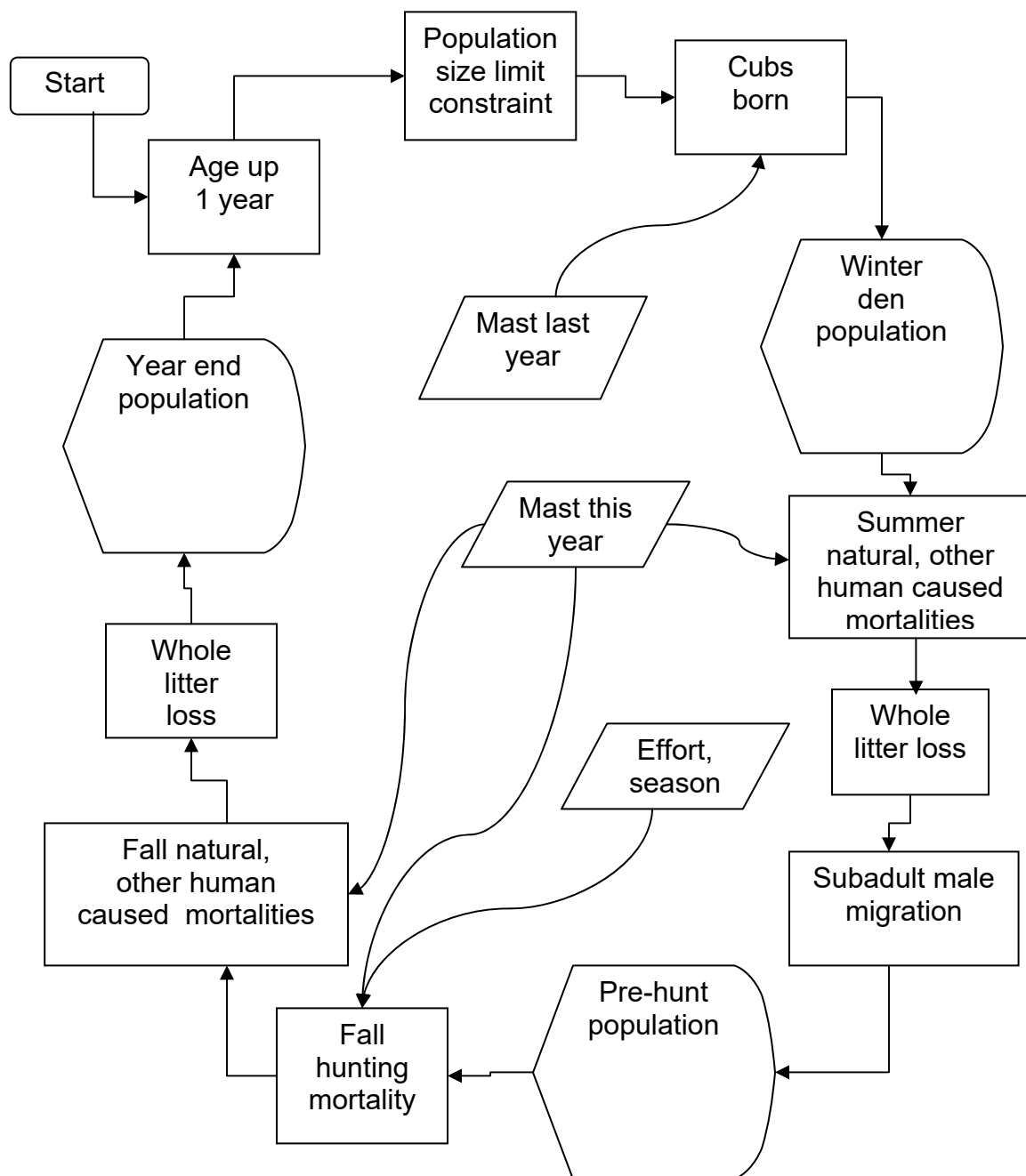


Figure 14-1. Schematic of sequence of events for a simulated year in the bear population model, New Mexico Black Bear Study, 1993-2000.

Natality. Parturition and cub survival rate inputs are step functions of poor, fair, and good mast availability and characteristic of the population being modeled. Fall mast each year determines cub survival rate for cubs born the previous winter and parturition rates for eligible adult females the following winter. Adult females with yearlings in dens do not give birth. Parturition rate is applied only to eligible adult females, defined as adult females without yearlings in dens. Cohort size variation and synchronized alternate year reproduction can be simulated. Calculated cub numbers are based on number of eligible mothers, parturition rate, and litter size frequency. Whole litter loss prior to hunting and prior to the following denning season is based on litter size frequency and cub survival. Whole litter loss in either time period classifies an adult female as eligible to give birth the next year, corresponding to the estimation of parturition rates for all adult females without yearlings in dens in this study.

Mortality. Long-term average mortality rate inputs characteristic of the population being modeled are age and sex specific, and partitioned into natural, hunting, and other human causes. Rates are additive. Hunting mortality varies as the characteristic rate is modified each year by hunt effort, season timing in relation to den entry, and mast conditions. Annual realized mortality rates, or characteristic rates modified by environmental factors, are an explicit output.

Hunting. The model can be run with hunt mortality rates as inputs, and hunter kills or pelt numbers as outputs. Alternatively it can be run with tagged pelt numbers as inputs, and the associated hunt mortality rates as outputs. The choice can be made separately for each year in the simulation. Forcing harvest numbers is useful for simulating unusual events such as the large 1994 harvest. Forcing harvest also makes explicit use of the NMDGF's long-term ongoing harvest pelt tag report data collection (see Chapter 13). Regional harvest data history files are stored with the model. Only fall hunts, the current NMDGF practice, have been implemented; a spring hunt could be added to a later version of the population model.

Scenarios. A scenario is the complete set of inputs for a model run. Scenarios may be saved and restored. Data interpretation using the model should be based on sets of scenarios, not on single runs. Sets of scenarios bracketing the range of uncertainty for inputs of interest or concern produce a set of outputs representing a plausible range of outcomes.

DISCUSSION

Limitations and Advantages of the Model

The New Mexico bear population model is deterministic. It is not suitable for assessing extinction probabilities or for modeling very small populations

where chance is a significant influence. A set of runs with varied inputs is necessary to achieve a range of plausible outcomes. The model is intended for simulation of viable, hunted populations, not endangered ones.

The model does not predict vital rates or environmental variation, although it allows variation in environment to modify realized rates over time. The influence of habitat quality can be expressed by choice of characteristic vital rates. Inputs are detailed, a disadvantage when biological information is sparse, but an advantage for simulating the particular conditions experienced by a real population. Annual mast index is an explicit input, allowing use of observations when available. Mast variation can also be randomized, based on frequencies characteristic of the geographic area being modeled.

The influence of bear social structure on population dynamics is not modeled explicitly. Migration of 3-year-old males in or out of the population can be included, activated by selected threshold population sex ratios. However, interpretation of the results of simulations allowing subadult male migrants should include the plausibility of an external population source for immigrants. An upper limit on adult females and on total bears can approximate density dependence and habitat carrying capacity. The model is sensitive to upper limits, so choices should be based on habitat types and potential densities where possible.

Reproductive biology is modeled in detail. Females with cubs and probability of whole litter loss are tracked for reproductive eligibility and for hunting vulnerability. There are not separate age classes for adult females and parturition rates are average for all adult females, not age specific, because age specific reproductive rate data will not be generally available for New Mexico populations. Age at first reproduction is effectively 5 years, the approximate average for New Mexico. However, reduced parturition in mast failure years is equivalent to older age of first reproduction under poor environmental conditions. Parturition rate is not affected by adult sex ratios, since depressed reproduction due to scarce males is not a problem in New Mexico. However, no cubs are produced if there are no adult males in the simulated population.

Hunt season timing or closure and hunting effort are inputs, allowing management options to be explicit inputs for simulations. The current version allows hunting only in the fall, the current practice in New Mexico. The addition of a spring hunt option would expand the utility of the model.

The New Mexico bear model is designed to facilitate a synthesis of harvest data, population biology, and information on environmental variability. Resulting inferences about bear populations are consistent with all available information. The model cannot provide certainty, but it can rule out nonsense.

When good information is available on annual mast availability, harvest numbers with sex and age, and an upper limit or carrying capacity number of adult females for a population, in conjunction with the vital rate estimates from this study, model results can be of considerable use to managers. Scenarios with population constraints are more sensitive to the combination of harvest numbers, mast failure frequency, and carrying capacity than to rate estimates. Mast, harvest, and carrying capacity can indicate potential over harvest; vital rates can indicate potential for recovery.

Some Strategic Uses of the Model

Real population status. Use of the model to assess population status requires criteria for recognizing a plausible simulation. The criteria will combine best available information for rates and environmental inputs, and information on historic harvests to compare with outputs. To establish criteria for an acceptable simulation, (1) determine reasonable harvest and total mortality rates for the region and time period, (2) use measured mast indices, or any other indicators of mast availability for each year, or use a reasonable frequency of mast failure and randomize mast index over time, (3) note hunt season start dates and identify years with unusually low or high hunter effort, (4) from pelt records, calculate the average numbers of harvests by sex for the time period, and identify years of unusually low or high harvests, and (5) find indications of cohort size variation from harvest data records or independent observations. Run the model using the most plausible rate, environment, and hunt condition inputs. If necessary, make additional runs, varying the initial population numbers until the predicted average female harvest agrees with the observed average, to ensure a plausible initial population size. Then evaluate other outputs against criteria for a plausible simulation. Check predicted variations in cohort size and total harvest for agreement with observed patterns over time. If harvest numbers were forced (inputs) for some years, check the realized hunting and total mortality rates for those years for plausibility. A simulation with plausible inputs and with outputs consistent with observation provides a plausible assessment of population size and trend, consistent with available information.

Hypothetical population behavior. To investigate bear population behavior in general, use an arbitrary initial population with a reasonable age and sex composition, and vary characteristic rates or environmental conditions while leaving the initial population unchanged. Compare patterns in outputs over time, rather than numbers, to see how populations and harvest size and composition respond to different conditions. For example, change mast failure frequency to see the impact on population growth and harvest composition. Increase characteristic harvest and total mortality rates to find levels of over-harvest associated with population reproductive rates, and observe how harvest number and composition predictions change at the same time. Or simulate different

hunting regimes over time for comparison, and include environmental variation for realism.

Examples from literature. The model can also be used to reproduce cautionary examples derived from technical literature concerning the problems of relating population status to harvest composition. An example is the counterintuitive finding that a predominantly female population is consistent with a predominantly male harvest, or that population and harvest age and sex composition can remain stable while population size is increasing, stable, or decreasing. The model user can thus be educated about the difficulties of interpreting harvest data, and avoid unwarranted deductions.

Reasonable Input Values

Characteristic vital rates. Estimating vital rates with minimal uncertainty is difficult for bear populations. Allowing rates to vary with environment and hunting is more important to model interpretations than getting average rates exactly right. The field study has produced reproductive and mortality rate estimates for New Mexico, although measured hunting mortalities are suspected to be low in some cases, providing the basis for reasonable input values for the population model (Tables 14-1 and 14-2).

Table 14-1. Black bear population model inputs for characteristic natality rates based on field study observations, New Mexico Black Bear Study 1993-2000.

Litter size frequency			Mast index frequency			
<u>No. cubs</u>	<u>NSA</u>	<u>SSA</u>	<u>Model label</u>	<u>Mast classification</u>	<u>NSA</u>	<u>SSA</u>
single	14	13	Poor	Fail	1	4
twins	43	24	Fair	Poor	4	2
triplets	4	1	Good	Medium or better	3	2

Mast index		Parturition rate		Cub survival	
<u>Model label</u>	<u>Mast classification</u>	<u>NSA</u>	<u>SSA</u>	<u>NSA</u>	<u>SSA</u>
Poor	Fail	0	0.39	0.50	0.43
Fair	Poor	0.71	0.67	0.50	0.85
Good	Medium or better	0.78	0.77	0.50	0.85

Choices for characteristic rate inputs have significant impact on model outputs, reflecting realistic uncertainty about bear population dynamics. Sets of simulations with different characteristic rates are needed to assess the impact of uncertainty on population inferences, and to bracket a range of plausible inferences.

Table 14-2. Observations and reasonable ranges for characteristic mortality rate inputs to the population model for female (F) and male (M) black bears on the Northern Study Area (NSA) and Southern Study Area (SSA), New Mexico Black Bear Study 1993-2000.

Population category	Hunt mortality rate			Total mortality rate		
	NSA	SSA	Reasonable range	NSA	SSA	Reasonable range
F Yearling	0	0	0.02 - 0.03	0.25	0.03	0.10 - 0.30
F Subadult	0.05	0.04	0.04 - 0.08	0.06 - 0.14	0.09 - 0.11	0.05 - 0.15
F Adult	0.04	0.07	0.04 - 0.08	0.07 - 0.08	0.10	0.08 - 0.20
M Yearling	0	0	0.02 - 0.05	0.10 - 0.13	0.24	0.10 - 0.30
M Subadult	0	0	0.07 - 0.10	0.05	0 - 0.03	0.08 - 0.25
M Adult	0.02	0.07	0.07 - 0.10	0.08	0.09 - 0.18	0.10 - 0.25

Choices for characteristic rates can be used to describe conditions for a particular population. Natality rates can be adjusted to represent habitat quality differences. Mortality rates can be increased for areas with many roads or other disturbances.

The model allows for characteristic natality rates associated with 3 levels of mast abundance. Study results indicate that only 2 levels, failure or not, are significant (see Chapters 5 and 6). To reconcile the model structure and the study findings, use the model category of poor mast abundance for failure conditions, and assign the same rates to the fair and good model categories for non-failure conditions, taking care to indicate the correct frequencies for the failure and non-failure categories. Alternatively, assign a 0 frequency to the good mast category in the model, and use the poor and fair categories to represent failure and non-failure conditions.

Initial population numbers. The model addresses changes in populations over time. Each simulation or model run requires a starting population as an input. When vital rate and environmental inputs are reasonable, but model outputs of pelt numbers or realized total mortalities are not consistent with observations, then the simulated population is not plausible, and the initial population input should be changed.

Where possible, use GIS habitat extent, quality and associated bear home range size to estimate total male and female numbers, and use those as inputs. Partition the totals by age using default proportions or use extrapolated study area population structure as a guide.

If habitat based estimates are not available, consider a manager's informed estimate of total bears in the region as a starting point. Using the model will provide a check on the plausibility of such estimates.

When there is no other basis for selecting an initial population size, the model can be used to generate ballpark initial populations from harvest data, with the following steps: (1) Select and load a set of characteristic vital rates based on geography from rates stored with the model. (2) Set mast values to average for all years, so that reproductive rates will be steady at average values. (3) Start with an arbitrary total of 1000 bears, and run the model for 20 years. (4) Use the final population from that simulation, which will have age and sex proportions consistent with the vital rates, as the initial population for the next run. This step eliminates the influence of unstable population age structure on average harvest. (5) Run the model again, and compare the average total pelts and female pelts to pelt tag observations. (6) Adjust the initial total numbers up or down until predicted average pelts are similar to observed average harvest. Then use that initial population for simulations with variations in environment and hunting.

One use of the model is testing a range of population sizes for plausibility in light of past harvest history and mast availability by repeated runs varying only initial population totals. Take care to avoid other input constraints that may invalidate the population size interpretation.

Application outside of New Mexico. The model can be applied to black bear populations in other locations by suitable choices of characteristic vital rates, litter size frequencies, and mast frequencies and mast step function values. The input details allow considerable opportunity for simulating particular conditions. In this version, simulated hunting is limited to a single fall season.

Modeling study population viability

The model was used to investigate the implications of observed natality and total mortality rates from both study areas. Natality rates from Table 14-1 were used as model inputs. Calculation of long term averages weighted by frequencies shows the NSA had an average parturition rate for eligible adult females of 0.65, and average litter size of 1.84. The SSA had lower average reproductive rates, with 0.51 for parturition rate and 1.68 average litter size. Observed total mortality rates for the study areas from Table 14-2 were entered as characteristic natural mortality, with other human and hunting mortality rates set to zero, for correct total realized mortality. Where the total mortality estimate was a range (excluding or including probable deaths), the mid point of the range was used for the input value.

Initial population age and sex composition were based on history scenarios previously developed for the surrounding mountain ranges, but total numbers were rounded to the nearest 1000 for simplicity. This analysis considers proportional population changes rather than absolute numbers, so the initial total numbers used do not affect the interpretations.

Some simulations were made with mast set to average for all years, to produce constant average natality rates. Additional runs were made with randomized mast values, using the frequencies characteristic of the study areas, so that cub production varied. Cub survival varied with mast, but total mortality rates for older bears were constant at input rates. For each study area, 1 run used mast index set to observed levels for 1993-2000. Since observed mortalities on the study areas appear unrealistic for female yearlings on both areas and subadult males on the SSA, simulations were also run with total mortalities set to the minimum, middle, and maximum of the reasonable ranges for each population category. Changes in adult female numbers from beginning to end of the simulations varied from 199% increase to 84% decrease, depending on the combination of mast conditions and mortality rates used (Table 14-3).

The interpretation of simulation results will focus on adult females, because their numbers determine the reproductive potential of the populations. Our observations of subadult male total mortality are unrealistically low, skewing the simulated male numbers and the simulated population sex composition.

These simulations are not realistic, because constant rates over time are not realistic, but they reveal the population trends implied by the observed average rates. Both populations have a built in tendency to increase, based on observed rates. The unhunted NSA has lower mortality for subadult and adult females, and higher potential reproduction because of its low frequency of mast failures, and so has potential to increase faster than the SSA.

The potential for increase is overestimated if total mortality for females has been underestimated. For both study areas, the average annual female total mortality is 10%. Model simulations with the same total mortality rate for all female age classes and average observed natality rates show that the NSA population would begin to decrease with average total female mortality above 12.5%, and the SSA population would begin to decrease with average total female mortality of 11.5%, well within the range of uncertainty for the observed rates.

Table 14-3. Percent changes in adult female numbers from bear population model runs using study area vital rates and mast observations for the Northern Study Area (NSA) and Southern Study Area (SSA), Black Bear Study in New Mexico 1993-2000.

Time frame	Constant average mortality rate	Mast	NSA female population change	SSA female population change
20 years	Study area observations	Constant at average	+117%	+49%
20 years	Study area observations	Randomized	+39 -128%	+40 - 86%
1992-2000	Study area observations	Study observations	+23%	+14%
20 years	Minimum of reasonable range	Constant at average	+199%	+129%
20 years	Middle of reasonable range	Constant at average	-16%	-34%
20 years	Maximum of reasonable range	Constant at average	-79%	-84%

The simulations with observed mast abundance indicate that both study populations have increased during the study. There were no marked bears killed from the SSA population during 1994, the year of record harvests for both sexes in the surrounding Gila region, but marking began only in 1993. If unmarked females resident on the SSA were killed in 1994, the study population may not have increased.

The pattern of mast abundance over time strongly affects simulated population trends, with all other inputs left unchanged. Routine observation of mast abundance would greatly enhance utility of the model and assessment of population status.

Modeling Pelt Tag Data Histories

In workshops held in 1998 and 1999, NMDGF area managers used the population model to assess black bear populations in 4 mountain range regions comprising most of the state's bear habitat (Table 14-4). Simulations used vital rates and mast observations from the study areas for the Gila and Sangre de Cristo complexes, and similar rates for the San Juan complex and Sacramento region with adjustments based on area managers' knowledge of local conditions. Simulations were run for 1981-1998. Outputs were evaluated for plausibility based on comparisons with observed average pelts tagged by sex for 1989-1998, timing of peak harvests, and proportions of subadults. Scenarios with reasonable matches to observed patterns provide interpretations of bear population status that are consistent with both pelt tag observations and field study findings.

Table 14-4. Regional black bear population status interpretations based on population model simulations and harvest observations in New Mexico, 1989-1998.

Region	Rough population estimate	Trend	Observed average no. bear kills 1989-1998		Model average no. bear kills 1989-1998		Pelt tag numbers forced	Scenario name
			F	M	F	M		
Sangre de Cristo complex	1500	Slow increase	40	67	41	56	none	SANG99D
San Juan complex	1000 hunted + 700 unhunted?	Slow increase	26	44	25	35	none	SNJN99C
Gila complex	1000	Stable	35	58	37	43	1989, 1994	GILA99B
Sacramento region	1000	Increasing	24	33	23	35	1994, 1995	SE99B

Sangre de Cristo complex. Scenarios were based on NSA rates, but with higher adult hunting and total mortality rates, because most of the region is hunted (although the study area was not). A scenario with constant hunt effort and observed mast pattern for the study years produced a slowly increasing population with reasonable harvest patterns but low average numbers, and a peak in kills for 1994. Initial population was increased to raise average pelt tag numbers, and hunt effort was specified as low for 1992 and high for 1995,

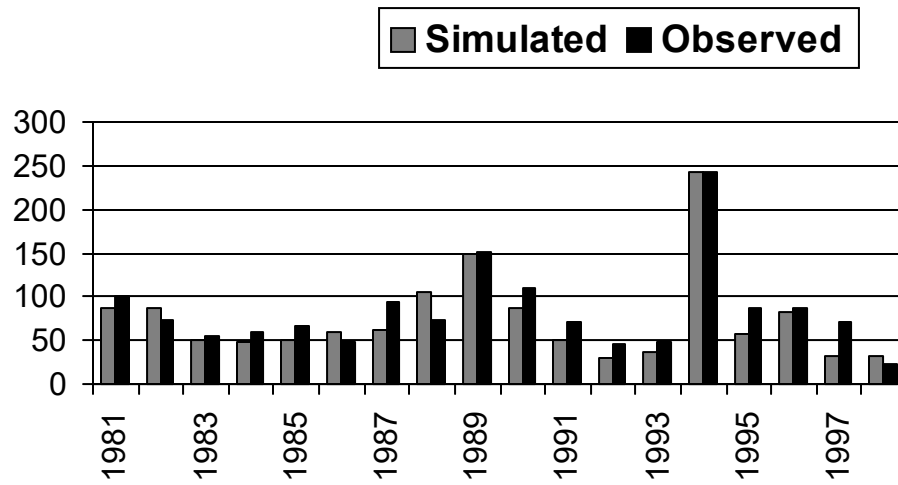
consistent with card survey results. The final scenario showed a gradual increase in the live population total. Scenario average pelt numbers for males were lower than observed, suggesting that the hunt component of male mortality may have been underestimated.

San Juan complex. Scenarios were based on NSA rates, but with higher adult hunting and total mortality rates, because part of the region is hunted (although the study area was not). . Mast index inputs were based on knowledge of local conditions, not northern study area observations. Runs with slightly increasing population and a reasonable match for observed female pelt tag reports had lower male pelt tag numbers than observed. The large areas of this region protected from hunting may be a source of some of the males killed by hunters.

Gila complex. Southern study area vital rates were used, except that a higher subadult female hunt mortality (same as for adult females) was needed to match the observed proportions for subadults of females in pelt tag reports. High harvest numbers for 1989 and 1994 were forced because simulations did not produce the observed peaks. For 1994, with the harvest forced to match the high observed pelt tag report numbers, realized total mortality for the year was 22% for females, 35% for adult males, and 42% for subadult males; area managers interpreted the high mortality values as reasonable for the unusually harsh conditions of 1994. In a scenario that produced a good match to observed pelt tag numbers and proportions for females, the 1994 harvest reduced the pool of adult females in the model population, so that the population fluctuated around initial 1981 population numbers without much change over time (Figure 14-2). Scenarios that matched observed female pelts predicted too few male pelts. The discrepancy could be reduced by assuming substantial immigration of subadult males from Arizona, or by shifting all subadult male mortality from other causes into hunting, or by a higher total population with much lower female hunting mortality.

Sacramento region. A population scenario with fast turnover, both natality and mortality near the high end of reasonable ranges, is consistent with the observed high proportions of subadults in pelt tag reports. With the large 1994 and 1995 pelt tag observations forced, a scenario with a slowly increasing population predicts harvests that agree with both observed numbers and proportions. There is no likely source of immigrant subadult males for this population, and the scenario does not need 1 because these mountain ranges are isolated from sources of immigrants.

Total harvest



Simulated population

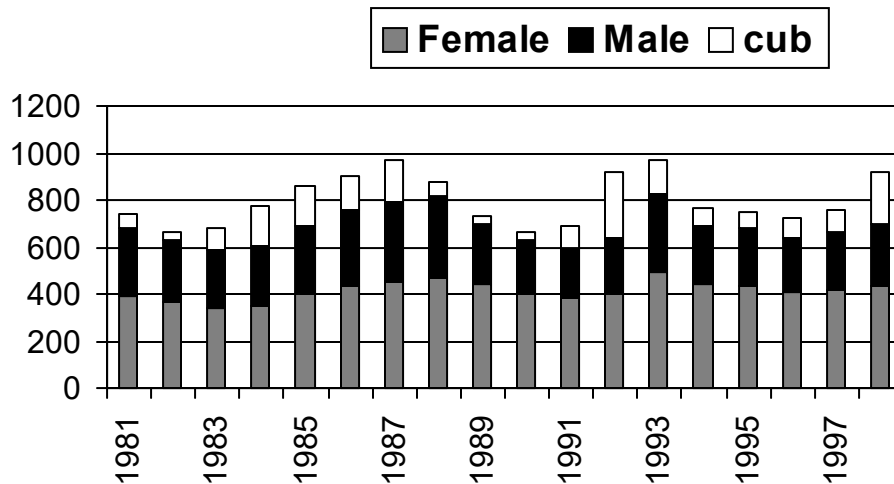


Figure 14-2. Black bear population and harvest numbers simulation

Statewide. The steady decrease in statewide hunter-killed bears from 625 in 1994 to 148 in 1998 raises concern about over-harvest. That pattern was exaggerated by the large harvest in the Gila complex in 1994; although present, the pattern is much less marked in other regions. Harvests increased again in 1999 and 2000. License sales decreased steadily from 1995 through 1998, and the 1998 season was 6 weeks later than previous years. Model population simulations with field study rates indicate that the peak harvests likely resulted from mast failure combined with an abundance of available subadults born in the early 1990s, and subsequent decreases were likely related to decreasing hunter numbers rather than to a rapid drop in bear populations.

Pelt tag reports show a higher proportion of males than do simulations based on vital rates observed during field study. The difference may result from difficulty in documenting male bear mortality rates, or from inclusion of immigrant subadult males in harvest reports, or both. Focusing on the female segment of the population for interpreting population changes avoids the problem.

Model Application to Management

Simulations used for the following model application discussions are included with the population model software in the scenario library (Table 14-5).

How fast can a population change? In simulations with all mortality rates at the high end of reasonable ranges based on study, model populations disappear in 2 or 3 decades. The persistence of bears is evidence against the plausibility of the long-term maximum mortality rate simulations. Populations with average natality like the SSA would decrease by 61 – 79% in 10 years and by 85 – 96% in 20 years with constant annual mortality rates of 20 – 25% for all population categories. Populations with average natality like the NSA would decrease by 56 – 75% in 10 years and by 80 – 94% in 20 years.

Minimum mortality simulations, while not realistic, identify an upper limit on bear population growth rates in New Mexico. Unless limited by habitat capacity, southern populations might double in 20 years, and northern populations might triple, if mortality were minimal and the pattern of mast availability remained normal. Since most New Mexico populations are hunted, the fastest population increase possible with persistent low mortality would be doubling in 20 years. With occasional years of greater mortality, population increases are reasonably expected to be slower.

Average statewide hunter kills for 1994 and 1995 were double the average for 1991-1993. This increase must be interpreted as increased hunting mortality rate, and not as a proportional increase in total population with unchanged harvest mortality, because the population could not have doubled during that

time frame. Similarly, the decrease in total pelts tagged from 625 in 1994 to 148 in 1998 cannot be interpreted as evidence of a 75% reduction in population in 5 years, because such a rapid drop would be highly unlikely. Instead, other factors should be considered along with the possibility of a less rapid population decrease.

Table 14-5. Scenarios used for the black bear population model application discussion and stored in the scenario library, Black Bear Study in New Mexico, 1993-2000.

Scenario library name	Description of scenario	Interpretation section
NSAOBS01	Constant mast, NSA characteristic vital rates	Study population viability
SSAOBS01	Constant mast, SSA characteristic vital rates	Study population viability
CUBVAR1	Population varying slightly around a stable total	Synchronous reproduction
OVER0	Baseline stable population with annual variations	Characteristics of over harvest
OVER1x	Persistent mast and reproductive failure	Characteristics of over harvest
OVER2x	Increased hunt mortality	Characteristics of over harvest
OVER3x	Increased nonhunt mortality	Characteristics of over harvest
SANG99D	Sangre de Cristo pelts, NSA rates	Pelt tag histories
SNJN99C	San Juan pelts, modified NSA rates	Pelt tag histories
GILA99B	Gila pelts, SSA rates	Pelt tag histories
SE99B	Southeast pelts, modified SSA rates	Pelt tag histories

Cohort variation, synchronized reproduction, and pelt age composition.

The baseline scenario simulates a hypothetical population varying slightly around a stable total for 20 years. Mast index and the associated natality and cub survival rates vary annually. The population age composition changes over time as variable size cohorts age. Hunt effort is held constant so that realized total mortality rates for yearling, subadult, and adult bears remain constant. Predicted hunter kills or pelt tag numbers vary slightly with population size and composition over time. The proportions of subadults in the pelts vary from 35 to 53%, with several large drops over a few years; however, total population size is essentially stable (Figure 14-3). This simulation demonstrates that shifting proportions of subadults in hunter-killed bears may indicate, and lag, cohort variations, but do not necessarily indicate population size change.

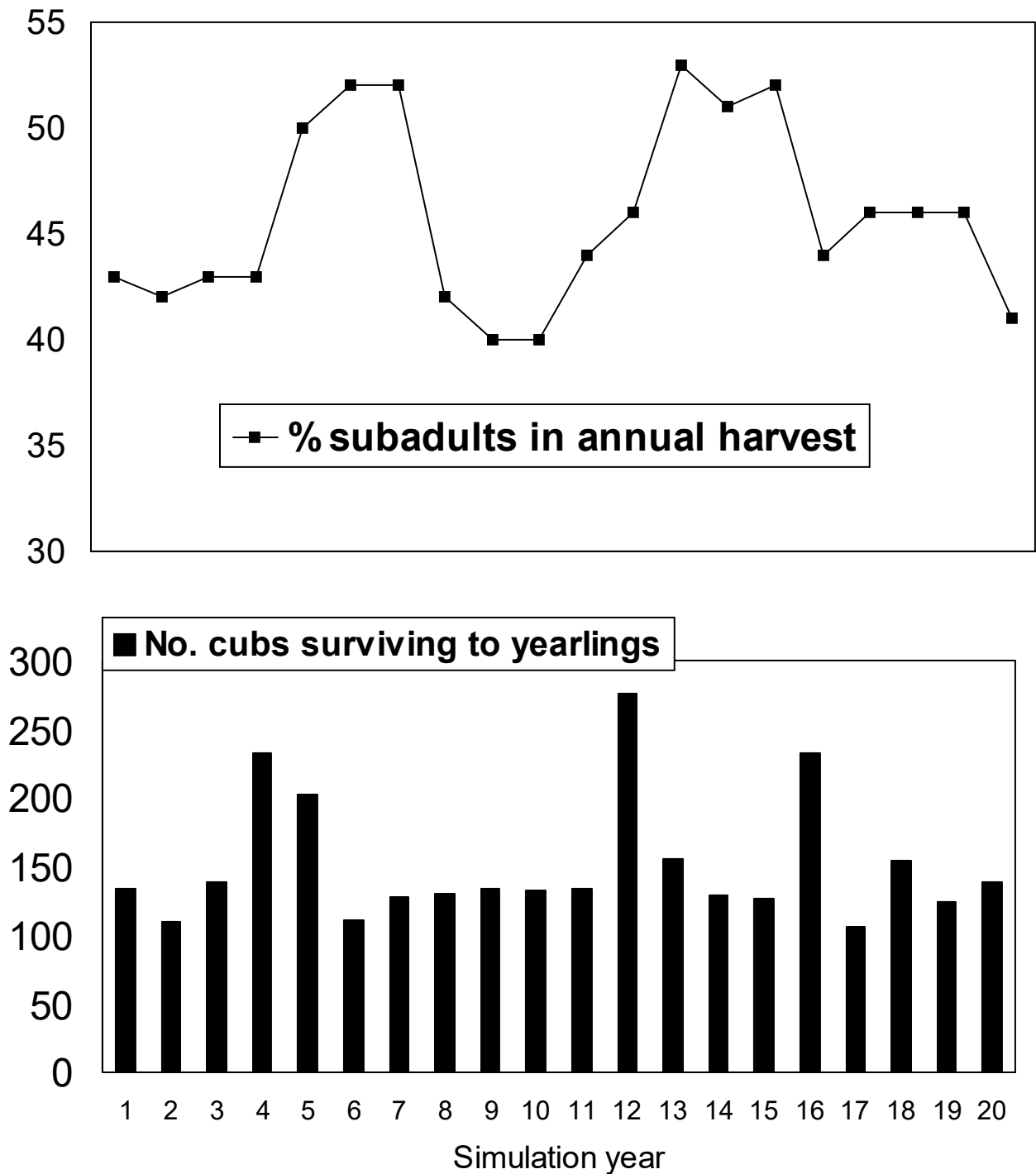


Figure 14-3. Simulation of black bear cohort size variation and its influence on harvest age composition in a 20 year stable population simulation for data applicable to black bears in New Mexico.

Synchronized reproduction can be simulated. Constant rate scenarios provide a basis for examining synchrony, by following the impact of a single mast failure over time. One year of mast failure in a simulation with NSA natality rates and otherwise all fair mast produces almost no cubs in the year following the mast failure, a very large cohort in the second year, and a smaller than normal cohort the third year. Variations continue for several more years, but with differences too small to be noticeable. A similar pattern occurs with SSA natality rates, except that the initial mast failure produces 2 cohorts about half average size since the mast failure reduces survival for cubs already born as well as parturition for the next year's cohort. A single mast failure affects cohort size for 3 or 4 years. Any single year's observation of population composition may misrepresent the longer time scale pattern. Averages over 2 to 4 years are useful for examining patterns over long time periods.

Characteristics of over-harvest. The model was used to investigate potential indicators of over-harvest and declining populations. A 20 year simulation of a hypothetical population fluctuating around a steady mean, with annual variations in mast index and 2 years each of high and low hunt effort, was used as a baseline. Declining populations were simulated by mast and reproductive failure, increased non-hunt mortality, and increased hunt mortality. For each cause of decline, runs were made with hunt mortality determining pelt numbers and with pelt numbers specified resulting in increasing hunt mortalities in the second decade. The hypothetical scenarios used for this discussion are stored in the model scenario library.

In the baseline simulation, pelt numbers fluctuated from year to year with cohort and hunt effort variations, but remained stable on average. The proportion of females varied in the range of 46-51%, and the proportion of subadults varied in the range of 34 – 44%, with no trends over time.

In all of the declining population simulations without forced pelt tag numbers, simulated harvest numbers fluctuated, but relative peaks decreased and averages clearly dropped over time. In the stable population simulation, harvest numbers were steady on average. In other simulations with increasing populations, pelt numbers increased on average. Trends in harvest numbers should indicate population trends if hunting effort remains reasonably constant and if harvest numbers are related to bear numbers, that is if hunting mortality rate has some reasonable upper limit. The problem with depending on pelt tagging report numbers as a population indicator lies in the assumptions. In New Mexico, changes in hunt season dates and substantial variation in numbers of hunters produce variations in hunt effort, so that patterns in pelt numbers must be interpreted in conjunction with patterns in hunter numbers and seasons. A persistent decrease in total pelts over 4 years or more without a related decrease

in hunting effort should be investigated as a potential indication of a population decline.

Simulations with forced pelt tag numbers can represent cases of harvest numbers not related to bear numbers, so that hunt mortality increases until hunters take all bears. If hunters can kill the same numbers of bears at high and low bear population levels, then pelt number patterns are not a reliable indicator of live population trends.

The age and sex composition of pelts from populations declining due to increased mortality rates did not differ noticeably from the baseline stable population simulation. In the simulation with persistent reproductive failure, the proportion of subadults in pelts decreased by half in 6 years, and then remained low but stable. In the reproductive failure case, independent information on persistent mast failures would alert managers to a probable population decline before pelt age changes could become obvious. Changes in pelt sex and age composition are not useful indicators of population size trends. Age and sex of pelts does provide useful information on relative cohort sizes and impacts on the pool of reproductive females, however.

In the simulations of populations declining from increased hunt or nonhunt mortality rates, the population declines could be stopped or reversed by reducing hunt mortality. In the simulation of population decline from reproductive failure, the rate of the decline was slowed with reduced hunt mortality.

Declining populations are hard to recognize from pelt tag data alone. Decreased pelt numbers without decreased hunt effort would indicate a declining live population, but would take perhaps a decade to become apparent. The bear model provides a context for interpreting pelt numbers; interpretations are considerably strengthened by the incorporation of other information such as mast observations, hunter numbers, and season timing.

Focus on female harvests. Initial experiments with the model are likely to produce frustration with the difficulty of forming definitive conclusions in the face of uncertainty about vital rates. Further experience with a variety of simulations will indicate that the pool of reproductive females is critical to population trends, an outcome that is not surprising. In New Mexico there is good information on harvest numbers. Even though female mortality rates are not known with certainty, unusually high female harvest numbers (well above averages from other years) can be recognized from pelt data, and imply unusually high female mortality for the year. In New Mexico there is a well-documented relationship between mast crop success or failure and reproductive success or failure (see Chapter 6). Continuing observations of fall mast will provide a good indication of annual variation in reproduction, and the associated variability in cohort size should be detectable from pelt ages. The model provides the capability of

simulating the population consequences of the real pattern of female harvest and reproduction over several years, key to assessing the potential for over-harvest. High female harvest numbers combined with poor reproduction need management attention.

MANAGEMENT IMPLICATIONS

The bear population model is a tool for integrating harvest and biological information, and forming interpretations that are consistent with existing knowledge. It helps managers to:

- Interpret harvest data in the context of bear population biology, including reproductive patterns and the influence of environmental conditions on vital rates, such as parturition and survival
- Make inferences about bear population size and status that are plausible and consistent with available harvest and biological information
- Evaluate the consequences of management options to bear populations

“Knowledge in, knowledge out” is the philosophy of bear model use. Inputs are the characteristics of the particular population to be modeled and the year-to-year changes in the conditions that affect that population. Outputs are predicted year-to-year changes in numbers and in age and sex composition of the live population and of hunter-killed bears. Model calculations link the outputs to the inputs based on knowledge of bear population dynamics. Model predictions are consistent with the inputs. Greater confidence in inputs means greater confidence that simulated population behavior is realistic.

The model simulates population behaviors that are realistic for conditions in New Mexico. There will always be considerable uncertainty in information about black bears. Because of this uncertainty, managers will not be able to use the population model for simple predictions of legal kills or population trends. The model will be useful for gaining insight about how bear populations can behave, and for discriminating between reasonable and unreasonable explanations of observed harvest trends.

The New Mexico bear model can incorporate variation in vital rates over time based on real population histories, through annual mast observations for natality variation, and annual harvest numbers for mortality variation. The consequent perturbations in live population structure and harvest composition can then be simulated and taken into account for population status interpretation.

The black bear population model can be a useful tool for understanding bear population dynamics, and educating the intuition of managers. Sufficient practice with the model is essential to appropriate interpretation.

Experimentation with the impacts of small changes in different inputs, or sensitivity analysis, will provide insight into the relative importance of different kinds of input information, allowing effort to focus on the most important variables.

When good input information is available, the black bear population model can be a useful tool for assessing population status. Continuing collection of hunt effort information through the hunter card survey and information on the number, sex, age, and location of hunter-killed bears through mandatory pelt tagging reports will be useful. Routine observation of fall mast abundance will be useful. Attention to habitat suitability, using GIS tools, will be useful.

Black bear population status appears to vary among mountain regions in New Mexico. Hunting regulations that vary among regions make sense from a population biology perspective.

Focusing the interpretation on bear population status on the female segment is useful, because the pool of adult females is critical to population maintenance. Annual variation in male harvest numbers is harder to interpret because subadult males may be migrants.

Be cautious in interpreting bear model predictions for conditions outside the range of experience from the bear study, including poorer habitats, different hunt regimes, and other climate conditions.

CHAPTER 15

MANAGEMENT TOOLS AND APPLICATIONS

It is vital that readers of this report and its appendices recognize that they are a tool for future management investigation and decision-making. Using the study results, the population and habitat models, and data collected annually by NMDGF, managers can explore the results and consequences of many management options. This product does not provide answers to all management questions; it provides the means to answer questions when used with reliable and up-to-date information.

EXISTING TOOLS

Hunter-Kill Data Records

Since 1978, the NMDGF has collected annual records of harvested bears through a mandatory tagging and reporting program. Beginning in 1985, utility of these data was improved with the requirement of proof of sex and collection of a premolar tooth for age determination with the cementum annuli method. This data set, known as the pelt tag records, also includes information on date, location, and method of kill.

Hunter Survey

Since 1989, the NMDGF also has conducted mail-in surveys of all buyers of bear hunting licenses to obtain data on hunter effort and methods to be used in conjunction with harvest records. These records, known as the card survey data, are collected and analyzed by the NMDGF Division of Wildlife.

NEW TOOLS

Bear Population Model

An important product of this study is a black bear population model that directly incorporates reproductive and survival rates observed during 8 years of field study, along with harvest data routinely collected by the New Mexico Department of Game and Fish. Utility of the model depends on continued input of data in the form of (1) annual hunter-kill (pelt tag) records and (2) annual observations of regional mast production.

Habitat Model

Another important product of this study is a model of predicted suitable habitat for black bears in New Mexico. This model is a relatively simple predictive algorithm that incorporates land cover classes (habitat types), land

cover class suitability for bears, mast production potential, and distance of isolated habitat tracts from primary habitat types. The model allows for examination of bear habitat with respect to other landscape features such as roads, distribution of hunter-killed bears, proximity to human population, and other factors that a resource manager may choose to evaluate. The model is designed to incorporate and integrate with new ecological and socioeconomic information as it becomes available.

Annual Mast Survey

The mast production survey implemented during this project is a procedure conducted by NMDGF personnel using categorical criteria to distinguish annual variation in mast production. Study results indicate that documenting annual mast production, particularly occurrence and frequency of mast failures, will be an effective tool for predicting future black bear reproductive success. In addition, knowledge of mast failure may aid in interpreting harvest data, because mast failure appeared to influence amount and composition of hunter harvests.

Research Report and Data sets

The Final Report and associated data sets (on CDs) provide extensive archiving of bear project data and interpretation of that information. Some of this information is supplemental to specific uses in the bear population model and habitat model. The report materials in total are a foundation for asking additional questions about managing black bears in New Mexico and describe uses of all of the tools mentioned here.

UNDERSTANDING THE TOOLS

Hunter-Kill Data

Hunter kill data provide information only from successful hunters. Continued collection of pelt tag report data is essential for estimating population trends using the bear population model. Analyses indicate ages of hunter-killed bears, estimated using the cementum annuli method, are sufficiently accurate to support interpretation of pelt tag data. Use of the bear population model requires age-specific data on bears aged 1-4 years, and distinguishing subadult from adult bears killed by hunters. Our analysis indicated the currently used age determination technique is most accurate and consistent for young bears. Procedural improvements, such as minimizing breakage and extracting the correct tooth, also will increase accuracy.

Analysis of pelt tag records from marked study bears indicated as many as 7% of hunter-killed bears reported to NMDGF are missing from finalized pelt tag data. Improvement in the flow of data from field personnel through area

offices to the Santa Fe office is necessary to ensure the most accurate data possible. Also, it is essential that UTM coordinates for locations of bear kills recorded on the pelt tag record be accurate and consistent with the GMU to maximize abilities to plot bear kill data with respect to habitat model output.

Hunter Survey

The hunter card survey collects information from unsuccessful as well as successful hunters, allowing estimation of effort and success rates. Continued collection of mail survey data is essential for knowledge of the geographic distribution of hunting effort, not available from statewide license sales or pelt tag records. Archiving raw survey response data will facilitate analysis beyond the routinely reported annual projections.

Projections of total hunter effort and harvest from card survey responses depend on total statewide license sales numbers. Because the state fiscal year is different from the regulation year, and license sales records are maintained for fiscal use, careful attention to appropriate total license numbers is important to card survey projections.

Surveys are mailed to all license holders with usable mailing addresses. Archiving mailing lists and noting undeliverable returns would improve knowledge of response rates, allow comparison of response rates by region, and facilitate follow up surveys of nonrespondents to assess bias.

Annual Mast Survey

Results of simplified surveys conducted by NMDGF officers were highly correlated with more intensive survey results, indicating quantified subjective criteria are adequate to distinguish variation in mast production. Most officers found the criteria were reasonably easy to use and could be completed during routine duties. In the future, an effort to establish general survey routes, revisited each year, may reduce unnecessary variability and ensure quality data.

Bear Population Model

The bear population model is a tool for (1) interpreting past or present conditions using real time series observations of harvest and mast, and (2) investigating demographic outcomes from hypothetical information based on realistic biological conditions and management actions. Model input variables are reproductive rates, survival rates; and mast production; outputs are predicted population composition and harvest composition. The inputs appear to be simple, but the user must be educated to the influences of factors such as hunt timing, methods, and regional differences in productivity and mortality. Information in the Final Report and interpretations from GIS habitat modeling are important resources for judging inputs for the bear population model.

Reliable information is essential for using the bear population model and interpreting its output. Continuing collection of hunt effort information through the hunter card survey and information on the number, sex, age, and location of hunter-killed bears through mandatory pelt tagging reports will be important for future management. Continued mast survey data are also essential inputs for the bear population model, because vital rates are deterministic functions of mast index in the model.

Information from this study indicated mean age of females at birth of first cubs was 5.7 years for study bears, and only 9% of 4-year-old bears produced first litters. Use of the population model assumes the adult segment of the bear population in New Mexico is bears ≥ 5 years old.

Sufficient practice with the model is essential to appropriate interpretation. Sensitivity analysis, or experimentation with the impacts of small changes in different inputs, will provide insight into the relative importance of different kinds of input information, allowing efforts to focus on the most important variables. Focusing interpretation of bear population status on the female segment is useful because the pool of adult females is critical to population maintenance. Annual variation in male harvest numbers is harder to interpret because subadult males may be migrants.

Caution is necessary in interpreting bear model predictions for conditions outside the range of experience from the bear study, including poorer habitats, different hunt regimes, and other climate conditions.

Habitat Model

At present, restrictions on availability of comprehensive, detailed, statewide information layers limit detailed analysis of habitat quality and potential effects of humans on bear survival. However, the model was constructed so that future, more resolved information can be easily incorporated to update model predictions. Such new data integration also applies to analytical uses of the habitat model to assess proximity to human-populated areas and other evidence of prospective human interaction with bears (e.g., traffic, recreation). The habitat model also may be useful in developing or verifying inputs to the bear population model, especially upper limits for modeled populations.

APPLYING THE TOOLS

Population Monitoring and Interpreting Hunter-Kill Data

Use of the bear population model, with the inputs described above, will (1) allow for interpretation of recent demographic trends in New Mexico bear populations, (2) provide a timely indication of potential overharvest, and (3)

provide predictive scenarios useful for selecting from several management options.

Although status and trends in black bear populations cannot be detected from harvest data alone, patterns in harvest data may flag areas of concern to managers. For example, missing cohorts and associated reduction in proportions of subadults in the harvest over several years may suggest poor reproduction.

Model vital rates are deterministic functions of mast index, which can be randomized with realistic frequencies, or matched to observations. Series of scenarios with different mast patterns or characteristic vital rates can be set up easily and run in a short time by NMDGF wildlife managers and researchers investigating further and future questions about bear population management. Outputs of interest must be recorded and organized for comparison; the model does not compare results of differing scenarios automatically.

Among adult and subadult bears, most mortality was human-caused. In addition to hunting, illegal kills and depredation kills were significant sources of mortality for these bears. Illegal kills were documented on both study areas, and many of the unexplained losses were probably due to illegal kills followed by destruction of the transmitters. We were unable to verify any of these possible mortalities, therefore these possible rates should be viewed as maximum rates.

Interpretation of population trend also will be improved by actual data on bear mortalities resulting from depredation and nuisance situations. Currently, NMDGF data are incomplete and do not represent a concerted effort to assess the impact of these actions on bear populations.

Because reproductive success and recruitment are determined largely by mast production, people primarily alter black bear population growth through human-caused mortality of adult and subadult bears. Use of the bear population model with reproductive and survival rates observed during this study indicated study populations were stable (SSA) or slightly increasing (NSA) with a likely annual population increment of no more than 2-4% growth per year on average. If management goals are to maintain bear population levels, strategies that emulate demographic rates observed during this project are appropriate. If management goals are to accomplish strategic changes in numbers or redistribution of bears (e.g., reduce or increase total population, different regional population objectives), then management strategies will call for altering mortality rates up or down from those observed during this study. Options related to those goals can be explored using capabilities of the bear population model.

If annual mast surveys are continued long-term, in addition to providing annual information necessary for model inputs, they also will provide valuable information on the relative frequency of mast failures within different regions of

New Mexico. This information will be useful for determining the growth potential of distinct bear populations within the different regions of New Mexico.

Population Estimation

Two independently derived population estimates (bear population model and habitat extrapolation) put the New Mexico statewide bear population at approximately 5200-6000 bears. These estimates were for the pre-mast season (May-early August) and excluded cubs of the year.

Statewide population estimates derived from this study refute previous estimates. Our estimates indicate a statewide population of approximately twice the long-standing estimate of 3,000 bears previously used by the NMDGF. However, these estimates do not suggest a doubling of the bear population in the past decade. Rather, these estimates are based on better information including demographics, density, and habitat extent.

Population estimates must be used advisedly because each method of population estimation has intrinsic limitations and firm numbers can never be achieved. Furthermore, population estimates derived from the field study represent density in good habitat, and little is known about the relative density of bears found in less suitable habitat. With this new information NMDGF has additionally recognized latitude in bear management, but should proceed with caution regarding adjustment of harvest goals near the upper limit of new estimates without further testing of the model and predictive scenarios.

Estimates of black bear density and total population provide a reasonable estimate of the upper limit of New Mexico bear populations. As an input into the bear population model, this information is intended as a planning figure. While it is not exact, it illustrates that there is an upper limit to the possible statewide bear population and ensures a level of reality prohibiting predictions of unlimited population growth.

Hunt Management

Annual bear kill by hunters was affected by many factors including season timing, hunter effort, hunter method, and mast production, as well as underlying population composition. Hunters aided with dogs had higher success rates and harvested 4 times as many female bears per hunter as those not using dogs. Harvest was positively associated with hunter effort (higher harvest with greater effort), while harvest was negatively associated with mast production (higher harvests with lower mast abundance). Knowledge of these relationships may aid the NMDGF in selecting among various hunt management options.

During the intensive fall foraging period, study bears commonly increased activity patterns and made frequent long-range movements outside of their

primary home ranges. Differences in movement patterns were observed between regions and among different sex and age categories. Movement patterns also differed relative to availability of mast, primarily acorns. Knowledge of these movement patterns may allow the NMDGF to set fall seasons at times most appropriate to accomplish various harvest objectives.

Bears entered dens as early as September and as late as February. Differences in den entry dates were observed between pregnant female and other bears and between regions of New Mexico, however much overlap occurred between sexes and varied annually. Knowledge of these differences will allow the NMDGF to influence the sex and age composition of the harvest to achieve desired management objectives, such as protection of adult females as the reproductive segment of the population. Analysis of pelt tag records indicates later timing of fall seasons reduced harvest of female bears.

Bears emerged from dens as early as March and as late as May. Slight differences in den emergence dates were observed between male and female bears, indicating careful timing of an early spring season could reduce vulnerability of female bears, especially those with new cubs. Analysis of pelt tag records showed spring harvests were dominated by male bears. However, immobility of cubs immediately following den emergence increases the potential for separation of cubs from their mothers (preventing identification of females with cubs), thus orphaning and inevitable cub mortality. Considering both factors, it appears that any spring hunting season will have the potential for reducing cub survival.

Knowledge of black bear denning dates is useful for interpreting sex and age composition of the harvest. The verified differential in den entry and emergence dates among sex and age groups has application to setting bear hunting seasons to accomplish various objectives. However, den entry and emergence dates are highly variable and generally span a period exceeding 2 months. We observed variation relative to mast production; other factors undoubtedly play a role influencing the timing from year to year. No single timing scenario is appropriate for every use.

It is important to recognize that there was no legal hunting on the NSA during 1992 through 1997. Therefore the hunting mortality rates observed may not reflect actual mortality of bears from hunting in northern New Mexico. The possibility of total mortality exceeding the rates we observed must be considered when interpreting harvest data and output from the bear population model.

Habitat Considerations

Estimated statewide bear habitat encompasses approximately 14.6 million acres, of which 75% is primary habitat. Primary habitat represents about 13.5% of the state.

Within predicted bear habitat, mast producing land cover types were found within 7 km (female mast season activity radius) of primary habitat throughout New Mexico except for about 300 km² in the Sangre de Cristo complex. This indicates that nearly all bears have access to habitat with important mast-producing species. However, actual abundance of oak, juniper, and pinyon is unknown within bear habitat because current data are not adequate to assess detailed distribution of potential mast production. Better information on actual mast-species abundance may allow for better interpretation of habitat quality and its potential for bear productivity.

Dens that facilitate security and energy conservation during hibernation period are of significant value to black bears, and female bears exhibit a tendency to select tree cavity dens when available. Retention of large diameter live trees, large snags, and large fallen logs may be a valuable goal in all forest management plans and programs.

Nuisance and Depredation Resolution

Approximately 17% of bear habitat is situated within 5 km of human populations. Availability of garbage and other human-related foods is associated with increased nuisance and depredation activity by bears. Despite the significant potential for conflict, analyses indicated only a minority of bears engaged in nuisance or depredation activities. Nonetheless, kills resulting from bear-human conflict represent a significant mortality factor within the bear population. Efforts to reduce accessibility of human-related foods will be instrumental in reducing the likelihood of bear problems in areas with human populations.

Translocation of bears, as a means of solving depredation and nuisance problems, has shown variable success. Observed homing behavior of adult bears indicates translocation of adult bears is merely a short-term solution, particularly if attractants are not removed from the original site. However, short- and long-term settlement was observed among translocated subadult bears, indicating relocation of subadult bears into remote areas, with little potential for human conflict, may be an effective management tool. Nonetheless, translocation of problem bears should not be done without associated attempts to eliminate or reduce accessibility to human-related attractants (e.g., garbage, pet foods, wildlife feeding, bee hives) where such attractants exist.

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APPENDICES

This section contains and references a variety of more lengthy context information regarding the black bear investigation in New Mexico. This section also identifies information in various digital formats and indicates how that information is delivered in final form.

In some cases, digital information are on CDs that reside with New Mexico Department of Game and Fish and U.S. Fish and Wildlife Service Division of Federal Aid. CDs are not provided with every copy of the final report that is printed and distributed.

APPENDIX A: BEAR HANDLING HISTORY, DENNING DATES, AND LOCATION DATA

This appendix represents a tabulation of field data regarding capture and handling histories of individual study bears (StudyBearHistory), den entry and emergence data (DenningDates), and bear locations derived from telemetry monitoring (BearLocations). This appendix is 3 extensive Excel spreadsheets with metadata that are included as data files on a CD-ROM deposited with NMDGF and USFWS as part of the electronic deliverables. A brief example of the file formats for each of the 3 files follows:

StudyBearHistory file format

Age Class	Age	Date	Event	Transmitter Status	Reproductive Status
SA	4	9/24/1992	Capture	New collar	
SA	4	9/26/1992		Shed collar	
SA	3	9/1/1992	Began monitoring	Collar OK	
SA	4	1/13/1993	Handled in den	New collar	No offspring
AD	5	3/22/1994	Observed in den	Collar OK	No offspring
AD	6	3/27/1995	Handled in den	New collar	2 cubs (F690, F691)
AD	7	2/19/1996	Handled in den	Collar OK	1 yearling (F691)
AD	8	3/23/1997	Handled in den	New collar	2 cubs (M284, F674)
AD	9	3/22/1998	Observed in den (inaccessible)	Collar fit unknown	2 yearlings (M284, F674)
AD	9	8/20/1998	Recapture	Collar OK	
AD	10	3/22/1999	Handled in den	New collar	2 cubs (F656, F657)
AD	11	2/18/2000	Handled in den	Removed collar	2 yearlings (F656, F657)
AD	8	9/1/1992	Began monitoring	Collar OK	
AD	9	3/11/1993	Handled in den	New collar	2 cubs (F513, F601)
AD	10	2/7/1994	Handled in den	Collar OK	1 yearling (F513)
AD	10	6/9/1994	Recapture	Collar OK	
AD	10	9/17/1994	Mortality (hunter kill)	Collar OK	
AD	8	9/1/1992	Began monitoring	Collar OK	
AD	9	3/13/1993	Handled in den	New collar	1 cub (M201)
AD	10	2/5/1994	Observed in den	Collar OK	1 yearling (M201)
AD	11	3/17/1995	Handled in den	New collar	2 cubs (M296, M297)
AD	12	2/20/1996	Handled in den	Collar OK	1 yearling (M296)
AD	12	9/2/1996	Mortality (hunter kill)	Collar OK	
AD	10	9/1/1992	Began monitoring	Collar OK	
AD	11	3/15/1993	Handled in den	New collar	3 cubs (M135, M136, F514)
AD	12	2/9/1994	Handled in den	Collar OK	3 yearlings (M135, M136, F514)
AD	13	3/23/1995	Handled in den	New collar	3 cubs (M295, F692, F693)
AD	13	5/12/1995	Mortality (possibly killed by bear)	Collar OK	
SA	3	9/1/1992	Began monitoring	Collar OK	

DenningDates file format

BEAR	YEAR	AREA	SEX	MAXACT	MINDEN	ENTRY DATE	DAYS1	MAXDEN	MINACT	EMERGE DATE	DAYS2	TDAYS
F502	1993	NSA	F	10/26/1992	11/6/1992	11/1/1992	11	4/12/1993	4/21/1993	4/17/1993	9	166
F502	1994	NSA	F	11/4/1993	11/9/1993	11/7/1993	5	3/24/1994	4/7/1994	4/1/1994	14	145
F502	1996	NSA	F					4/26/1996	5/5/1996	5/1/1996	9	
F502	1997	NSA	F	10/31/1996	11/11/1996	11/6/1996	11	4/27/1997	5/10/1997	5/4/1997	13	178
F502	1998	NSA	F					4/30/1998	5/9/1998	5/5/1998	9	
F502	2000	NSA	F	10/14/1999	10/21/1999	10/18/1999	7					
F503	1993	NSA	F	10/14/1992	10/26/1992	10/21/1992	12	4/5/1993	4/12/1993	4/9/1993	7	169
F503	1994	NSA	F	11/4/1993	11/9/1993	11/7/1993	5	4/18/1994	5/2/1994	4/26/1994	14	170
F504	1993	NSA	F	10/14/1992	10/26/1992	10/21/1992	12	4/30/1993	5/14/1993	5/8/1993	14	198
F504	1994	NSA	F	10/15/1993	10/22/1993	10/19/1993	7	5/2/1994	5/13/1994	5/8/1994	11	201
F504	1995	NSA	F	10/14/1994	10/28/1994	10/22/1994	14					
F504	1996	NSA	F					4/26/1996	5/5/1996	5/1/1996	9	
F505	1994	NSA	F	10/8/1993	10/15/1993	10/12/1993	7	4/7/1994	4/18/1994	4/13/1994	11	183
F506	1993	NSA	F					5/24/1993	6/2/1993	5/29/1993	9	
F506	1994	NSA	F	11/4/1993	11/9/1993	11/7/1993	5	3/24/1994	4/7/1994	4/1/1994	14	145
F506	1995	NSA	F	10/14/1994	10/28/1994	10/22/1994	14					
F506	1996	NSA	F	11/7/1995	11/14/1995	11/11/1995	7	5/5/1996	5/12/1996	5/9/1996	7	180
F506	1997	NSA	F	10/24/1996	11/2/1996	10/29/1996	9					
F506	1998	NSA	F					5/9/1998	5/28/1998	5/19/1998	19	
F510	1994	NSA	F	11/9/1993	11/18/1993	11/14/1993	9	4/18/1994	5/2/1994	4/26/1994	14	163
F510	1995	NSA	F	10/14/1994	10/28/1994	10/22/1994	14					
F510	1996	NSA	F	11/7/1995	11/14/1995	11/11/1995	7	5/5/1996	5/12/1996	5/9/1996	7	180
F510	1997	NSA	F	10/10/1996	10/24/1996	10/18/1996	14	5/28/1997	6/12/1997	6/5/1997	15	229
F510	1998	NSA	F					4/30/1998	5/9/1998	5/5/1998	9	
F511	1994	NSA	F					4/18/1994	5/2/1994	4/26/1994	14	
F512	1994	NSA	F	10/15/1993	10/22/1993	10/19/1993	7	5/13/1994	5/31/1994	5/23/1994	18	216
F512	1995	NSA	F	10/14/1994	10/28/1994	10/22/1994	14	5/4/1995	5/20/1995	5/13/1995	16	203
F512	1996	NSA	F	11/7/1995	11/19/1995	11/14/1995	12	5/5/1996	5/12/1996	5/9/1996	7	177
F512	1997	NSA	F					4/27/1997	5/10/1997	5/4/1997	13	
F516	1995	NSA	F	11/4/1994	11/10/1994	11/8/1994	6					
F516	1996	NSA	F					4/26/1996	5/5/1996	5/1/1996	9	
F516	1998	NSA	F					5/9/1998	5/28/1998	5/19/1998	19	
F516	1999	NSA	F					5/6/1999	5/22/1999	5/15/1999	16	
F516	2000	NSA	F	10/14/1999	10/21/1999	10/18/1999	7					
F517	1995	NSA	F					5/4/1995	5/20/1995	5/13/1995	16	
F517	1996	NSA	F	11/7/1995	11/14/1995	11/11/1995	7	4/26/1996	5/5/1996	5/1/1996	9	172
F517	1997	NSA	F					5/10/1997	5/28/1997	5/20/1997	18	
F517	1998	NSA	F	11/17/1997	11/30/1997	11/24/1997	13	4/30/1998	5/9/1998	5/5/1998	9	162
F517	1999	NSA	F					5/13/1999	5/22/1999	5/18/1999	9	

BearLocations file format

AREA	BEAR	SEX	DATE	YEAR	AGE	AGECL	LANDMARK	EAST	NORTH	LOCSTAT
NSA	F502	F	10/2/1992	1992	3	SA	Atmore Ranch	488000	4048200	I
NSA	F502	F	10/26/1992	1992	3	SA	Colin Neblett	486400	4047400	A
NSA	F502	F	1/1/1993	1993	4	SA		488200	4049900	DV1
NSA	F502	F	2/1/1993	1993	4	SA	Maxwell Camp	486300	4050600	D2
NSA	F502	F	4/21/1993	1993	4	SA	Colin Neblett	486300	4047500	A
NSA	F502	F	4/30/1993	1993	4	SA	Maxwell Camp	486200	4051100	A
NSA	F502	F	5/14/1993	1993	4	SA	Maxwell Camp	486200	4051100	A
NSA	F502	F	5/24/1993	1993	4	SA	California Creek	486600	4049400	A
NSA	F502	F	6/2/1993	1993	4	SA	W Atmore Ranch	486700	4049300	A
NSA	F502	F	6/8/1993	1993	4	SA	Maxwell Camp	485700	4050200	A
NSA	F502	F	6/15/1993	1993	4	SA	Maxwell Camp	486000	4050700	A
NSA	F502	F	6/23/1993	1993	4	SA	California Creek	487200	4047800	A
NSA	F502	F	6/30/1993	1993	4	SA	W Atmore HQ	487400	4048900	A
NSA	F502	F	7/9/1993	1993	4	SA	Atmore HQ	489100	4049200	A
NSA	F502	F	7/19/1993	1993	4	SA	Atmore HQ	486100	4049000	A
NSA	F502	F	7/29/1993	1993	4	SA	Maxwell Camp	485100	4049800	A
NSA	F502	F	8/5/1993	1993	4	SA	W of Atmore	485600	4049100	A
NSA	F502	F	8/24/1993	1993	4	SA	Maxwell Camp	486500	4050200	A
NSA	F502	F	9/1/1993	1993	4	SA	N Dean Canyon	504200	4045800	A
NSA	F502	F	9/16/1993	1993	4	SA	S Horseshoe Canyon	504200	4048700	A
NSA	F502	F	9/21/1993	1993	4	SA	Chase Canyon	505500	4048400	A
NSA	F502	F	10/1/1993	1993	4	SA	W Atmore HQ	487400	4049200	I
NSA	F502	F	10/8/1993	1993	4	SA	Chase Canyon	504900	4048500	A
NSA	F502	F	10/15/1993	1993	4	SA	W Johns Pond	487900	4047400	A
NSA	F502	F	10/22/1993	1993	4	SA	E Ute Creek Ranch	492100	4047700	A
NSA	F502	F	11/4/1993	1993	4	SA	E Ute Creek Ranch	491100	4049600	A
NSA	F502	F	1/1/1994	1994	5	AD		491900	4048300	DV
NSA	F502	F	4/7/1994	1994	5	AD	NE Ute Creek Ranch	491300	4048700	A
NSA	F502	F	4/18/1994	1994	5	AD	W Santa Claus Camp	491100	4049800	A
NSA	F502	F	5/2/1994	1994	5	AD	W Johns Pond	488100	4047900	A
NSA	F502	F	5/13/1994	1994	5	AD	E Ute Creek	487100	4051100	A
NSA	F502	F	5/25/1994	1994	5	AD	W Atmore HQ	486600	4048800	A
NSA	F502	F	5/31/1994	1994	5	AD	Ute Creek	487300	4049600	A
NSA	F502	F	6/17/1994	1994	5	AD	California Creek	487700	4047600	A
NSA	F502	F	6/30/1994	1994	5	AD	S California Creek	485500	4046300	A
NSA	F502	F	7/11/1994	1994	5	AD	N California Creek	487100	4047900	A
NSA	F502	F	7/29/1994	1994	5	AD	TMN Mountain	485400	4049200	A
NSA	F502	F	8/18/1994	1994	5	AD	N California Creek	488500	4047800	A
NSA	F502	F	8/26/1994	1994	5	AD	Johns Pond	488700	4047800	A

APPENDIX B. GIS AND DATA FILE LISTING AND METADATA

This is an index to the GIS coverages and data files that have been compiled for use in the bear project. The metadata for these files consists of the listing in this appendix and metadata records included with the GIS coverages or individual files identified. Metadata for GIS coverages are designed to meet Federal Geographic Data Committee standards and format. The data and metadata are available on a CD-ROM on file with NMDGF and USFWS as part of final electronic deliverables. The following table describes the directory and file structure for accessing coverages and data files.

Folder	Description	Files	File Description	FGDC Metadata Record
ArcView	ArcView projects and files			
		Model2.apr	Programming for habitat model	
		bearfigs.apr	Arc/View programming for Chapter 11 figures	
		studysites.apr	Arc/View programming for study site figures	
		fig11-x.wmf	Chapter 121 figures	
Residents	Census data			
		blk00.dbf	2000 Census block Boundaries	..\Residents\blk00.htm
		grp00.mdb	2000 Census Block-Group boundaries	..\Residents\grp00.htm
		tract00.dbf	2000 Census Tract Boundaries	..\Residents\tract00.htm
		PlaceNames.shp	Names and locations of physical and cultural geographic features located within New Mexico.	..\Residents\PlaceNames.htm
		distopop	Distance (m) to nearest human population center	..\Residents\distopop.htm
		Census2000	Tables associated with 2000 census and population projections by county	
HabitatModel	Files associated with bear habitat model.			
		statemodel2	Predicted habitat suitability for Black bear.	..\HabitatModel\statemodel2.htm
		Range2	Predicted extent (range) of black bear occurrence	..\HabitatModel\Range2

		vegattr.dbf	Habitat and Mast scores by Land cover classification	
		popcodes.dbf	Description of black bear range assignments	
HuntingFishing	Files associated with hunter and fisherman use statistics and areas of use.			
		HuntingAnglingEffort.mdb	Access files containing hunter use data by game management unit, or antelope management unit, angler survey data, and New Mexico fishing waters data. Also contains a file with metadata.	
		amu.shp	Shapefile showing boundaries of New Mexico Game and Fish antelope management units for use with antelope harvest survey data.	..\HuntingFishing\amu.htm
		fishingwaters.shp	Shapefile coverage of waters in New Mexico used by fishermen, for use with angler survey data.	..\HuntingFishing\fishingwaters.htm
		gmu98.shp	Shapefile showing boundaries of New Mexico Game and Fish game management units, for use with harvest survey data.	..\HuntingFishing\gmu98.htm
		beartag	Pont locations of bear kills in New Mexico	..\HuntingFishing\beartag.htm
Landcover	Land cover coverage			
		gaplandcover	GAP landcover file.	..\landcover\gaplandcover.htm
Metadata	Metadata for bear project			
		BearPrjMetadata.xls	This file, excel file containing bear project index and metadata.	
		citation.dbf	Citations used in metadata.	
		contact.dbf	Table of contacts used in	

			metadata.	
Ownership	Stewardship of New Mexico lands			
		PLSS	Shape file depicting stewardship of lands in New Mexico	..\landownership\PLSS.htm
Roads	Files with road locations			
		AllRoads.shp	Shapefile roads coverage containing major and minor New Mexico roads.	..\Roads\AllRoads.htm
		cfccodes.xls	Excel file explaining codes used in allroads coverage.	
		nmroads.shp	Shapefile containing major roads in New Mexico	..\Roads\nmroads.htm
		distord	Distance to nearest secondary road	..\Roads\distord.htm
		rddens7k	Total Length of road within 7k radius (female activity radius)	..\Roads\rddens7k.htm
		rddens12k	Total length of road within 12k radius (male fall activity radius)	..\Roads\rddens12k.htm
StudyData	Files specific to bear project			
		nsabounds.shp	Shapefile showing boundary of northern study area.	..\StudyData\nsabounds.htm
		nsabuff.shp	Shapefile showing buffer around northern study area.	..\StudyData\nsabuff.htm
		nsadem	Digital elevation model for northern study area.	..\StudyData\nsadem.htm
		nsahillshade	Hillshade file for use with northern study area digital elevation model.	..\StudyData\nsahillshade.htm
		ssabounds.shp	Shapefile showing boundaries of southern study area.	..\StudyData\ssabounds.htm
		ssabuff.shp	Shapefile showing buffer around southern study area.	..\StudyData\ssabuff.htm
		ssadem	Digital elevation model for southern study area.	..\StudyData\ssadem.htm
		ssahillshade	Hillshade file for use with southern study area digital	..\StudyData\ssahillshade.htm

			elevation model.	
		DenningDates	Den Entry and Emergence Information	
		BearLocations	Geographic coordinates of bear locations by date	
		StudyBearHistory	Identity and status of bears captured and handled during project.	

APPENDIX C. HABITAT MODEL AND ASSOCIATED COVERAGES

This appendix contains GIS coverages and data files associated with the habitat model generated for black bears in New Mexico and related analyses in context with human interests and population on the landscape.

The files are located on a CD-ROM and are also identified in Appendix B for file reference and metadata access.

APPENDIX D. PELT TAG NOTEBOOK

This appendix contains a year by year summary of pelt tag and hunter card survey data as they pertain to demographic modeling and simulation. This information was compiled by Katherine Green-Hammond. The appendix is included as digital files on a CD-ROM on file with NMDGF and USFWS as a final electronic deliverable.

See the following pages for an example of the Notebook format

CHANGES BEGINNING IN THE 1998 VERSION

The Central mountain range region was split into the Zuni region (units 9 and 10) and the Manzano region (units 8 and 14). Unit 18 was dropped since it is closed to bear hunting.

Ages defining adults and subadults have been changed for all data summaries. Age 4 bears have been reclassified from adults to subadults consistent with the bear study finding that age 5 is the earliest age at which females give birth in New Mexico populations. Consequently, subadults are defined as bears ages 1 to 4, and adults are defined as bears ages 5 and above, for both sexes.

Most of the interpretive comments have been removed from this notebook. Interpretations will be revised in a future revision of the notebook.

CHANGES IN THIS VERSION

Card survey results from the 1997 season, and pelt tags from the 1998 season have been added; ages are not yet available for the 1998 season pelts.

1998 AND 1999 SEASON DIFFERENCES

Prior to 1998, fall hunting began September 1 or earlier. Both 1998 and 1999 fall hunts were late, beginning and ending later than in previous years.

For the 1998 hunting season, major regulation changes were made. The season dates were October 15 - December 15, a change from the previously standard September 1 - October 31. Also, for 1998 only, hunters could not buy bear licenses after the bear hunting season began. The total bear pelt tags reported for 1998 were 148, the lowest statewide total since pelt tag record keeping began in 1978. The numbers of 1998 hunt season licenses sold, 2969, was lower than all years since 1983 except for 1986 (when bear hunting was closed during elk hunting) and 1992 (when license fees doubled for nonresidents).

In 1999, hunting season dates were October 1 - December 15, and licenses could be purchased during the hunt season. Total pelts increased to 213.

WHAT PELT DATA SUGGEST ABOUT NM BEAR POPULATIONS

Bear populations have gradually increased statewide in the last 30 years. Very high harvests in 1994 and 1995, especially of females, probably interrupted the increasing trend.

The total harvest and, presumably, the hunting mortality rate on bears, were unusually high during 1989 - 1990 and 1993 -1996, possibly because dry environmental conditions increased vulnerability to hunting.

Total statewide harvest peaked in 1994, dropped steadily through 1998, and increased again in 1999. The very low harvest in 1998 can be attributed to the change to a late fall season and very low license sales.

The high numbers and proportions of adult females harvested in recent years may represent the beginning of a period of excessive harvesting, and should be watched.

IMPORTANCE OF HARVEST DATA

Information on bears is very hard to get. Harvest data provide the only information on bears statewide and over time.

Complete pelt tag data (mandatory reporting) substantially reduces the uncertainty about bear harvests, for a reasonable cost.

Tooth age data (one tooth from each pelt) is essential for identifying subadults. Identifying subadults allows pelt data to provide information on good and bad reproductive years, and allows more useful interpretation of changes in total pelt tag numbers.

The bear hunter card survey provides the only information on the geographic distribution of hunting effort and success.

CAUTIONS ABOUT CARD SURVEY DATA

Statewide bear card survey returns number in the hundreds, but there are very few responses reporting hunting or killing a bear in many of the individual game management units. Consequently projections by unit, which are summed for the regional numbers included in this notebook, may be based on unacceptably small sample sizes. The card survey provides the only available information on

geographic distribution of hunting effort, so the unit analysis results have been used in spite of the sample size problem.

The projected total statewide bear kills from the card surveys are usually higher than reported pelt tags, sometimes substantially higher. This may be a consequence of higher return rates from successful than from unsuccessful hunters (we are in the process of testing this hypothesis). Because pelt tag reports are mandatory, the pelt tag numbers are considered to be a more reliable estimate of bear kills than the survey projections. Consequently, survey results are used only for estimates of number of hunters (hunting effort) in this notebook. Number of kills, either reported directly or used in calculations of success rate, are based on pelt tag reports.

TABLE 1. Bear pelt tag numbers over time, ranked by total pelts recorded from 1978 through 1997.

Unit	Total Pelts 1978 - 1997	Annual Average # Pelts 1978 - 1992	Annual Average # Pelts 1993 - 1997
16	662	28	48
6	598	25	45
55	575	32	20
34	558	23	43
45	349	14	27
36	308	13	23
15	274	13	15
48	229	10	16
4	228	9	18
54	203	8	15
51	192	7	17
57	186	6	18
14	184	7	15
49	178	7	13
21	177	10	7
22	146	6	10
23	120	4	11
37	117	6	5
24	115	5	8
53	113	5	6
17	112	6	6
5	107	4	8
44	105	4	8
10	97	3	11
REGION	Total Pelts 1978 - 1997	Annual Average # Pelts 1978 - 1992	Annual Average # Pelts 1993 - 1997
Sangre de Cristos	1996	90	129
Gila	1631	73	107
San Juan	1188	48	92
Southeast	989	42	72
Zuni + Manzanos	340	12	31
Statewide	6195	268	435

APPENDIX E. CD-ROM WITH BEAR POPULATION MODEL SOFTWARE, SCENARIO LIBRARY, AND USER MANUAL

This appendix consists of model software and other tools associated with preparation and use of the Bear Population Model as compiled by Katherine A. Green Hammond. The information in final form is a set of electronic files on CD-ROM on file with NMDGF Santa Fe state office and USFWS Division of Federal Aid in Albuquerque.

See the following pages for an example of the format of the User Manual.

**This information also is on a CD-ROM distributed with selected
copies of the completion report**

APPENDIX F. BEAR POPULATION MODEL CORE EQUATIONS DOCUMENTATION

This appendix contains the mathematical background for the Bear Population Model. The appendix was compiled by Katherine Green-Hammond and is contained on a CD-ROM provided as a final electronic deliverable.

An example of the text of this documentation is presented on the following pages. It is presented in Times New Roman font to preserve the format as prepared in original form. The version on the CD must be accessed for full understanding and use.

BEAR MODEL CORE EQUATIONS

POPULATION / ENVIRONMENT / HUNT MODEL DESIGN

The bear model tracks changes in population numbers and age and sex composition over time based on computed births, deaths, and migrants. Initial population, characteristic vital rates, and annual variations in mast conditions, den entry timing, and hunting regulations and effort are inputs. An upper limit on population size is optional.

Parturition and cub survival rates vary annually, as a function of mast conditions. Characteristic or average mortality rates are specified for yearlings, subadults, and adults of both sexes. Rates from natural causes, legal hunting, and other human causes are specified separately and are additive. Legal hunting mortality can vary annually, with the characteristic rate modified by hunting effort or increased by poor mast conditions. Hunting mortality for late hunting seasons (beginning in October) is also a function of den entry timing.

Birth and mortality rates are not explicit functions of density dependence or social structure in this model. Optional upper limits on total population and total adult females approximate density dependence at high population levels. Since a hunted population is being modeled, natural mortality rates will be low and hunting mortality is additive rather than compensatory. If there is a need to model long time periods without hunting, natural mortality rates in the absence of hunting should be modified. Migration is treated as a net gain or loss of 3 year old (subadult) males, and is a function of the proportions of males and females in the prehunt population. Immigration occurs when the proportion of males is below a specified threshold. Migration occurs when the proportion of males exceeds a specified threshold.

The model should be applied to a geographic area that is meaningful to bears and managers, from a game management unit to a mountain range. Migration of subadults applies to the modeled area and its surroundings, not movements within the modeled area.

The model bear population structure tracks females and males separately in age classes of cubs, yearlings, subadults (2, 3, and 4 year olds are separate age classes), and all adults (ages 5 and up) lumped. The age structure allows the influence of strong and weak cohorts to be expressed over time, and tracking of recruitment to breeding age. No maximum age is imposed or tracked in simulations; long term average total annual mortality rates determine model population longevity.

The adult female category is divided into groups with cubs, with yearlings, and with no offspring in dens. The birth rate model includes the alternate year breeding pattern of black bears; adult females with yearlings in dens are not eligible to produce cubs. The phenomenon of synchronized breeding can be simulated by the model under appropriate conditions. Adult females with cubs in the fall are partially vulnerable to legal hunting.

The effectiveness of the regulation protecting females with cubs from hunting mortality is a variable.

The model biological year has 3 parts, denning, active season spring and summer, and active season fall. Births take place during denning. Natural and other human caused mortalities occur during both active seasons. Hunting mortality occurs only during the fall season in the current model version. A spring hunting season may be added in a later version.

CORE MODEL RELATIONSHIPS: CALCULATION ENGINE

Timing and Sequence of Events

The initial population is post hunt numbers by sex and age category at the time of den entry at the end of the fall active season. The bear model year is a calendar year and begins with the winter denning season.

For age tracking throughout a simulation run, all birthdays occur at the beginning of the year, in dens, but before births. Each model year, including the first, begins with age updating; cubs at den entry become yearlings, and adult females with cubs at den entry are reclassified as adult females with yearlings at the beginning of the simulation year, and are not eligible to produce cubs that year. Bears aged 1, 2, 3, and 4 the previous year become ages 2, 3, 4 and adult (all yearlings become subadults, some subadults become adults); adults aged 5+ remain adults. New age 5 females are classified as adult females with no offspring in the den, and are eligible to produce cubs. Adult females with yearlings at the end of the previous fall are reclassified as adult females with no offspring, and are eligible to produce cubs. Adult females with no offspring at the end of the previous fall remain adult females with no offspring, and are eligible to produce cubs.

At the beginning of the year, with updated ages, there are no adult females with cubs, and the male and female cub categories are empty. All births, but no mortalities, occur during the denning season. All mortalities, but no births, occur during the early and late active seasons.

Environmental variation

The environmental condition variables of mast index, hunt effort, hunt season start date (or hunt closure), and den entry timing are inputs which may change from year to year. All vital rates are simple functions of the environmental variables modifying an underlying rate treated as a population characteristic. Variation in the environmental variables results in variation of the vital rates.

Vital rates: Characteristic rates with variation

Parturition rates and cub survival rates have input characteristic values associated with poor, fair, and good mast conditions, as well as values for special cases and long term average values. Fall mast condition (or special case or average values) is an input which may vary by year, forcing parturition and cub survival to vary by year correspondingly. Functions of mast condition involve time lags; mast index for a year influences cub survival for the same year, and parturition rate for the next year. Mortality rates have characteristic values for each combination of age, sex, and cause, which are constant and specified as inputs. Variation in mortality rates from year to year is handled by multiplying the characteristic rates by factors which are functions of mast condition, hunt effort, hunt regulations, and den entry timing.

Notation for Representing Population Numbers

F0, F1, F2, F3, F4, AF number of females of age 0 (cubs), 1, 2, 3, 4,
adult

M0, M1, M2, M3, M4, AM number of males of age 0 (cubs), 1, 2, 3, 4,
adult

CUBS = F0 + M0 number of cubs

YF = F1, **YM** = M1 numbers of yearlings for each sex

SF = F2 + F3 + F4 number of subadult females

SM = M2 + M3 + M4 number of subadult males

AFnone number of adult females without cubs or
yearlings

AFcubs number of adult females with cubs

AFyrl number of adult females with
yearlings

AF = AFnone + AFcubs + AFyrl

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Research



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Reintroduced wolves and hunting limit the abundance of a subordinate apex predator in a multi-use landscape

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Top-down effects of apex predators are modulated by human impacts on community composition and species abundances. Consequently, research supporting top-down effects of apex predators occurs almost entirely within protected areas rather than the multi-use landscapes dominating modern ecosystems. Here, we developed an integrated population model to disentangle the concurrent contributions of a reintroduced apex predator, the grey wolf, human hunting and prey abundances on vital rates and abundance of a subordinate apex predator, the puma. Increasing wolf numbers had strong negative effects on puma fecundity, and subadult and adult survival. Puma survival was also influenced by density dependence. Overall, puma dynamics in our multi-use landscape were more strongly influenced by top-down forces exhibited by a reintroduced apex predator, than by human hunting or bottom-up forces (prey abundance) subsidized by humans. Quantitatively, the average annual impact of human hunting on equilibrium puma abundance was equivalent to the effects of 20 wolves. Historically, wolves may have limited pumas across North America and dictated puma scarcity in systems lacking sufficient refugia to mitigate the effects of competition.

1. Introduction

The reintroduction of large carnivores to areas in which they were previously extirpated has provided opportunities to study and quantify the top-down effects of apex predators within ecological communities (e.g. [1,2]). The strength of the various ecological effects of apex predators, however, is modulated by jurisdiction and appears to be obscured in unprotected landscapes where they are overshadowed by human impacts on community composition and species abundances [3–6]. Human activities and social tolerance for large carnivores, for example, determine carnivore distribution and abundances [7], and therefore the potential strength of top-down effects attributable to apex predators in most ecosystems. Further, human agricultural practices subsidize lower trophic levels and increase bottom-up effects in many modified systems [4,8]. For these reasons, results demonstrating strong top-down effects of apex predators on subordinate predators and their prey almost entirely come from studies conducted inside protected areas rather than the much more common multi-use landscapes dominating modern ecosystems [4,5,9].

Traditionally, ‘top-down effects’ described effects across trophic levels, but more recently they have also been used to describe the effects of dominant competitors on subordinate competitors that share trophic levels in more complex food webs (e.g. [10]). Pumas (*Puma concolor*) are subordinate, wide-ranging, solitary carnivores and their population dynamics exemplify the difficulties

in differentiating top-down from bottom-up effects. Pumas live at low densities and exhibit life histories typical of long-lived species, making it difficult to obtain sample sizes needed for complex analyses aimed at understanding drivers of their population dynamics [11]. Contemporary puma population dynamics in western North America are also dominated by anthropogenic top-down effects in the form of legal hunting [12,13] and other anthropogenic impacts (e.g. road mortality, conflict management and depredation permits [14]). Like other apex carnivores, theory predicts that the abundance of pumas in areas without human hunting is determined by prey availability [15–17]. Pumas, however, are also subordinate to four dominant competitors across their range: grey wolves (*Canis lupus*), grizzly bears (*Ursus arctos*), American black bears (*U. americanus*) and jaguars (*Panthera onca*) [18]. These species compete with pumas for prey, usurp their kills (i.e. kleptoparasitism) and sometimes kill them. Therefore, pumas are clearly susceptible to additional top-down forces beyond those exerted by humans. Evidence suggests that grey wolves, in particular, impact numerous puma behaviours, including puma habitat use and prey selection [19,20], but researchers still lack direct evidence that wolves affect the abundance of pumas on the landscape [18].

Wolves were reintroduced in Yellowstone National Park in the USA in 1995, shortly after which they expanded into adjacent multi-use landscapes. Between 2000 and 2015, the puma population in the southern Greater Yellowstone Ecosystem (GYE) declined by 48%, as explained by three primary causes of mortality: regulated human hunting of adult and subadult pumas, grey wolves killing puma kittens, and increased starvation across age classes, but especially subadults [21]. The southern GYE is a mosaic of variable human perturbations influencing local wildlife, including legal hunting of predators and ungulates, and subsidized primary production through watering grasslands and agriculture on private ranches and public lands. Wildlife managers also subsidize bottom-up effects through supplemental feeding programmes on public lands aimed at supporting wintering elk (*Cervus canadensis*) populations and mitigating elk conflicts with local ranchers [22].

Here, we combine 16 years of monitoring data from 147 individual pumas, their associated estimates of survival and fecundity, as well as abundance estimates of pumas, wolves and prey (elk) in an integrated population model (IPM) to link observed patterns of mortality with declines in puma abundance. Integrated population models provide the opportunity to include multiple types of data and allow researchers to simultaneously examine the abundance and demographic drivers underlying changes in abundance [23,24]. Such insights will support conservation management of pumas and wolves, given the current expansion of both species in North America due to reintroduction efforts for wolves and the evolution of wildlife management encouraging coexistence strategies with large carnivores following the cessation of predator bounty hunting. Such work may also prove useful in deciphering historic ecological systems in North America, when pumas and wolves were sympatric across nearly all of the puma range. Recent research has highlighted that coyote (*C. latrans*) expansion in North America, for example, is in part due to wolf eradication efforts that occurred a century ago [2,25].

Based upon research in other carnivore guilds highlighting the impacts that dominant competitors have on the abundance of subordinate competitors (e.g. African lion (*Panthera*

leo) and wild dog (*Lycaon pictus*) [26]; tiger (*Panthera tigris*) and leopard (*Panthera pardus*) [27]; wolf and coyote [25]), we predicted that reintroduced wolves would have a population-level effect on puma abundance. To begin with, we accounted for the effects of human hunting on pumas that might obscure wolf effects. Then we tested several *a priori* models to determine whether top-down (human hunting or wolf abundance) or bottom-up (prey abundance) or some combination of top-down and bottom-up forces best fit puma vital rates and changes in puma abundance determined over 16 years of fieldwork (the time period during which wolves completely recolonized the study area). Finally, we used the most parsimonious model explaining observed fluctuations in puma population size to project future potential puma populations in the region, essential for the conservation of this charismatic predator and the maintenance of its diverse contributions to healthy ecosystems [28–30].

2. Methods

(a) Study area and wolf reintroductions

Our research ran from late 2000 until 2017, and our study area encompassed approximately 2300 km² of the southern GYE in northwest Wyoming, USA, northeast of the town of Jackson (figure 1; WGS84 43.60671, -110.41182). Our study area overlapped different types of public lands reflecting various, species-specific management. To the west, the study area included approximately 475 km² of the Grand Teton National Park, where wildlife were fully protected, except elk, which were subject to an Autumn hunt in managed subsections of the National Park. To the south, wildlife were also fully protected on the 100 km² National Elk Refuge (NER), except bison (*Bison bison*) and elk, which were subject to limited harvest during an Autumn hunt. The remaining 75% of the study area was composed of lands managed by the United States Forest Service (USFS), which allowed legal hunting and trapping of diverse mammals following guidelines set by the Wyoming Game and Fish Department (WGFD). This included hunting of carnivores and competitors, including American black bears and coyotes, and ungulate prey, including elk, mule deer (*Odocoileus hemionus*), moose (*Alces alces*), pronghorn (*Antilocapra americana*) and bighorn sheep (*Ovis canadensis*). Grizzly bears were fully protected during the study, except bears killed due to human safety or livestock conflict issues on public or private lands.

Wolves were first reintroduced north of our study area in Yellowstone National Park in 1995 [31]. The first breeding pair settled in our study area in 1999, and annual estimates for the numbers of wolves and wolf packs in the study area have since been determined by the United States Fish and Wildlife Service (USFW). Wolves were protected from legal hunting during our study excepting 2012 and 2013, when a limited quota hunt was permitted from October 1 to December 31 of each year. Over the duration of our research, the number of wolves in the study area ranged between 10 and 91 individuals, the peak of which occurred in 2010 [21].

Elk in our study area were part of the migratory Jackson herd and cooperatively managed by the WGFD, National Park Service and the NER. Portions of the Jackson elk herd travel long distances, but the entire herd congregates near Jackson, in winter, where they receive supplemental feeding on the NER and adjacent USFS lands on feed lots managed by the WGFD. Our study occurred during the time period in which managers implemented liberal hunting quotas across jurisdictional boundaries to reduce the Jackson herd from 16 000 in 2000 to 11 000 animals [22,32].

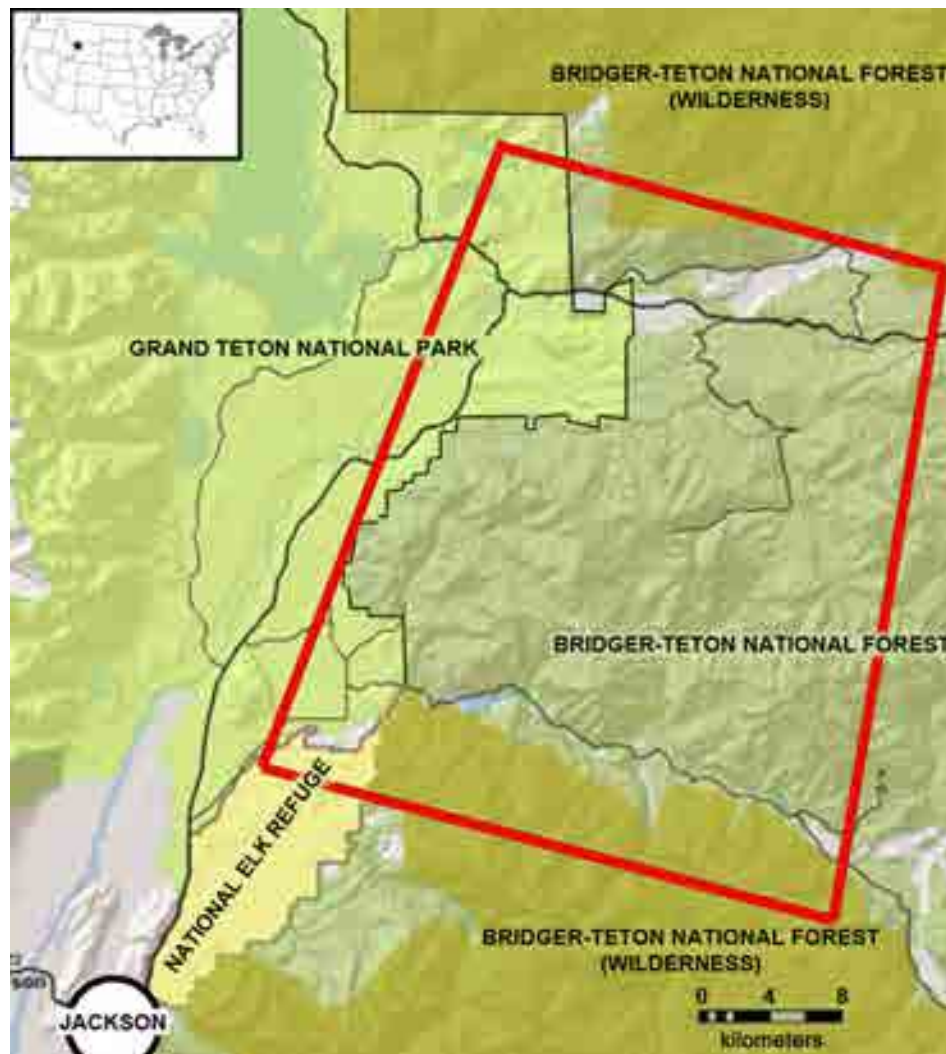


Figure 1. The location of our study area in northwest Wyoming in the USA in the inset, and a larger map delineating land ownership. The rectangle is the portion of the study area in which we annually captured pumas. (Online version in colour.)

Our study area also included large private inholdings surrounded by public lands (e.g. ranches), as well as development on the fringes of local communities, all of which subsidized primary production directly through agriculture (hay or alfalfa or other crops), watering pastures for livestock or lawns, and/or feed provisioning meant for livestock but used by wildlife. Additional descriptions of climate, topography and habitat are presented in Elbroch *et al.* [33].

(b) Puma captures, monitoring and age classifications

We included puma monitoring data beginning in 2001, when a sufficient proportion of the population had been captured to justify analyses. We followed puma capture and immobilization protocols described in Elbroch *et al.* [33] and approved by the Jackson Institutional Animal Care and Use Committee (Protocol 027-10EGDBS-060210) and National Park Service IACUC (Protocol IMR_GRTE_Elbroch_Cougar_2013-2015). Pumas were fitted with a VHF (Telonics, Mesa, AZ) or GPS (Telonics, Mesa, AZ; Televilt, Lindesberg, Sweden; Vectronics, Berlin, Germany; Lotek Wireless, Ontario, Canada) collar. We counted kittens in known dens, when possible within 3 weeks of their birth, and then hand-captured kittens between 5 and 7 weeks old without the aid of immobilization drugs. Any kittens we managed to capture were fitted with custom-made, lightweight, expandable VHF collars (Telonics, Mesa, AZ).

We attempted to locate kittens wearing VHF collars every 2 days until they were 10- to 12-months old, when collars dropped

on their own. All other pumas wearing VHF collars were located at minimum weekly from the ground and monthly from aircraft. Location data were acquired by GPS collars 4–12 times per day. All collars were equipped with mortality sensors, which alerted researchers when an individual had not moved for greater than or equal to 8 h. We investigated mortality sites and determined the cause of death through interpreting field signs (e.g. bite marks, footprints), necropsies conducted with a veterinarian and based on blood and tissue samples analysed by the Wyoming Game and Fish Wildlife Health Laboratory [34].

(c) Estimating annual puma density

Each year, we determined the minimum puma density in our study area based on overlapping home ranges [35]. Annual home ranges for adult pumas were determined using fixed-kernel density estimators [36] in ArcGIS 10, and isopleth calculations in the Geospatial Modeling Environment [37]; methods are further described in Lendrum *et al.* [38]. We determined the boundaries of the area in which we consistently searched for pumas each winter, and in which we believed we had captured all resident pumas. In ArcGIS 10, we created a polygon of our capture area and quantified each puma's residency within this polygon [35]. 'Minimum puma densities' (i.e. excluding transients or residents we did not capture) were then determined by summing the residency estimates for all adult pumas with overlapping home ranges for each year. Kitten estimates were those kittens that accompanied marked, resident females we monitored.

(d) Integrated population model

We estimated future puma abundance using a demographic model inclusive of seasonal fecundity and stage-specific survival rates operating on a six-month time step. Following Elbroch *et al.* [21], we split each year into two six-month seasons, one in which there was regulated legal hunting for pumas, and the other during which hunting was not permitted. These seasons captured variation in effects due to human-caused mortality as well as other mortality: (i) pumas were legally hunted during a ‘hunting season’ running from 1 October to 31 March of the following year. The hunting season also captured additional ecological variation: elk migrations to low-elevation winter ranges where they aggregated in large herds near supplementary feeding stations, mule deer migrations out of the study area, increased competition between wolves and pumas, and deep snows and cold temperatures influencing puma movements and energetics [20]. (ii) Puma hunting was closed during the ‘non-hunting season’ from 1 April to 30 September of each year, during which elk migrated to high-elevation summer ranges and spread out, mule deer returned to the study area, temperatures warmed, and ungulate and puma parturitions occurred [21,38].

We defined puma life-history stages based on differences in behaviour and survival reported in the literature. We defined kittens as 0–6 months, subadults as 7–18 months and adults as greater than or equal to 18 months of age. Kittens (defined as stage K) were completely dependent on their mothers and experienced high mortality from both predation and starvation [39,40]. Subadults were dependent on their mothers, less susceptible to predation [39], but more susceptible to starvation. Subadults could be legally hunted once they were 1-year old and separate from their mothers [41], and they experienced additional risks associated with dispersal [11,42]. While we assumed that all subadults had the same vital rates, we distinguished between subadults less than a year old that could not be hunted (defined as stage $S1$) from older individuals that could be hunted (defined as stage $S2$). We pooled all individuals greater than or equal to 18 months old into an adult age class (defined as stage A) when pumas were expected to establish stable territories and become reproductively active [11,39].

Our models assumed a birth pulse in the non-hunting season [38], thus fecundity was only modelled for the non-hunting season. We did, however, allow some kittens to recruit the following non-hunting season, to better reflect the fact that kittens may be born late in the non-hunting season, and on occasion, at the onset of the hunting season [43]. We modelled the number of kittens that recruited at the end of the non-hunting season as a fixed proportion, π , of the total number of kittens birthed in that calendar year.

Survival probabilities were informed by integrating an abundance model with a multistate capture–mark–recapture model. The abundance model described the seasonal abundances as log-normal random variables. The mean of each was modelled using the transition matrices described in equations (2.1) and (2.2). We modelled the variance of the abundances using a stage-specific variance term that can be interpreted as the environmental variation experienced by each stage [44]. The capture–recapture data was modelled using a multistate survival model that accounted for death due to legal hunting, or death due to other causes, hereafter ‘other mortality’. Other causes of death in our study included starvation, disease, predation, poaching, capture-related mortalities and undetermined mortality [21]. We allowed harvested animals to remain in the model until the end of the six-month harvest period to compete for resources but removed these harvested individuals from the reproductive pool so that they were not producing offspring.

The survival models for each stage and season were coupled to a fecundity model in a stage-structured matrix [45] to quantify seasonal changes in population abundance. A life cycle diagram describing all possible state transitions is given in the electronic supplementary material, figure S1. We denote the natural survival terms in the model as ϕ , with a subscript indicating the life-history stage and season, harvest probabilities as p_{harvest} , and fecundity as f . Kittens (stage K) were surveyed soon after birth, so we were able to estimate true fecundity; all other stages were surveyed at the end of each census period. Our model for the non-hunting season in year y included the birth pulse of kittens, the survival of subadults and adults, and recruitment of all stages. In equation (2.1), we assumed that kittens recruited to become subadults with probability π , accounting for the fact that some proportion of kittens may be born late in the non-hunting season, and on occasion, at the onset of the hunting season.

The hunting season model was similar to the non-hunting season though it did not have any fecundity term (equation 2.2). We modelled annual natural survival rates ($\phi(y)$) using a logit link that incorporated covariates associated with each of our hypotheses (described below). Recapture (i.e. detection) probabilities were modelled with year (y) as a random effect. Individuals that dispersed from the study area during the study were censored.

Integrated population models are robust to some assumptions (e.g. dependence of abundance and recapture data [46]), but fragile to others, such as tag-loss [47]. We only had one dropped collar over the course of the study, and we accounted for heterogeneity in mortality with a stage-structured model. Transient individuals that are never monitored and only spend a short time in the study area also have the potential to increase intraspecific competition that could bias model outputs. However, in a land-tenure species like pumas [15], we expect that

$$\begin{bmatrix} K_{\text{non}} \\ S1_{\text{non}} \\ S2_{\text{non}} \\ A_{\text{non}} \end{bmatrix}_y = \begin{bmatrix} 0 & 0 & 0 & f \\ \phi_{K,\text{hunt}} \cdot \phi_{S,\text{non}} \cdot (1 - \pi) & 0 & 0 & 0 \\ 0 & \phi_{S,\text{non}} \cdot \pi & 0 & 0 \\ 0 & 0 & \phi_{A,\text{non}} \cdot (1 - \pi) & \phi_{A,\text{non}} \cdot \pi \end{bmatrix}_{y-1} \begin{bmatrix} K_{\text{hunt}} \\ S1_{\text{hunt}} \\ S2_{\text{hunt}} \\ A_{\text{hunt}} \end{bmatrix}_{y-1}. \quad (2.1)$$

$$\begin{bmatrix} K_{\text{hunt}} \\ S1_{\text{hunt}} \\ S2_{\text{hunt}} \\ A_{\text{hunt}} \end{bmatrix}_y = \begin{bmatrix} (1 - \pi) & 0 & 0 & 0 \\ \phi_{K,\text{non}} \cdot \phi_{S,\text{hunt}} \cdot \pi & 0 & 0 & 0 \\ 0 & \phi_{S,\text{hunt}} \cdot (1 - p_{\text{harvest}}) \cdot (1 - \pi) & 0 & 0 \\ 0 & 0 & \phi_{A,\text{hunt}} \cdot (1 - p_{\text{harvest}}) \cdot \pi & \phi_{A,\text{hunt}} \cdot (1 - p_{\text{harvest}}) \cdot (1 - \pi) \end{bmatrix}_y \begin{bmatrix} K_{\text{non}} \\ S1_{\text{non}} \\ S2_{\text{non}} \\ A_{\text{non}} \end{bmatrix}_y, \quad (2.2)$$

bias to be minimal because negative effects of competition between residents and transients primarily impact transients.

We considered four continuous covariates as potential drivers of seasonal changes in puma abundances: (i) annual minimum puma densities to test for possible density-dependent effects (estimated as resident adults/890 km²); (ii) annual elk counts for the Jackson herd as reported by WGFD; (iii) annual elk counts of the number of animals wintering off the NER, and which are more reflective of true prey availability for local pumas [48] and (iv) annual wolf counts for our study system, as reported by the USFW (electronic supplementary material, table S1 [21]). Two covariates were different elk metrics representing prey availability and bottom-up effects, as elk abundance had previously proven highly predictive of cause-specific mortality rates for pumas in the study system [21]. We tested for multicollinearity among predictor variables and report them in electronic supplementary material, figure S2.

We used the above covariates to construct six hypotheses about the ecological factors driving puma vital rates: Model 1 (hereafter the 'null model') assumed that all demographic rates in the models defined by equations (2.1) and (2.2) were constant through time. Model 2 (hereafter the 'density-dependent model') varied all vital rates depending upon adult puma densities from the previous season. We constructed three additional models that had density-dependent variables plus one of three covariates representing top-down versus bottom-up effects on puma vital rates: Model 3 included annual wolf counts for our study area as reported by the USFW (hereafter the 'density + wolf model'). Model 4 included annual counts for the Jackson elk herd as reported by WGFD (hereafter the 'density + elk model'), and Model 5 included annual counts of elk in the Jackson elk herd that wintered off the NER as reported by the WGFD and NER (hereafter the 'density + off-refuge elk model'). Model 6 combined elements from these covariates into a hypothesis we generated based on the literature about puma ecology and our own observations in the field. This model included density-dependent and off-refuge elk effects on puma fecundity, wolf effects on kitten survival, and both off-refuge elk and wolf effects on adult survival (hereafter referred to as the 'Local Perceptions' model). We did not include a model with both wolves and elk, because of the high correlations between the variables ($R^2 = 0.71$, 0.78 ; electronic supplementary material, figure S2). Our initial diagnostic figures also illustrated patterns of density dependence in population counts, and therefore, we did not test models without puma density in our initial *a priori* models. However, we did run post hoc models that included the effects of individual covariates without density-dependent effects. We standardized all covariates so that the magnitudes of parameter estimates could be directly compared within and among models.

We modelled survival rate of age class S , season X , in year y (denoted as $\phi_{S,X}(y)$) using a logit model with covariate effects that could include the effects of density dependence and a covariate. This full form of this model was $\text{logit}(\phi_{S,X}(y)) = \beta_{S,X} + \beta_{S,P} \cdot A_X(y) + \beta_{S,C} \cdot C(y)$, where $\beta_{S,X}$ was the intercept term, $\beta_{S,P}$ was a regression coefficient that gives the effect of the adults puma density, $A_X(y)$, in season X and year y , and $\beta_{S,C}$ was a regression coefficient that determined the effect of a covariate, $C(y)$, in year y , on age class S . For the null model, we set $\beta_{S,P} = 0$ and $\beta_{S,C} = 0$, while for the density-dependent model we set $\beta_{S,C} = 0$.

The full annual fecundity model for year y was, $f(y) = e^{\alpha_0 + \alpha_P \cdot A_{\text{Hunt}}(y) + \alpha_C \cdot C(y)}$, where α_0 is the log-fecundity and α_P and α_C were regression coefficients that accounted for the effects of puma adults density in the hunting season and other covariates, respectively. As in the survival model, we set the appropriate coefficients to 0 for the null and density-dependent models. The vital rate models for each of our candidate models are reported in electronic supplementary material, table S3.

All estimates were conducted using MCMC in JAGS [49]. We ran models with four chains, each chain had a burn-in of 10^4

iterations followed by 10^4 draws from the posterior distribution. We determined convergence of the MCMC chains by a visual inspection of each posterior distribution and by examining Gelman's \hat{R} statistic. We used the Watababe-Akaike criterion (WAIC) to rank relative model performance [50].

(e) Projecting future puma populations

We simulated potential puma populations 25 years into the future using parameter estimates from our most parsimonious model under two scenarios. For both scenarios, we simulated the effects of wolf abundance on puma populations, but in only one did we include human harvest. We let wolf abundance range from the minimum observed value (10 wolves in 2001) to the maximum (91 wolves in 2010) over a range of 15 evenly spaced values, assuming that wolf densities were constant over the simulation period. In the first scenario, we included the effect of hunting mortality at historic levels, using the estimated value for the probability of an animal being hunted (p_{Harvest}). In the second scenario, we completely removed the effects of hunting (i.e. we set $p_{\text{Harvest}} = 0$). We simulated dynamics using the mean posterior estimates under each wolf abundance 10^4 times and calculated the mean puma abundance in the hunting season. The population simulations were initiated using the puma population abundances from 2016, the last full year of the study.

3. Results

(a) Puma monitoring

We monitored 147 individual pumas (86 kittens, 22 subadults, 39 adults) and estimated minimum annual puma densities based on 4.5 (1.8 s.d.) adult pumas monitored each year. Adult puma densities in the 890 km² portion of the study area for which we determined density varied between 2.5 and 8.9 resident adults, or 0.28–1.0 adults/100 km² (electronic supplementary material, table S1). Over the course of the study, we recorded 115 mortalities. Eighteen mortalities were from legal hunting, eight of which were censored from the analyses because they dispersed beyond the study area, and 10 pumas were killed by wolves (table 1). Information on annual wolf and elk abundances is found in electronic supplementary material, table S1.

(b) Integrated population model

Our analyses demonstrated that observed changes in population abundance of pumas were best described by a model that included puma density and wolf abundance (density + wolf) as predictors of survival and fecundity (table 2). This model estimated (estimates reported as (mean, probability of direction (p_D) [51]) that both puma density ($\alpha_P = -0.09$, $p_D = 0.99$) and wolves ($\alpha_W = -0.20$, $p_D = 0.98$) negatively affected puma fecundity, and that wolves also negatively influenced adult puma survival ($\beta_{A,W} = -0.36$, $p_D = 0.99$) and subadult survival ($\beta_{S,W} = -0.24$, $p_D = 0.70$); the effects on subadult survival, however, had high uncertainty. We also found that the impact of puma densities on adult puma survival was negative ($\beta_{A,P} = -0.14$, $p_D = 0.99$), consistent with a density-dependent effect on survival. All other covariate effects in these models were near zero and had a p_D less than 0.95. All parameter estimates and credible intervals from this model are reported in electronic supplementary material, table S2. Support for this model garnered more than five times the

Table 1. Cause of mortality for pumas at age of death, as opposed to age at start of monitoring.

	hunting	other anthropogenic ^a	undetermined	starvation	other natural	predation
kitten		4	10	8	6	12
subadult	1	1	12	4	3	8
adult	17 ^b	5	6	10	3	6

^aThree were translocated by the state wildlife agency and their fates are unknown.

^bEight harvested outside the study area.

Table 2. Ranked results of model selection. Density refers to annual puma density, wolf to annual wolf abundance, off-refuge elk to annual elk in the Jackson herd wintering off the National Elk Refuge, and elk to annual elk in the Jackson herd wintering on the National Elk Refuge.

model	number of parameters	ΔWAIC	WAICw
density + wolf	19	0.00	0.67
density + off-refuge elk	19	3.52	0.12
density only	15	3.99	0.09
density + elk	19	4.21	0.08
null	11	6.54	0.03
local perceptions model ^a	15	7.19	0.02

^aThe 'local perceptions' model included density dependent and off-refuge elk effects on puma fecundity, wolf effects on kitten survival, and both off-refuge elk and wolf effects on adult survival.

empirical support of the second-ranked model that included the effects of puma density and off-range elk [52].

In our best model, we estimated the average annual recapture probability of a puma to be 0.90 (0.17 s.d.). All rates varied substantially between hunting and non-hunting seasons and in some cases by year as well (figure 2). The estimated annual fecundity (reported as posterior mean) was 1.53 (0.51 s.d.) kittens per female per year. Predicted fecundity had substantial temporal variation due to the strong effects of both density dependence and wolves (figure 3). Our six-month survival estimates for kittens were 0.36 (0.10 s.d.) in the non-hunting season and 0.28 (0.08 s.d.) in the hunting season (figure 2b). The subadult survival rates, including only other mortality, were 0.93 (0.10 s.d.) in the non-hunting season and 0.82 (0.17 s.d.) in the hunting season (figure 2c). The adult survival rates, including only other mortality, were 0.90 (0.03 s.d.) in the non-hunting season and 0.86 (0.03 s.d.) in the hunting season (figure 2d). Finally, we estimated the annual probability of mortality in subadults and adults due to hunting as 0.04 (0.02 s.d.).

(c) Simulated future puma populations

Our projections under our best model predicted a threefold (CI 1.4–4.3) decrease in the local puma population over the range of observed wolf abundances (reported as median (95% CI) (figure 4). Removing legal hunting mortality increased puma abundance by approximately 30% (CI –21%–

106%), which translated to roughly two adult pumas at low wolf abundance and one adult puma at high wolf abundance. The relative impact of removing puma hunting corresponded to a change approximately equivalent to removing 20 wolves from the system.

4. Discussion

Our results suggested that puma abundance in the southern GYE is more strongly influenced by top-down forces (i.e. competition) exhibited by a reintroduced apex predator, than by top-down forces exhibited by human hunting or bottom-up forces (prey abundance) subsidized by humans promoting and providing primary production through agriculture and supplemental feeding programmes. Our earlier analytical approach, in which we determined local puma survival rates using multistate capture–mark–recapture models [21], supported previous research emphasizing that top-down forces are obscured by stronger bottom-up forces outside protected areas [4]. Here, our IPM combining vital rates and abundance data provided novel insights into this complex system and helped us further parse out the competitive effects of wolves and the bottom-up effects of elk on different puma age classes. Our modelling framework, in which we separate human hunting from the effects of apex predators, may also allow other researchers to more realistically assess top-down effects outside protected landscapes, where we see mixed human effects and increased bottom-up forces. In the era of the Anthropocene, mixed scenarios occurring along a spectrum of completely protected to completely developed landscapes are increasingly likely to occur [5].

Predominantly, our study system was not protected from wildlife exploitation. Grey wolves, however, were protected in all but 2 years of our study, during which there was limited harvest. Grey wolves are distinctive because they can exhibit strong top-down effects that initiate trophic cascades in natural systems [1,7,53]. In our study, increasing wolf numbers had strong negative effects on puma fecundity, subadult survival and adult survival. These effects were near parallel to effects previously assigned to changing elk densities off the NER rather than wolves in an earlier analysis we conducted with multistate capture–mark–recapture models and a subset of the puma data herein [21]. The effects of increasing wolves and decreasing off-refuge elk, however, are highly correlated and difficult to tease apart ($R^2 = 0.71$; electronic supplementary material, figure S2). In fact, wildlife managers suspect changing elk distributions are at least in part explained by increasing wolves in the system, and that elk are seeking to reduce predation risk from wolves by selecting more open habitat on the NER than they did historically [32].

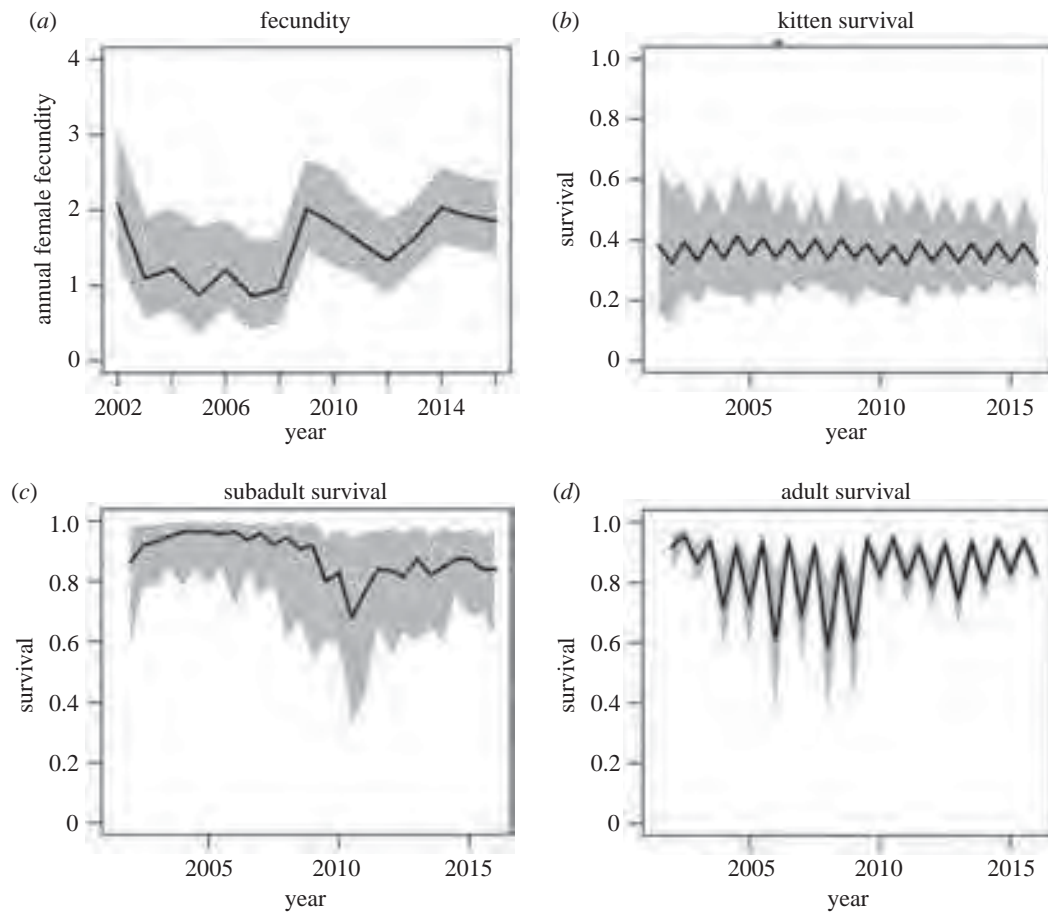


Figure 2. Estimated annual vital rates of pumas throughout the study, excepting hunting mortality. Black lines denote estimated mean, grey shaded area denotes the 95% credible interval.

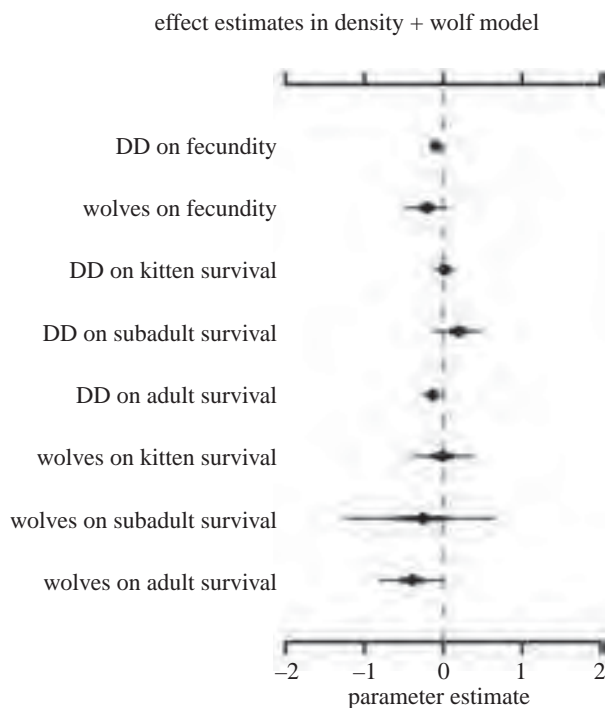


Figure 3. Posterior density estimates for each covariate in the density (DD) + wolf model. Dots denote median estimates, thick horizontal lines denote the 50% credible interval and thin black lines denote the 95% credible interval.

Further evidence for this complexity is found in interpreting the potential cause of puma starvation, which nearly equalled mortality attributed to predation (table 1). Puma starvation

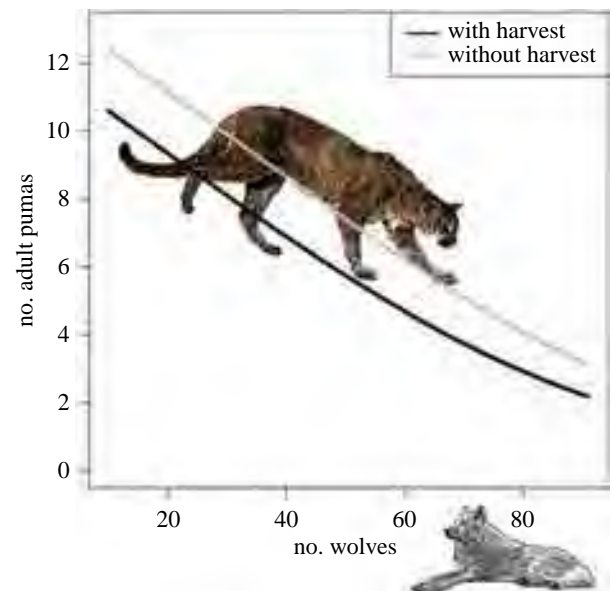


Figure 4. Effect of changing wolf abundance and the effect of hunting mortality on the average adult puma abundance during the hunting season for the 890 km² area for which we estimated puma density.

may have increased over the study due to the declining elk herd (i.e. bottom-up effects), decreased accessibility to elk, as mediated by exploitive and interference competition with wolves (top-down effects), or both [21].

Puma survival was also influenced by density dependence and decreasing puma abundance over the course of the study. Density-dependent effects negatively impacted



Figure 5. A map of North America depicting the historic and current ranges of pumas in green, and the current range in which they overlap with grey wolves in dashed lines. Historically, wolves covered nearly the entirety of North America, excepting southernmost Mexico and Central America. (Online version in colour.)

fecundity as well as adult and subadult survival. Subadult survival appeared to increase with decreasing puma numbers, which is not surprising for a land-tenure species that exhibits territoriality [15]. Given the uncertainty in this estimate (electronic supplementary material, table S2), however, we are cautious about how we interpret this result. ‘Juvenile delinquent theory’ predicts that when hunting removes adult males, the number of independent subadults in puma populations increases, creating unstable social dynamics [54,55], but at this time, it is unknown whether there is a threshold level of hunting that results in these dynamics.

Our results supported previous research emphasizing the additive effects of hunting on puma mortality [12,13]. Uniquely, we were able to estimate that the average annual impact of human hunting on puma abundance in this system was approximately equivalent to the effects of 20 wolves (figure 4). We would emphasize that human hunting was low in our study system as compared to other areas of the USA, and that human hunting does not replace wolf effects. Wolves and human hunting directly and indirectly influence puma sex and age classes very differently. Nevertheless, these results have implications for how we might interpret the current versus historic distribution and abundance of pumas in what was wolf range. It may be that historically, wolves limited pumas heavily across North America, where the species were entirely sympatric except in southern Mexico and Central American countries. Historic wolf abundance may have also dictated puma scarcity in systems lacking sufficient refugia to mitigate the effects of competition (e.g. plains grasslands [56,57]). Further, current puma abundance in parts of western North America may be high not only due to the cessation of puma bounties in the mid-twentieth century, but also to competitive release due to the widespread extirpation of wolves in the USA (figure 5).

Most importantly, our research emphasizes that when hunting is used as a management tool on subordinate

predators in systems with other apex predators, population declines can happen quickly. This is an especially cautionary note for managers in regions where apex predators are recovering or being reintroduced [18]. This puma population dropped by 48% while wolves repopulated the study area and increased in abundance [21]. In another example, leopards decreased by 79% over 4 years as tiger numbers increased; researchers assumed that leopard numbers decreased due to competition reducing leopard foraging opportunities, as well as spatial displacement driving leopards into areas where conflict with people increased leopard mortality [27]. Thus, we recommend that in systems with recovering apex predators, managers evaluate subordinate predator hunting limits preemptively rather than post hoc as they did in our system, to compensate for the effects of dominant competitors on subordinate guild members. In Wyoming, wolf hunting has recently been legalized again, and as an unintended byproduct, this action will likely facilitate the maintenance of a higher density of pumas in the study system.

Ethics. We followed puma capture and immobilization protocols suggested by the American Society of Mammalogists and approved by the Jackson Institutional Animal Care and Use Committee (Protocol 027-10EGDBS-060210) and National Park Service IACUC (Protocol IMR_GRTE_Elbroch_Cougar_2013-2015).

Data accessibility. All data not presented in the manuscript, as well as code for our analyses, are available from the Dryad Digital Repository: <https://doi.org/10.5061/dryad.5qfttdz31> [58].

Authors’ contributions. L.M.E. designed the study, coordinated the study, collected data, participated in data analysis and led the writing of the manuscript; J.F. designed and conducted the analyses, and drafted the manuscript; H.Q. designed the study, coordinated the study and collected data; D.C. designed the study, coordinated the study and collected data; D.T. provided project support and collected data. H.W. participated in data analysis and drafted the manuscript. All authors gave final approval for publication and agree to be held accountable for the work performed therein.

Competing interests. We declare we have no competing interests

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Validating the performance of occupancy models for estimating habitat use and predicting the distribution of highly-mobile species: A case study using the American black bear

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ABSTRACT

Occupancy models have become a valuable tool for estimating wildlife-habitat relationships and for predicting species distributions. Highly-mobile species often violate the assumption that sampling units are geographically closed shifting the probability of occupancy to be interpreted as the probability of use. We used occupancy models, in conjunction with noninvasive sampling, to estimate habitat use and predict the distribution of a highly-mobile carnivore, the American black bear (*Ursus americanus*) in New Mexico, USA. The top model indicated that black bears use areas with higher primary productivity and fewer roads. The predictive performance of such models is rarely validated with independent data, so we validated our model predictions with 2-independent datasets. We first assessed the correlation between predicted and observed habitat use for 28 telemetry-collared bears in the Jemez Mountains. Predicted habitat use was positively correlated with observed use for all 3 years (2012: $\rho = 0.81$; 2013: $\rho = 0.87$; 2014: $\rho = 0.90$). We then predicted the probability of use within a cell where a bear mortality was documented using 2043 mortality locations from sport harvest, depredation, and vehicle collisions. The probability of habitat use at a mortality location was also positively correlated with observed use by the species (2012: $\rho = 0.74$; 2013: $\rho = 0.89$; 2014: $\rho = 0.93$). Our validation procedure supports the notion that occupancy models can be an effective tool for estimating habitat use and predicting the distribution of highly-mobile species when the assumption of geographic closure has been violated. Our findings may be of interest to studies that are estimating habitat use for highly-mobile species that are secretive or rare, difficult to capture, or expensive to monitor with other more intensive methods.

1. Introduction

Since their inception, occupancy models have been an essential tool for the conservation and management of wildlife. In its original construction, the occupancy-modeling framework enabled estimation of the static occurrence and distribution of a single species while accounting for imperfect detection (MacKenzie et al., 2002). Recent extensions of the paradigm provide the ability to investigate the dynamic nature of various ecological processes that occur over time (MacKenzie et al., 2003) or among multiple species (MacKenzie et al., 2004) and include multiple occupancy states (Nichols et al., 2007). Generalizations of the model accommodate forms of heterogeneity and bias related to variation in abundance (Royle and Nichols, 2003), non-

independence among repeated surveys at sampling units (Nichols et al., 2008), and false-positives or misidentification of species (Miller et al., 2011) while investigating hierarchical scales of occurrence (Hines et al., 2010; Nichols et al., 2008). As a testament to their flexibility, occupancy models have helped explain the mechanisms driving the breeding dynamics of amphibians (Gould et al., 2019), have been used to monitor global-terrestrial biodiversity (Steenweg et al., 2017), have predicted future impacts of population growth and development on wildlife (Brown et al., 2014), and have been used to monitor the spread and dynamics of wildlife pathogens (Russell et al., 2017).

Occupancy models in their simplest form estimate the probability of occupancy (Ψ) in relation to habitat characteristics while accounting for imperfect detection by simultaneously estimating detection

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probability (p) from repeated site visits (MacKenzie et al., 2002). When wildlife species violate the assumption that sampling units (e.g., a pond or a spatial sampling unit on the landscape) are closed to changes in occupancy state estimates of Ψ will be biased. However, if movements by a species in and out of sampling units are random, then Ψ can be interpreted as the probability a sampling unit is “used” rather than occupied and inferences about habitat use can be drawn (MacKenzie, 2006). Therefore, depending on whether closure can be assumed, occupancy modeling can be used to estimate the probability a species occurs at a site or the probability a species uses a site.

Highly-mobile species often violate the geographic closure assumption. Common sampling techniques used to collect presence-absence data for such species are often expensive and logistically challenging (e.g. telemetry collars and aerial surveys). Consequently, non-invasive sampling techniques for highly mobile species, such as camera and hair traps, have become more widely used. When noninvasive sampling techniques are coupled with occupancy modeling, a cost-effective approach arises for modeling habitat use and predicting a species' distribution that also embodies a sound statistical framework (MacKenzie et al., 2002).

For example, occupancy models have provided stakeholders with information on the predicted range of clouded leopards (*Neofelis nebulosa*) to help assess the efficacy of a conservation-corridor initiative on Peninsular Malaysia (Tan et al., 2017). They have also been used to model the effects of livestock grazing on large mammals determining that current laws are insufficient in safeguarding large mammal communities in protected reserves of the Hyrcanian forest of Iran (Soofi et al., 2018). Additionally, inferences from occupancy models have been used to develop maps of high-priority conservation areas helping inform local conservation organizations in their assessment and prioritization of land management and acquisition scenarios for forest-breeding birds in the United States (De Wan et al., 2009). Occupancy models have even been used to fight illegal activity detrimental to wildlife by providing a cost-effective method to predict and direct resources to combat poaching hotspots in Brazil (Ferreguetti et al., 2018).

Despite the common use of occupancy models, empirical studies have often failed to assess model fit and the predictive performance of the models. While some studies have examined violations in model assumptions, most studies did not identify the root cause of the violation (MacKenzie and Bailey, 2004; Royle et al., 2007; Warton et al., 2017). Furthermore, few empirical studies have used spatially-independent data to validate habitat use relationships (Babu et al., 2015; Drouilly et al., 2018; Zeller et al., 2011; but see Walpole et al., 2012). Failing to assess the fit and predictive performance of a habitat use model is particularly concerning given their importance in guiding conservation actions and wildlife policy decisions (Araújo et al., 2019; Guisan et al., 2013). Thus, the assumption that occupancy can be re-interpreted as habitat use when the assumption of geographic closure is not met for highly-mobile species has not been properly addressed.

The objective of our study was to use occupancy modeling coupled with noninvasive sampling to estimate habitat use for a highly-mobile species. We conducted a goodness-of-fit test to detect if violations of model assumptions had occurred and to evaluate the fit of the most supported model to the data. We then assessed the predictive performance of the most supported model at 2-different scales with 2-independent datasets. We show the efficacy of this approach using a case study on the American black bear (*Ursus americanus*) in New Mexico, USA.

2. Methods

2.1. Study area

We conducted our study in the Sangre de Cristo (9925 km²), Sacramento (3700 km²), and Jemez (~850 km²) Mountains, New Mexico, USA (Fig. 1). Elevation ranges from ~1500 m to 4011 m across

the 3 mountain ranges. Dominant vegetation types included subalpine coniferous forest (Engelmann spruce [*Picea engelmannii*], limber pine [*Pinus flexilis*] and subalpine fir [*Abies lasiocarpa*]), montane coniferous forest (Southwestern white pine [*P. strobiformes*], ponderosa pine [*P. ponderosa*], Douglas-fir [*Pseudotsuga menziesii*], white fir [*A. concolor*], blue spruce [*P. pungens*], and aspen [*Populus tremuloides*]), and coniferous and mixed woodland (piñon pine [*P. edulis*] and juniper [*Juniperus* spp.]; Dick-Pedie, 1993). Oak species (*Quercus* spp.) are scattered throughout mid- and low-elevation forests and are most abundant at lower elevations (Dick-Pedie, 1993). The average monthly temperature was highest in July and lowest in January ranging among the mountain ranges from 22 °C to 30 °C and –15 °C to –5 °C, respectively (Western Regional Climate Center, 2018). Average monthly precipitation varied among the mountain ranges from 7.10 cm to 12.70 cm and was highest during the monsoon season (Jul–Oct), with rainfall typically peaking in August (Western Regional Climate Center, 2018). In sum, the three mountain ranges were similar in orography, land cover, and climate.

2.2. Field sampling and genetic analysis

We used hair traps to sample black bears in the Sangre de Cristo and Sacramento mountains. Sampling within each study area was limited to primary habitat defined as all closed-canopy forest and woodland vegetation types (Costello et al., 2001). We distributed a grid of 5-km × 5-km cells with a randomly determined origin across the landscape. In each cell, we set a hair trap in a place most likely to encounter bears such as suspected travel routes, the occurrence of seasonal forage (e.g., green grass and ripe soft and hard mast), and the presence of bear sign (Kendall et al., 2009). Due to logistical constraints, a survey in the Sangre de Cristo Mountains lasted 4 weeks whereas a survey for the Sacramento Mountains was 2 weeks. We set hair traps across 4 surveys in the northern (22 Apr–5 Sep 2012) and southern Sangre de Cristo Mountains (29 Apr–9 Sep 2013) and across 6 surveys in the Sacramento Mountains (5 May–6 Aug 2014).

A hair trap consisted of a strand of barbed wire stretched 45 cm above ground and wrapped around ≥3 trees with a collection of organic material at the center (i.e., a lure pile). During each survey in the Sangre de Cristo Mountains, we randomly selected 1 of 4 non-consumable lures (cow blood/fish emulsion mixture [blood], skunk tincture/lanolin mixture [skunk], fatty acid scent tablet [FAS], or anise oil) and applied it to the lure pile. Based on this sampling, FAS and anise oil scent duration and dispersal distance appeared inferior to blood and skunk. A chi-square test of independence confirmed that the 4 lures were not collecting an equal number of samples ($\chi^2_3 = 616.29$, $P \leq 0.001$). In the Sacramento Mountains, we randomly selected and applied either blood or skunk lures to maximize detection of black bears. A sample consisted of all hair caught in one barb, and we used our best judgment to identify hair samples collected from when bears rolled around in the lure pile. We deposited each hair sample in a separate paper-coin envelope. Afterwards, we cleaned the barb wire with a propane torch to prevent false detections during subsequent surveys. We moved hair traps (100 m to 2.5 km) between surveys to help increase detection rates (Boulanger et al., 2006).

The only qualifier for an occupancy analysis is detection of the focal species (MacKenzie et al., 2002). We considered hair samples to be from a black bear if 2 odd numbered alleles were amplified for the G10J marker and if ≥4 loci were amplified across 8 additional genetic markers (G1D, G10B, G10L, G10M, G10H, G10J, G10U, MU59; Paetkau et al., 1998, 1995; Taberlet et al., 1997). The G10J marker is an indicator for black bears among North American ursids but has shown some cross-species amplification (L. Harris, Wildlife Genetics International, personal communication). All samples were exported to Wildlife Genetics International (WGI), Nelson, British Columbia, Canada under permits required by the Convention on International Trade in Endangered Species (Export Permits 12US86417A/9, 13US19950B/9, and 14US43944B/9).

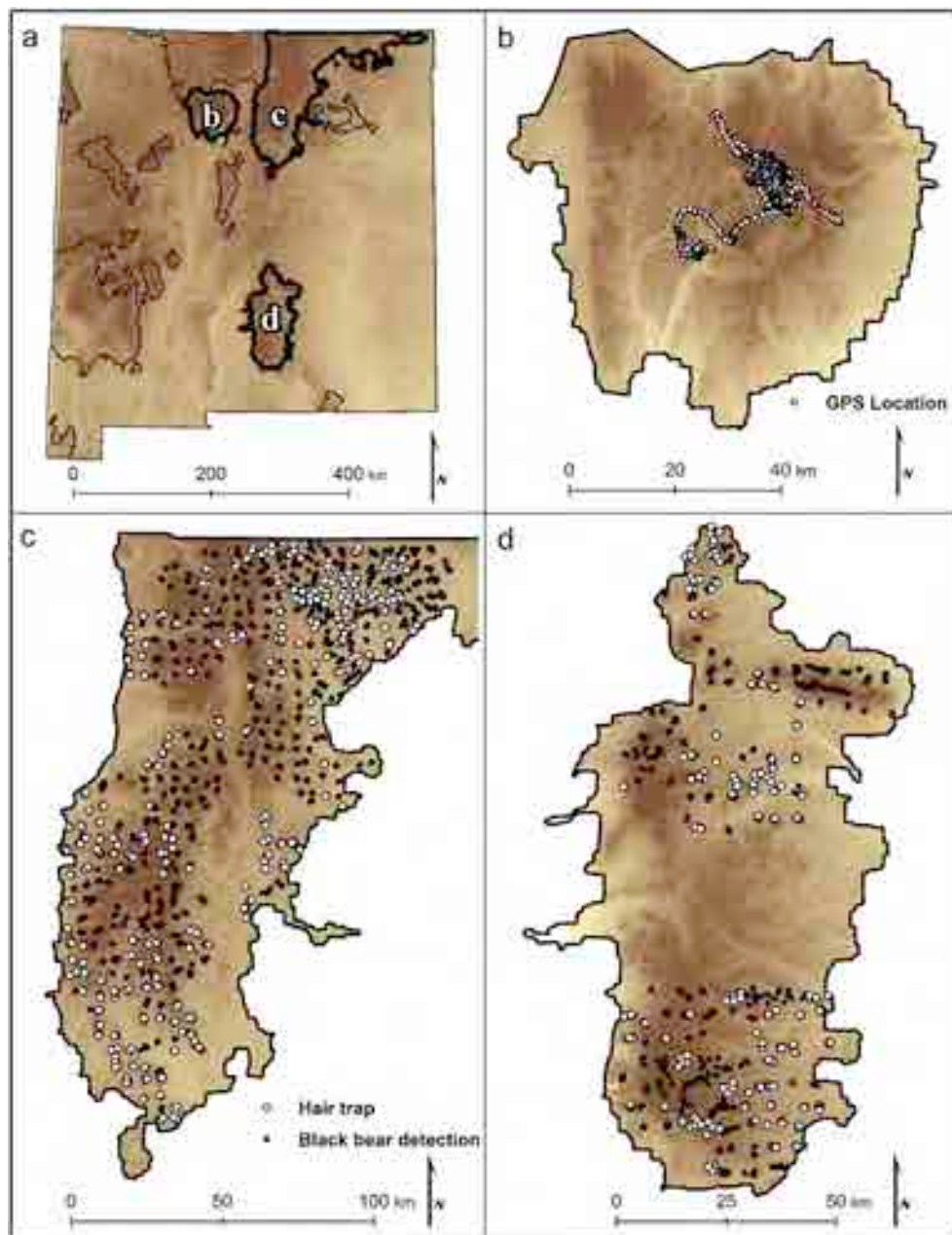


Fig. 1. (a) Location of our 3 study areas within New Mexico, USA overlaid on to a digital elevation map with hillshade where the color gradient from light to dark brown represents lower to higher elevations. (b) Telemetry locations of 1 American black bear (*Ursus americanus*) from 22 May 2013 to 31 August 2013 in the Jemez Mountains. Distribution of hair traps in the (c) Sangre de Cristo, 2012–2013 and (d) Sacramento Mountains, 2014. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Kindschuh et al. (2016) captured adult-black bears in the Jemez Mountains from June 2012–July 2014 using culvert traps and foot snares. They fitted individuals with a global positioning system (GPS) telemetry collar programmed with a 3 h fix interval (Advanced Telemetry Systems model G2110E, Isanti, Minnesota, USA or Northstar model NSG-LD2, King George, Virginia, USA). Our sampling procedures were approved by the New Mexico State University Institutional Animal Care and Use Committee (Protocols #2011-027) and New Mexico Department of Game and Fish (Scientific Collection Permit 3504). The New Mexico Department of Game and Fish (NMDGF) provided locations on statewide sport-hunted, depredation, and vehicle collision mortalities collected in 2012–2014.

2.3. Modeling habitat use

We used single-species, single-season occupancy models to investigate habitat use by black bears (MacKenzie et al., 2002). We used the results from our genetic analysis to create a detection history for each 5-km × 5-km cell. While habitat use was the primary objective of our occupancy modeling analysis, providing an accurate depiction of the detection process to eliminate negative bias is essential to the overall model fit and an accurate depiction of habitat use (MacKenzie et al., 2002). We hypothesized that detection may be influenced by the distance of a hair trap to a road (dist), lure scent (lure), and mountain range (mtn) with mtn depicting the natural variation in the movement

behavior of bears from different mountain ranges or due to differences in survey length between the Sangre de Cristo and Sacramento mountains. We predicted a lower detection probability when we set hair traps closer to roads as bears have been shown to avoid roads (Simek et al., 2015; Stillfried et al., 2015). We predicted a higher detection probability when we used blood as a lure based on the results of our chi-square test of independence. We also predicted a higher detection probability in the Sangre de Cristo Mountains because the length of the surveys was longer. We pooled the detection data by survey across the 2 mountain ranges. This resulted in the detection history having 6 total surveys with sites in the Sangre de Cristo Mountains censored in surveys 5 and 6. Due to their ineffectiveness in the Sangre de Cristo Mountains, we pooled the anise oil and FAS lures into 1 lure category.

We modeled habitat use by developing a suite of a priori models. We hypothesized that habitat use would be influenced by: 1) spatio-temporal variation in primary productivity because food availability influences reproduction and survival (Costello et al., 2003), 2) terrain complexity because it reflects hydrological profiles that may influence security cover, forage diversity, and primary productivity (Berryman et al., 2015), and 3) road density because of increased human disturbance and perceived risk and reduced survival (Hostetler et al., 2009). We selected the enhanced vegetation index (EVI), its coefficient of variation (EVICV), and dominant land cover type (cover) as covariates correlated with food availability (Merkle et al., 2013; Nijland et al., 2016). We predicted higher use in cells with a higher mean EVI (a measure of productivity) and mean EVICV (a measure of seasonality; Requeña-Mullor et al., 2014). We predicted a positive relationship with seasonality because pulses of productivity that occurred predominantly during the summer would be more advantageous for bears as they prepare for hibernation (Wiegand et al., 2008). The EVI has been shown to be sensitive to spatial and temporal variation in photosynthetic activity and has improved corrections for aerosols and cloud cover compared to NDVI (Huete et al., 2002). We predicted higher use of mixed conifer and spruce-fir land cover, which tend to occur at mid- to high-elevations, because these classifications likely represent early-seasonal grasses and soft-mast plant communities that contain important black bear food during the period that our study was conducted (Guntly, 2016). We predicted a positive association with the terrain ruggedness index (TRI) because greater terrain complexity would result in more diverse hydrological profiles that should yield higher forage diversity and primary productivity (Berryman et al., 2015; Nellemann et al., 2007). We predicted that a higher density of roads open to mechanized travel would be used less due to increased anthropogenic disturbance (Gaines et al., 2005; Hostetler et al., 2009). Last, we assigned mtn as a group variable to evaluate if habitat use was specific to or similar across mountain ranges.

We calculated EVI using 16-day, 250 m Moderate Resolution Imaging Spectrometer (MODIS) datasets (Huete et al., 2002). We generated a single EVI and EVICV value for each cell by averaging all 250 m pixels within a 5-km × 5-km cell for each MODIS image and then averaging all MODIS images across all surveys. We reclassified the 30 m LANDFIRE land cover data into 5 classes that represented black bear habitat: mixed conifer (combination of aspen, Douglas fir, white pine), piñon pine-juniper, ponderosa pine, spruce-fir, and all remaining classes (www.landfire.gov; Rollins, 2009). We assigned a sixth classification of “heterogeneous” when no classification represented ≥50% of the area within the cell. We calculated TRI using a National Elevation Dataset 30 m digital elevation model (www.nationalmap.gov) and the Benthic Terrain Modeler in ArcMap. We generated a single, averaged TRI value for each cell. We measured road density and distance to roads using the U.S. Census Bureau's 2010 TIGER/Line county-road dataset (www.rgis.unm.edu). We extracted all model covariates using ArcMap 10.2.1 (Environmental Systems Research Institute, Inc., Redlands, California, USA).

We used a multi-step modeling process to determine the final model structure for p and Ψ (Doherty et al., 2012). First, we standardized all

continuous covariates by subtracting the mean and dividing by 2 standard deviations (Gelman, 2008). We assessed multicollinearity between continuous covariates by calculating Pearson's sample correlation (r) between all covariate combinations, with $r \geq 0.60$ disqualifying use of a covariate combination in a model. We used box plots to visually evaluate trends between the categorical land cover variable and each continuous covariate. Land cover and EVI were correlated, so we did not include them in the same model. We first modeled p by dist, lure, mtn, all additive combinations of the 3 covariates, or constant while using the global model for Ψ . We then incorporated the model structure from the top model for p into our subsequent modeling of Ψ using all additive combinations of the uncorrelated covariates except for EVICV, which was only included in models with EVI. We also included an interaction between TRI and EVI as we hypothesized cells with high EVI and low TRI may be used less by bears because the cell may be more accessible to human activity or contains more open fields than forest cover.

We used Akaike's Information Criterion corrected for small sample size (AICc; Hurvich and Tsai, 1989) to rank and determine relative support among models. We used the AICc weights (w_i) to assess proportional support for each model (Burnham and Anderson, 2002). We assessed the goodness-of-fit for the top-ranked model using visual diagnostic plots based on simulated Dunn-Smyth residuals for occupancy following methods in Warton et al. (2017). If the 95% confidence interval (CI) of the simulation overlapped 0, then we assumed the model fit the data and that there were no violations of model assumptions. We performed our occupancy analysis and model ranking using program MARK (White and Burnham, 1999). All other analyses were performed in program R (v. 3.4.4 and v. 3.5.1; R Core Team, 2017, 2018).

2.4. Validating the habitat use model

We used the parameter structure for Ψ from the top model to predict the distribution of black bears at 2-spatial scales, the Jemez Mountains and New Mexico state. We limited predicted habitat use in the Jemez Mountains to primary habitat to evaluate how well the top model predicted habitat use in a mountain range that is similar in habitat but independent of the Sangre de Cristo and Sacramento mountains (Costello et al., 2001). We did not limit predicted habitat use for New Mexico to primary habitat to evaluate how well the model performed outside of the conditions used to construct it. We validated these maps by comparing predicted to observed habitat use based on GPS and mortality locations for each respective scale. We selected GPS locations that were collected during the same time that hair samples were collected in the Sangre de Cristo and Sacramento mountains, whereas, we used all mortality locations collected in 2012–2014.

First, from a random starting location, we overlaid a grid of 5-km × 5-km cells over primary bear habitat within the Jemez Mountains and across all of New Mexico. We then predicted the probability of use for each cell. We scaled the predicted probabilities of the cells to sum to 1, grouped them into 20-equally sized bins, and then summed within each bin:

$$P(USE) = \sum_j \hat{\Psi}_{ij}$$

where i is the bin identifier, j is the grid cell, and $\hat{\Psi}$ is the probability of habitat use for 1 to N grid cells (Boyce et al., 2002; Howlin et al., 2004). Next, we summed the proportion of observed habitat use for each grid cell by bin:

$$O(USE) = \sum_j \frac{r_{ij}}{r}$$

where i is the bin identifier, j is the grid cell, and r is the observed collar and mortality locations in the study area (Boyce et al., 2002; Howlin et al., 2004). We then conducted a Spearman's rank correlation test to

assess the correlation between predicted and observed habitat use and assumed predicted and observed use would be positively correlated ($\rho \geq 0.60$; Boyce et al., 2002). We also generated a histogram that described the distribution of mortality locations across the distribution of predicted use probabilities for New Mexico. We assumed that each source of mortality was proportional to use, and locations would be found in cells with a higher probability of use. If not, the habitat use model was not a good predictor of habitat use across New Mexico, or the source of mortality may have biased locations towards low-quality habitat due to higher road densities resulting in greater hunter access (sport-harvest), greater anthropogenic attractants (depredation), or higher road densities in areas outside of non-primary habitat (vehicle collision).

3. Results

3.1. Field sampling and genetic analysis

We set 397 and 148 hair traps that were open for 43,951 and 12,080 trap days in the Sangre de Cristo and Sacramento mountains, respectively. These traps collected 2485 and 1198 hair samples with 60% and 53% of hair traps collecting ≥ 1 black bear hair sample. We obtained DNA suitable for amplification from 1813 and 851 hair samples, and we identified 1046 and 546 samples as black bear in the Sangre de Cristo and Sacramento mountains, respectively. In the Jemez Mountains, Kindschuh et al. (2016) live-captured 28 individual bears (19 male; 9 female) from which the telemetry collars obtained 30,660 (22,429 male; 8231 female) GPS locations that coincided with sampling periods in the Sangre de Cristo and Sacramento mountains. New Mexico Department of Game and Fish collected 711, 776, and 556 mortality locations during a 3-yr period (2012–2014), respectively.

3.2. Modeling habitat use

The top-ranked detection model included lure and mtn as covariates and was supported almost twice as much ($w_i = 0.61$) as the second ranked model ($w_i = 0.32$; Appendix Table A.1). The second ranked model differed from the top model by only 1 parameter and both had nearly identical deviances. The additional covariate in the second-ranked model (dist) was uninformative and the competitiveness of the two models was a consequence of a model structure that was similar to the top-ranked model (Arnold, 2010). Therefore, we used the model structure from the top-ranked model for our subsequent modeling of Ψ . As we predicted, detection probability was highest for the blood lure and in the Sangre de Cristo Mountains (Fig. 2). The 95% CIs for the beta coefficients did not overlap 0 for all detection probability covariates (blood: $\beta = 1.28$, 95% CI = 0.99–1.58; skunk: $\beta = 0.73$, 95% CI = 0.43–1.02; mtn: $\beta = 0.39$, 95% CI = 0.11–0.66). The ratio between standardized beta coefficients showed blood had the largest effect relative to skunk (1.76) and mtn (3.33) and skunk had a larger effect than mtn (1.89).

The hypotheses that primary productivity and road density affect black bear habitat use were supported. The top-ranked model for Ψ included EVI, EVICV, and road density, however, this model received just over a third of the total model weight ($w_i = 0.36$). The second and third ranked models differed from the top model by only 1 parameter and had nearly identical deviances as the top model. Like the results for modeling p , the competitiveness of the 2 models was a consequence of a model structure that was similar to the top-ranked model. Thus, we eliminated the 2 models with the uninformative covariates (TRI and mtn) from our model set and the w_i for the top-ranked model increased to 0.52 (Appendix Table A.2). The next 11 models contained a cumulative weight of 0.45 and all but 2 had EVI as a covariate. Consistent with our predictions, habitat use increased with increasing EVI and EVICV and decreased with increasing road density (Fig. 2). The 95% CIs for the beta coefficients did not overlap 0 for all probability of use

covariates (EVI: $\beta = 2.66$, 95% CI = 1.90–3.42; EVICV: $\beta = 0.84$, 95% CI = 0.20–1.47; road: $\beta = -0.53$, 95% CI = -1.02 to -0.05). The ratio between standardized beta coefficients showed that EVI had the largest effect on probability of use relative to EVICV (3.18) and road density (4.97) and EVICV had a larger effect than road density (1.56). The visual diagnostic plots did not show a lack-of-fit for the top model as the 95% CIs for all simulations overlapped 0 (Appendix Figs. B.1 and B.2). The observed proportion of cells used across both mountain ranges was 0.58 and when corrected for imperfect detection, the estimated probability of cell use was $\hat{\Psi} = 0.74$ (SE = 0.03).

3.3. Validating the habitat use model

We used the model structure for Ψ from the top-ranked occupancy model to predict habitat use for bears in the Jemez Mountains and New Mexico because it received $5\times$ more support than the second-ranked model and because nearly all of the remaining models contained EVI (Appendix Table A.2). Predicted habitat use was positively correlated with observed use for all 3 years in the Jemez Mountains (2012: $\rho = 0.81$; 2013: $\rho = 0.87$; 2014: $\rho = 0.90$) and across New Mexico (2012: $\rho = 0.74$; 2013: $\rho = 0.89$; 2014: $\rho = 0.93$). Eighty-two percent, 72%, and 77% of all mortality locations in 2012–2014, respectively, fell within cells that had a predicted probability of habitat use of ≥ 0.90 even though these cells represented only 18–19% of the total cells in New Mexico during the 3 years (Fig. 3; Appendix Fig. C.1). When separated by cause-specific mortality cells that had a predicted probability of habitat use of ≥ 0.90 contained the highest number of mortalities (sport-hunted: 82–87%; depredation: 50–67%; vehicle collision: 37–50%; Appendix Fig. C.1).

4. Discussion

4.1. Benefits of occupancy modeling

Occupancy modeling is a flexible and reliable statistical method that separates the observation process from the ecological process (i.e., p and Ψ) and yields a more accurate representation of where a species has been detected and how it uses the landscape (Kéry et al., 2013; Lahoz-Monfort et al., 2014). This level of inference is valuable because environmental characteristics can affect the detection of a species and bias descriptions of habitat use leading to ill-informed conservation and management plans (MacKenzie, 2006). Our research highlights the utility of occupancy modeling, coupled with noninvasive sampling, to estimate habitat use for highly-mobile species. A unique aspect of our study was the opportunity to use independent data to assess the predictive performance of our model. Our empirical validation procedure reinforces the view that occupancy modeling can be used to estimate habitat use when the assumption that geographic closure of sampling units is violated by a highly-mobile species.

Additionally, when paired with thoughtful and flexible study designs occupancy models can help achieve multiple research objectives. For example, Gould et al. (2018) used noninvasive genetic sampling to estimate the density of black bears, and then we used these data to explore habitat use over large-spatial scale that would have been too financially exorbitant with telemetry collars. In studies that use camera traps, researchers could use occupancy modeling to simultaneously analyze range and community dynamics, investigate species interactions, and monitor biodiversity (Kéry et al., 2013; Rich et al., 2017; Robinson et al., 2014). Occupancy modeling, however, may not always be the most appropriate method for a study. For instance, research on cause-specific mortality, foraging behavior, and 2nd–4th order resource selection requires detailed spatiotemporal location data necessitating the use of telemetry collars (Manly et al., 2002). Despite its strengths, the decision to use occupancy modeling will depend on the ecological questions of interest and monetary constraints of a project.

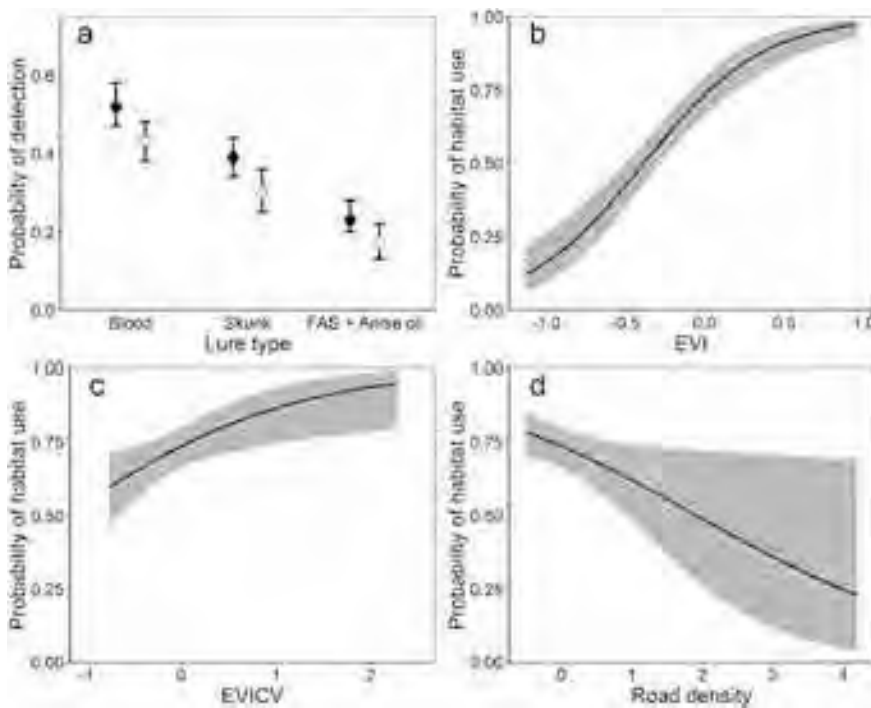


Fig. 2. (a) The probability of detection as a function of lure type (blood, skunk, fatty acid scent tablet [FAS] and anise oil) and mountain range (Sangre de Cristo Mountains = filled circles, Sacramento Mountains = unfilled circles) and (b) the probability of habitat use (Ψ) with respect to the enhanced vegetation index (EVI), (c) its coefficient of variation (EVICV), and (d) road density. Gray shade represents the 95% confidence intervals of the probability of habitat use.

4.2. Validating the habitat use model

Our predicted species distribution maps for black bears exhibited high spatiotemporal concordance with observed habitat use at both spatial scales. Model predictions are often not validated or are validated without using independent data because these data are often difficult and costly to obtain. Instead, researchers typically split the occurrence data into training and testing datasets. They then use the training dataset to generate a single habitat use model, or iteratively generate multiple habitat use models, and validate the model(s) using the testing dataset (e.g., k-fold cross-validation; Boyce et al., 2002). A more informative approach would be to estimate habitat use using the full dataset ensuring a larger sample and greater statistical power to describe patterns of habitat use. Then validate the predictive performance of the model using independent data. Yet, researchers rarely have access to additional independent data, whereas, we were fortunate to have 2-independent datasets available to evaluate our habitat use model.

In the United States, state wildlife management agencies commonly collect mortality information on multiple species so such data are often available to serve as independent data sets. Mortality locations, however, can be biased depending on the cause of mortality. For example, sport harvest locations may be biased due to hunter selectivity and the accessibility of an area to motorized vehicles. Depredation mortalities may be biased if artificial attractants occur outside of high-use habitat. While vehicle collisions may be biased dependent on road type (e.g., interstate vs. dirt). All mortality sources will likely be affected by differential movements of the species due to sex and age (e.g., dispersing juveniles) and increased and uncommon movement patterns due to drought-induced failure of food crops (Costello, 2010; Jones et al., 2015; Kerley et al., 2002). The mortality data we used was male-biased as more males were either killed by sport harvest (1.5–1.6 males:1.0 female), removed because of depredation events (2.0–4.0 males:1.0 female), or killed by vehicle collisions (1.1–2.0 males:1.0 female) across the 3 years. The larger proportion of males is likely a combination of male biased harvest limits, larger movement rates relative to females, and female-biased philopatry, which could increase a male's risk of mortality due to increased interaction with roads and humans (Lee and Vaughan, 2003; Costello, 2010; Gould et al., 2018). Despite these

concerns, it seems logical that bears would use areas that are either easier to travel through, to conserve energy, or contain the resources they need to meet their energy requirements. Our assumption seems reasonable, given most of the cause-specific mortality locations were found in areas with a predicted probability of use ≥ 0.90 (Appendix Fig. C.1).

4.3. Modeling habitat use

The simulated Dunn-Smyth residuals for occupancy did not show any pattern and the 95% CIs for all simulations overlapped 0 suggesting that the model fit the data well and that the assumptions of the model were not violated (Appendix Figs. B.1 and B.2). The model assumption of geographic closure, however, was indeed violated due to the extended sampling period (Gould et al., 2018). Instead, these results likely indicate that movement in and out of the sampling units by the species was random and the probability of occupancy could be interpreted as use.

Habitat use by black bears in New Mexico had a positive relationship with primary productivity and its variation, which likely describes the spatiotemporal distribution of food resources. This relationship can be explained by their omnivorous diet, which is comprised predominantly of vegetative matter (Costello et al., 2001; McLellan, 2011). The positive relationships between primary productivity and habitat use is consistent with various ursid studies that have shown a correlation between primary productivity and population-level habitat selection, habitat quality, and patterns in density (Duquette et al., 2017; Stetz et al., 2018; Wiegand et al., 2008).

Incorporating variables on ecosystem functions (i.e., covariates representing multiple rather than a single ecosystem process) into modeling habitat use has become increasingly popular because they more realistically track ecological patterns (Cabello et al., 2012). Ecosystem functioning variables have improved predictions by species distribution models (Requena-Mullor et al., 2014) and have helped explain diet patterns, population cycles, and habitat use in several mammalian species (Schmidt et al., 2018; Squires et al., 2013; Tsuji et al., 2015). We used EVI and EVICV to represent primary productivity and seasonality, respectively. Land cover combined with road density, however, had a similar performance as the top model as the 2 had nearly identical

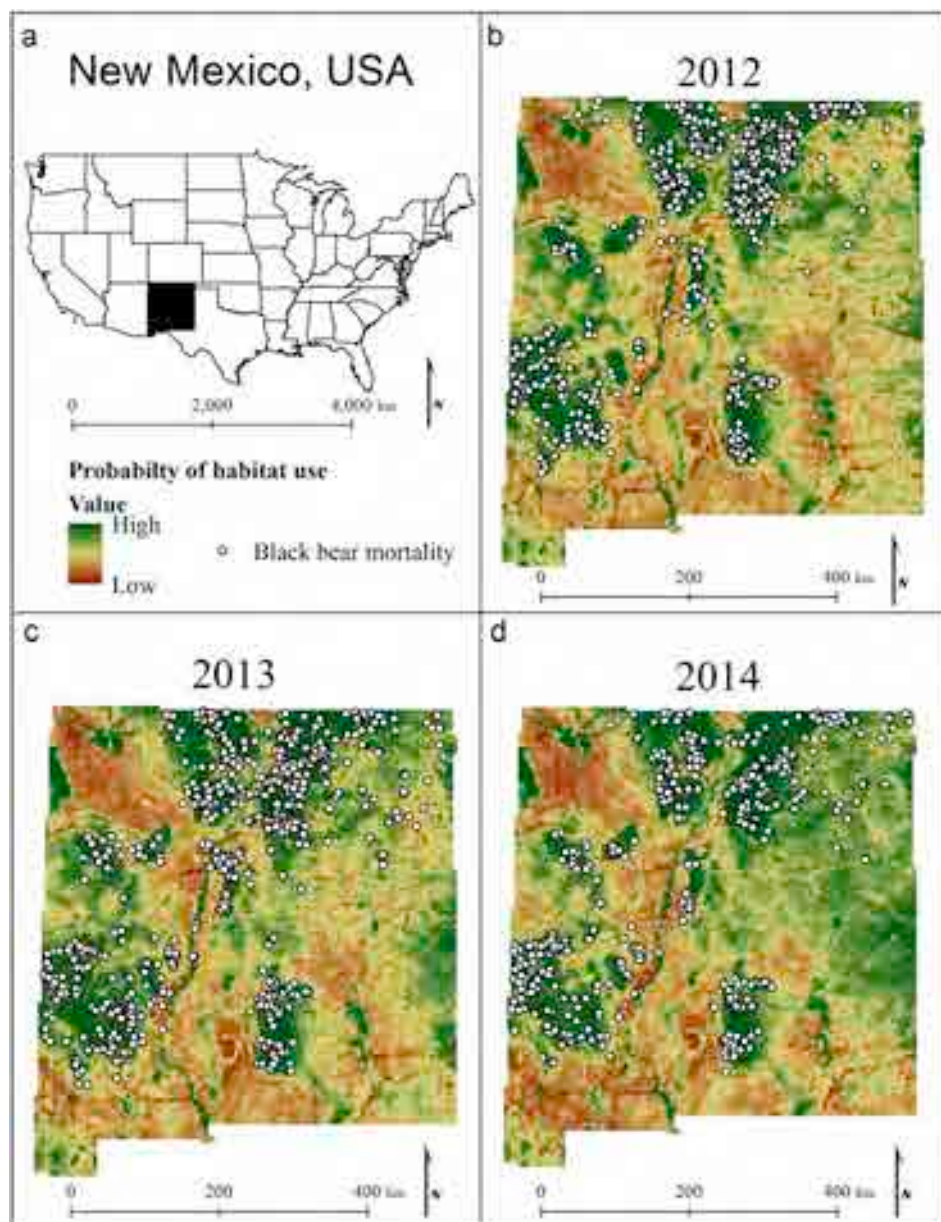


Fig. 3. The predicted probability of habitat use for American black bears (*Ursus americanus*) across (a) New Mexico, USA overlaid with black bear mortality locations in (b) 2012, (c) 2013, and (d) 2014.

deviance values. The similarity in performance most likely arose because EVI and land cover were correlated, but land cover was not ranked highly due to parsimony (Burnham and Anderson, 2002). Thus, land cover may be a good predictor of bear habitat use, but ecosystem functioning variables are more advantageous because they can often be assessed with a single, continuous variable resulting in 2 parameters (intercept and slope) and can characterize the dynamic, spatiotemporal heterogeneity in ecosystem processes more efficiently than a categorical land cover variable. The occupancy model, however, over-predicted habitat use in east-central New Mexico along the Texas border. The EVI and EVICV were likely sensitive to agriculture-based irrigation and the presence of shinners oak (*Quercus havardii*), a deciduous and low-growing shrub. Therefore, some subjectivity based on biological expertise may be necessary when constructing and interpreting habitat use models that are extrapolated outside the area they were generated.

Our results also suggest that habitat use is influenced by road density, but to a much lesser degree than primary productivity. The

negative relationship between road density and habitat use is consistent with a large body of research that has highlighted the negative impact of roads on ursids, including increasing habitat loss, reducing habitat quality, heightening genetic isolation, and increasing mortality rates (Dixon et al., 2007; Little et al., 2017). Roads are also negatively correlated with habitat use of other mammals, from marsupials to small rodents and large-obligate carnivores with greater impacts on species exhibiting low reproduction and high vagility (i.e., highly-mobile species; Kerley et al., 2002; McAlpine et al., 2006; Kelly et al., 2013; Rytwinski and Fahrig, 2011).

We found no support that habitat use was related to terrain complexity or differences between mountain ranges (Appendix Table A.2). Terrain complexity may not have been supported because the scale of our study and the sample of available units was limited to mountain ranges. If we had broadened the geographic scale of sampling for the development of our occupancy model, a greater proportion of less rugged areas would have been included and terrain complexity likely would have been an important predictor of broad-scale habitat use for black bears.

4.4. Conclusions

Predictive maps highlighting wildlife-habitat use and predicting a species' distribution can be valuable tools for developing a better understanding of a species' spatial ecology, thereby informing species management and conservation plans. Occupancy models provide practitioners with the ability to estimate and predict these relationships while accounting for imperfect detection of a species. Using 2-validation datasets, we assessed the performance of occupancy models for estimating habitat use and predicting the distribution of a highly-mobile species, the American black bear. Despite our predictions occurring in an independent mountain range and outside of the habitat conditions upon which the model was constructed, predicted and observed habitat use were positively correlated. Our validation procedure supports the notion that occupancy models can be an effective tool for estimating habitat use and predicting the distribution of highly-mobile species when the assumption of geographic closure has been violated. Our findings may be particularly useful when conservation and management agencies are charged with estimating habitat use for highly-mobile species that are secretive or rare, difficult to capture, or expensive to monitor with other more intensive methods.

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.biocon.2019.03.010>.

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Validating the performance of occupancy modeling in estimating and predicting habitat use for highly-mobile species: a case study using the American black bear

Appendix A: Model selection results for detection probability and the probability of habitat use.

Table A.1. Model selection results examining factors influencing detection probability (p) for American black bears (*Ursus americanus*) in the Sangre de Cristo and Sacramento Mountains, New Mexico, USA, 2012–2014. We used a multi-step modeling process to determine the best model structure for p while using a global model for the probability of habitat use (Ψ).

Model ^a	K ^b	AIC _c ^c	Δ AIC _c ^d	w_i ^e	Deviance ^f
$p(\text{lure} + \text{mtn}) \Psi(\text{global})$	10	2419.02	0.00	0.61	2398.61
$p(\text{lure} + \text{dist} + \text{mtn}) \Psi(\text{global})$	11	2420.31	1.29	0.32	2397.81
$p(\text{lure}) \Psi(\text{global})$	9	2424.23	5.21	0.04	2405.90
$p(\text{lure} + \text{dist}) \Psi(\text{global})$	10	2424.93	5.91	0.03	2404.52
$p(.) \Psi(\text{global})$	7	2491.24	72.21	0.00	2477.03
$p(\text{mtn}) \Psi(\text{global})$	8	2492.53	73.51	0.00	2476.26
$p(\text{dist}) \Psi(\text{global})$	8	2492.59	73.56	0.00	2476.32
$p(\text{dist} + \text{mtn}) \Psi(\text{global})$	9	2493.72	74.70	0.00	2475.38

^a p and Ψ as a function of: lure = blood, skunk, and combination of fatty acid scent tablet and anise oil, mtn = mountain range; dist = distance to road; global = road density, enhanced vegetation index, coefficient of variation for enhanced vegetation index, terrain ruggedness index, and mountain range; (.) = constant; + = additive effect.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference in AIC_c between the top ranked model and the i th ranked model.

^e Model weight.

^f Model deviance = $-2(\log\text{-likelihood})$.

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Table A.2. Model selection results estimating the probability of habitat use (Ψ) of American black bears (*Ursus americanus*) in the Sangre de Cristo and Sacramento Mountains, New Mexico, USA, 2012–2014. We used the model structure from the top ranked model for detection probability ($p \sim \text{lure} + \text{mtn}$) for all models and then ranked all models to estimate Ψ .

Model ^a	K ^b	AIC _c ^c	ΔAIC_c ^d	w_i ^e	Deviance ^f
$\Psi(\text{road} + \text{EVI} + \text{EVICV})$	8	2415.47	0.00	0.52	2399.20
$\Psi(\text{EVI} + \text{EVICV})$	7	2418.86	3.39	0.10	2404.65
$\Psi(\text{road} + \text{TRI} + \text{EVI} + \text{EVICV} + \text{mtn})$	10	2419.02	3.55	0.09	2398.61
$\Psi(\text{TRI} + \text{EVI} + \text{EVICV})$	8	2420.12	4.65	0.05	2403.85
$\Psi(\text{road} + \text{TRI} + \text{EVI})$	8	2420.34	4.87	0.05	2404.07
$\Psi(\text{EVI} + \text{EVICV} + \text{mtn})$	8	2420.74	5.27	0.04	2404.47
$\Psi(\text{road} + \text{EVI})$	7	2421.13	5.66	0.03	2406.92
$\Psi(\text{TRI} + \text{EVI} + \text{EVICV} + \text{mtn})$	9	2422.03	6.56	0.02	2403.69
$\Psi(\text{road} + \text{TRI} + \text{EVI} + \text{mtn})$	9	2422.33	6.86	0.02	2404.00
$\Psi(\text{road} + \text{cover})$	11	2422.47	7.00	0.02	2399.97
$\Psi(\text{cover})$	10	2422.47	7.00	0.02	2402.06
$\Psi(\text{road} + \text{EVI} + \text{mtn})$	8	2422.98	7.51	0.01	2406.71
$\Psi(\text{TRI} + \text{EVI})$	7	2424.23	8.76	< 0.01	2410.02
$\Psi(\text{cover} + \text{mtn})$	11	2424.24	8.77	< 0.01	2401.75
$\Psi(\text{road} + \text{cover} + \text{mtn})$	12	2424.50	9.03	< 0.01	2399.91
$\Psi(\text{TRI} + \text{cover})$	11	2424.53	9.06	< 0.01	2402.03
$\Psi(\text{road} + \text{TRI} + \text{cover})$	12	2424.55	9.08	< 0.01	2399.96
$\Psi(\text{TRI} + \text{EVI} + \text{mtn})$	8	2425.63	10.17	< 0.01	2409.37
$\Psi(\text{EVI})$	6	2425.80	10.33	< 0.01	2413.65
$\Psi(\text{TRI} + \text{EVI} + \text{TRI} \times \text{EVI})$	8	2426.09	10.62	< 0.01	2409.82
$\Psi(\text{TRI} + \text{cover} + \text{mtn})$	12	2426.33	10.86	< 0.01	2401.74
$\Psi(\text{road} + \text{TRI} + \text{cover} + \text{mtn})$	13	2426.60	11.13	< 0.01	2399.91
$\Psi(\text{EVI} + \text{mtn})$	7	2426.82	11.35	< 0.01	2412.61
$\Psi(\text{TRI} + \text{EVI} + \text{TRI} \times \text{EVI} + \text{mtn})$	9	2427.48	12.01	< 0.01	2409.14
$\Psi(\text{road} + \text{TRI} + \text{mtn})$	8	2486.96	71.50	0.00	2470.69
$\Psi(\text{road} + \text{TRI})$	7	2487.43	71.96	0.00	2473.22
$\Psi(\text{road} + \text{mtn})$	7	2487.64	72.17	0.00	2473.43

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$\Psi(\text{road})$	6	2489.12	73.66	0.00	2476.97
$\Psi(\text{TRI} + \text{mtn})$	7	2492.05	76.59	0.00	2477.84
$\Psi(\text{mtn})$	6	2493.86	78.39	0.00	2481.71
$\Psi(\text{TRI})$	6	2496.20	80.73	0.00	2484.04
$\Psi(.)$	5	2499.97	84.50	0.00	2489.86

^a Ψ as a function of cover = land cover type; EVI = enhanced vegetation index; EVICV = coefficient of variation for enhanced vegetation index; mtn = mountain range; road = road density; TRI = terrain ruggedness index; (.) = constant; + = additive effect; * = interactive effect.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference in AIC_c between the top ranked model and the i th ranked model.

^e Model weight.

^f Model deviance = $-2(\log\text{-likelihood})$.

Validating the performance of occupancy modeling in estimating and predicting habitat use for highly-mobile species: a case study using the American black bear

Appendix B: Goodness-of-fit tests for the top-ranked occupancy model

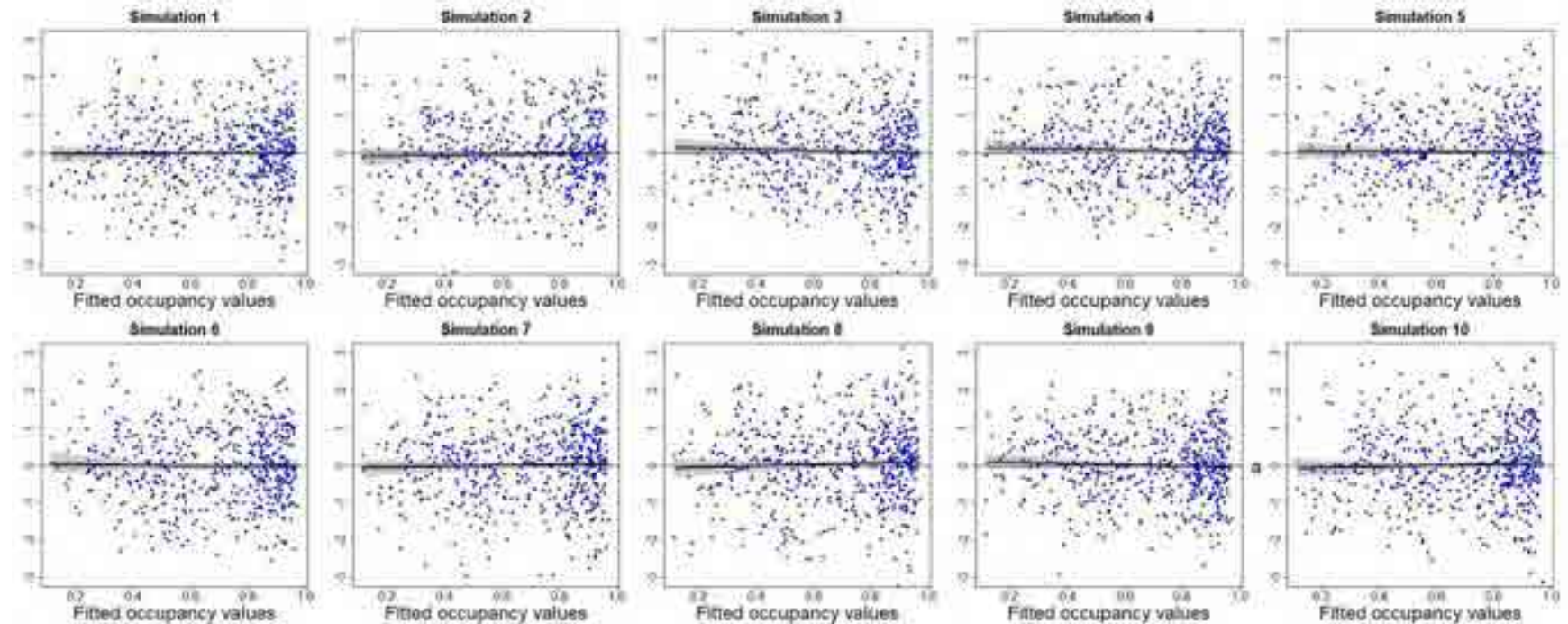


Figure B.1 Plots of Dunn-Smyth residuals for occupancy based on the top-ranked model in our occupancy analysis (Table A.2) for American black bears (*Ursus americanus*) in the Sangre de Cristo and Sacramento Mountains, New Mexico, USA, 2012–2014. We conducted 10 simulations and applied a smoother with a 95% confidence interval where a violation of single-species, single season occupancy model assumptions occurred if the confidence interval did not overlap 0. All simulations indicated the top-ranked model fit the data and no model assumptions were violated. Methods to construct these plots can be found in Warton et al., (2017).

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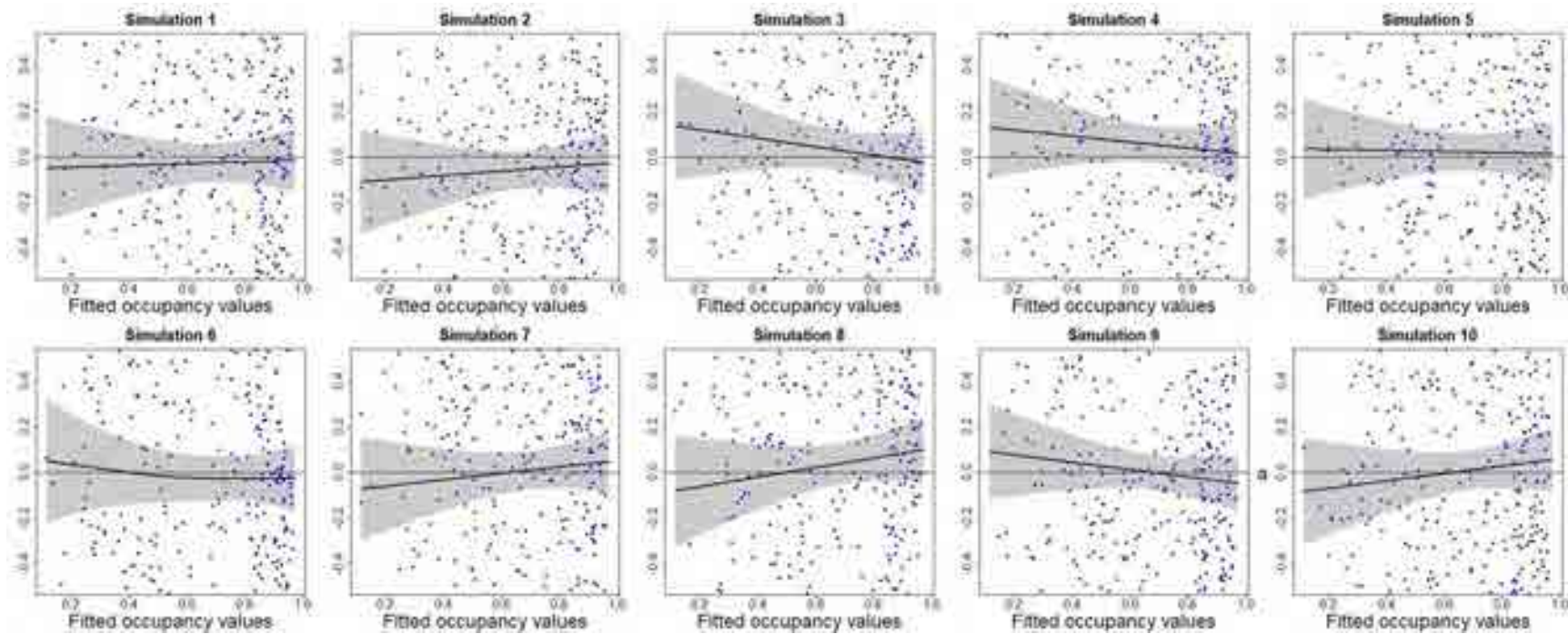


Figure B.2 Plots of Dunn-Smyth residuals for occupancy based on the top-ranked model in our occupancy analysis (Table A.2) for American black bears (*Ursus americanus*) in the Sangre de Cristo and Sacramento Mountains, New Mexico, USA, 2012–2014. We conducted 10 simulations and applied a smoother with a 95% confidence interval where a violation of single-species, single season occupancy model assumptions occurred if the confidence interval did not overlap 0. These figures show the same data as Figure B.1 but are zoomed in to better evaluate if the confidence intervals do not overlap 0. All simulations indicated the top-ranked model fit the data and no model assumptions were violated. Methods to construct these plots can be found in Warton et al., (2017).

References

Warton, D.I., Stoklosa, J., Guillerá-Arroita, G., MacKenzie, D.I., Welsh, A.H., 2017. Graphical diagnostics for occupancy models with imperfect detection. *Methods in Ecology and Evolution* 8, 408–419. <https://doi.org/10.1111/2041-210X.12761>

Validating the performance of occupancy modeling in estimating and predicting habitat use for highly-mobile species: a case study using the American black bear

Appendix C: Histogram of observed cause-specific mortality with respect to predicted probability of habitat use across New Mexico.

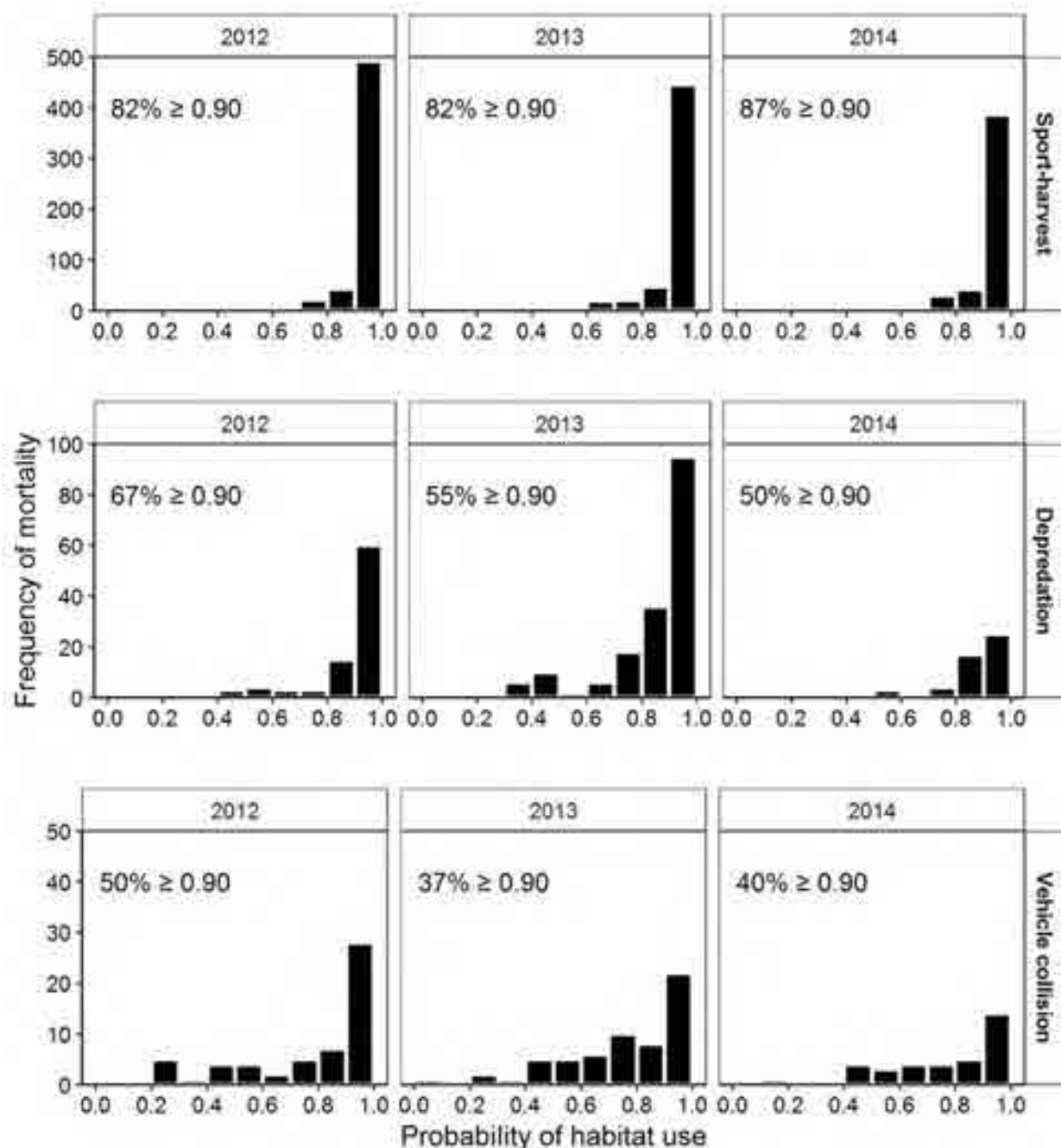


Figure C1. Histogram showing the frequency of cause-specific mortalities with respect to the probability of habitat use predicted for each cell where the mortality occurred for American black bears (*Ursus americanus*) in New Mexico, USA, 2012–2014. The listed percentages represent the percent of the cause-specific mortalities that fell within cells that had a predicted probability of habitat use of ≥ 0.90 .

RESEARCH ARTICLE

Pleistocene–Holocene vicariance, not Anthropocene landscape change, explains the genetic structure of American black bear (*Ursus americanus*) populations in the American Southwest and northern Mexico

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Abstract

The phylogeography of the American black bear (*Ursus americanus*) is characterized by isolation into glacial refugia, followed by population expansion and genetic admixture. Anthropogenic activities, including overharvest, habitat loss, and transportation infrastructure, have also influenced their landscape genetic structure. We describe the genetic structure of the American black bear in the American Southwest and northern Mexico and investigate how prehistoric and contemporary forces shaped genetic structure and influenced gene flow. Using a suite of microsatellites and a sample of 550 bears, we identified 14 subpopulations organized hierarchically following the distribution of ecoregions and mountain ranges containing black bear habitat. The pattern of subdivision we observed is more likely a product of postglacial habitat fragmentation during the Pleistocene and Holocene, rather than a consequence of contemporary anthropogenic barriers to movement during the Anthropocene. We used linear mixed-effects models to quantify the relationship between landscape resistance and genetic distance among individuals, which indicated that both isolation by resistance and geographic distance govern gene flow. Gene flow was highest among subpopulations occupying large tracts of contiguous habitat, was reduced among subpopulations in the Madrean Sky Island Archipelago, where montane habitat exists within a lowland matrix of arid lands, and was essentially nonexistent between two isolated subpopulations. We found significant asymmetric gene flow supporting the hypothesis that bears expanded northward from a Pleistocene refugium located in the American Southwest and northern Mexico and that major highways were not yet affecting gene flow. The potential vulnerability of the species to climate change, transportation infrastructure, and the US–Mexico border wall highlights conservation challenges and opportunities for binational collaboration.

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Ranch

KEYWORDS

American black bear, American Southwest, landscape genetics, northern Mexico, Pleistocene, population genetic structure, *Ursus americanus*

TAXONOMY CLASSIFICATION

Biogeography, Conservation genetics, Ecological genetics, Genetics, Population genetics

1 | INTRODUCTION

The Pleistocene epoch (2.6–0.012 mya) represents a geologic period characterized by massive climatic fluctuations that drove dynamic glacial–interglacial cycles with profound effects on the global distribution and genetic structure of flora and fauna (Hofreiter & Stewart, 2009). Glacial advance contracted species' ranges into refugial pockets of habitat where isolation, selection, and genetic drift resulted in genetic differentiation among populations. Upon glacial recession, species expanded out of their respective refugia into their current distribution resulting in latitudinal patterns of species assemblages, genetic structure, and areas of admixture between formerly isolated populations (Lomolino et al., 1989; Puckett et al., 2015; Shafer et al., 2010). The phylogeographic influence of these glacial–interglacial dynamics has been observed for vagile species like the gray wolf (*Canis lupus*; Weckworth et al., 2010) and red fox (*Vulpes vulpes*; Aubry et al., 2009) and for more habitat-restricted species like the woodland caribou (*Rangifer tarandus caribou*; Klütsch et al., 2012) and American marten (*Martes americana*; Stone et al., 2002). The location of refugia is highly dependent on the life history of the organism.

The American black bear (*Ursus americanus*; hereafter, black bear) is a large omnivore endemic to the forests of North America. Its distribution and genetic structure have been an ebb and flow of isolation and admixture events dictated by glacial tides of the Pleistocene (Puckett et al., 2015). Mitochondrial and nuclear data indicate that black bears were last isolated during the Last Glacial Maximum (LGM) ~26.5 kya and had contracted into three glacial refugia located in Beringia, the Pacific Northwest, and the American Southeast, and a fourth hypothesized refugium in the southwestern United States and northern Mexico (hereafter, the Southwest; Puckett et al., 2015; Varas-Nelson, 2010). As glaciers receded (~20 kya), black bears expanded out of their respective refugia resulting in admixture among populations in west-central and east-central North America and the formation of region-specific subpopulations (Pelletier et al., 2011; Puckett et al., 2015). Black bears across their northern range are genetically diverse and inhabit a large, contiguous landscape with a genetic structure that is consistent with isolation by distance due to female-biased philopatry (Pelletier et al., 2011; Pelletier et al., 2017). Despite support for a fourth glacial refugium in the Southwest (Puckett et al., 2015; Varas-Nelson, 2010), there remains some uncertainty as these inferences are based on limited geographic sampling, particularly in the southeast portion of New Mexico (Onorato et al., 2007; Onorato, Hellgren, Van Den Bussche, & Doan-Crider, 2004). Furthermore, conflicting inferences regarding

the genetic structure of black bears have been made in Arizona and New Mexico, where bear populations have been reported as both genetically structured and admixed (Atwood et al., 2011; Varas-Nelson, 2010; Winslow, 2012).

The potential existence of a southwestern refugium for black bears is independently supported by paleoecological reconstruction of woodrat (*Neotoma* spp.) paleomiddens (Betancourt et al., 1990). Woodrats collect plant material and pollen blows in or adheres to plants and the macrofossils and pollen become encased in crystallized woodrat urine, or amberat, that form an indurated paleomidden (Spaulding et al., 1990). Investigations of these paleomiddens reveal information about the relative abundance, distribution, and species composition of prehistoric plant communities, which in turn enable assessments of climatic and plant community change (Betancourt et al., 1990). These investigations indicate that during the late Pleistocene and early Holocene (12 kya–present), areas within what are now the Chihuahuan and Sonoran deserts of the southwestern United States and northern Mexico, contained large areas dominated by pygmy conifer forest, a plant community comprising important food plants of black bears, including those that produce hard mast such as piñon pine (*Pinus* spp.), juniper (*Juniperus* spp.), and oak (*Quercus* spp.; Betancourt et al., 1990, Chp. 21; Holmgren et al., 2006; McAuliffe & Van Devender, 1998; Onorato et al., 2003). Conversely, areas farther north, in northern Arizona and New Mexico and southern Colorado and Utah, contained less hospitable habitat including montane glaciers, tundra, and taiga as well as forests dominated by yellow pine (*Pinus* spp.), limber pine (*P. flexilis*), and lodgepole pine (*P. contorta*). These regions currently harbor more contiguous black bear habitat. As the Holocene aridified, habitats preferred by bears either shifted up in elevation, such as in the Madrean Sky Islands along the US–Mexico border, or farther north in latitude and the bears likely followed suit. Thus, vicariant events, namely climatic change that drove the distribution of important food plants for this forest-adapted species, may have influenced the distribution of black bears. This pattern of vicariance and migration may be visible in the genetic structure of contemporary black bear populations.

Anthropogenic activities, in particular, overharvest, urbanization, and transportation infrastructure such as highways with high traffic volume have also influenced the abundance, movement patterns, and genetic structure of black bears. In the western and eastern portions of their range, overhunting and persecution during European settlement severely reduced the abundance of black bears with some populations recovering and recolonizing portions of their former range (Evans et al., 2017; Malaney et al., 2018), while others

have been rendered into small, isolated populations more susceptible to genetic drift, eroding genetic diversity (Hooker et al., 2015; Murphy et al., 2017; Murphy et al., 2018). In Florida, major roads have heightened mortality (McCown et al., 2009) and acted as semipermeable barriers, that when coupled with urbanization, fragmented bear habitat, decreased connectivity, and caused appreciable genetic structure among subpopulations (Dixon et al., 2007; Karelus et al., 2017). In the Lower Mississippi Alluvial Valley of Louisiana, human-caused mortality combined with extensive habitat loss and fragmentation forced black bears into a patchwork of small populations isolated by anthropogenic activities; active translocations are underway to help restore bear populations there (Murphy et al., 2018). In several states, roads have been shown to influence movements and patterns of habitat selection, as bears either avoid roads or select areas farther from roads, and in some regions, roads created genetic substructure by acting as filters to bear movement (Cushman & Lewis, 2010; Dixon et al., 2007; Gould et al., 2019; Hiller et al., 2015; Short Bull et al., 2011).

In the Southwest, limited geographic and genetic sampling has obscured the influence of prehistoric and contemporary ecological processes that shape genetic structure and govern gene flow of black bear populations. Our aim was to fill a crucial gap regarding the large-scale population genetic structure of the American black bear by using a suite of microsatellite loci to characterize the genetic profile of 550 individual bears sampled across the Southwest. We focused on two hypotheses. First, we hypothesized that the current genetic structure could be a consequence of Pleistocene–Holocene vicariance whereby bears occupied forest refugia during the LGM, but then followed changes in the distribution of forests as the Holocene dried and warmed (Pleistocene–Holocene Vicariance Hypothesis). If true, we predicted that bears occupying contiguous forests should be relatively closely related and exhibit little genetic substructure. Bears in the Madrean Sky Islands should be more genetically structured (Atwood et al., 2011; Varas-Nelson, 2010) and should show evidence of gene flow characterized by isolation by resistance. Finally, there should be a pronounced asymmetric pattern of gene flow from south to north. Second, we hypothesized that the genetic substructure of bears could be dominated by anthropogenic activities typifying the Anthropocene (i.e., the concept that we are living in a time when human activities have significant effects on the global environment). If true, we predicted that the influence of major highways would be manifested by bears being more closely related on the same side of a highway and more distantly related on opposite sides. This should occur irrespective of the intervening habitat matrix. Although highways may not be barriers, they should act as semipermeable filters that influence gene flow (Anthropocene Filter Hypothesis). Expectations from these hypotheses may not be mutually exclusive, but we envision that the strength of evidence gathered through our analysis will expose their relative importance and that the insight gained will illuminate the processes that helped shape the phylogeography and present-day genetic structure of black bears in the Southwest. Our findings will also aid in the conservation and management of black bears by identifying genetically

isolated populations and the landscape features promoting or inhibiting genetic connectivity among black bear populations.

2 | MATERIALS AND METHODS

2.1 | Study area

We conducted our study in the southwestern United States (Arizona, Colorado, New Mexico, Texas, and Utah) and northern Coahuila de Zaragoza, Mexico (Figure 1). Orography and climate vary drastically throughout the Southwest with elevation ranging from 21 m at the southwest corner of Arizona to 4155 m-high peaks in southern Colorado. The desert and grassland communities receive the majority of the ~100–300 mm of annual precipitation during the July to October monsoon season with mean monthly maximum temperatures for July from 1961 to 1990 ranging from ~16 to 40°C (Davey et al., 2006, 2007a, 2007b). The forest communities receive the majority of the ~300 to 1250 mm of annual precipitation during the winter with mean monthly minimum temperature for January from 1961 to 1990 ranging from ~−20 to −4°C (Davey et al., 2006, 2007a, 2007b).

Black bears in the Southwest inhabit a mosaic of habitat distributed throughout three ecoregions: Northwestern Forested Mountains, Temperate Sierras, and Southern Semiarid Highlands which themselves are often separated by the North American Deserts ecoregion (Omernik & Griffith, 2014). Biotic communities at higher elevations and latitudes consist of Petran Subalpine and Petran Montane conifer forests transitioning to mid-elevation Great Basin Conifer and Madrean Evergreen woodlands (Brown, 1994). Large expanses of low-elevation valleys are composed of biotic communities such as Plains and Great Basin Grassland, Semidesert Grassland, and the Great Basin, Chihuahuan, and Sonoran desert scrub. These areas comprise a low elevation “sea” that is not typically used by black bears, isolating them on montane ‘sky islands’ (Brown, 1994; Hellgren et al., 2005; Olson et al., 2001).

2.2 | Sample and marker selection

We collected genetic samples from individual black bears through hunter harvest, live-capture, noninvasive genetic sampling, and vehicle collisions. We attempted to sample ≥25 individuals from each mountain range to obtain an adequate representation of allele frequency and diversity within each assumed subpopulation (Hale et al., 2012). Despite there being evidence that bears from west Texas and northern Coahuila de Zaragoza, Mexico, have genetic signatures more similar to bears in the southeast United States (Onorato et al., 2007; Onorato, Hellgren, Van Den Bussche, & Doan-Crider, 2004; Pedersen et al., 2021, Van Den Bussche et al., 2009), we included individuals from this region in our analysis because limited geographic sampling of black bears in New Mexico creates the possibility of a link between west Texas and northern Coahuila de

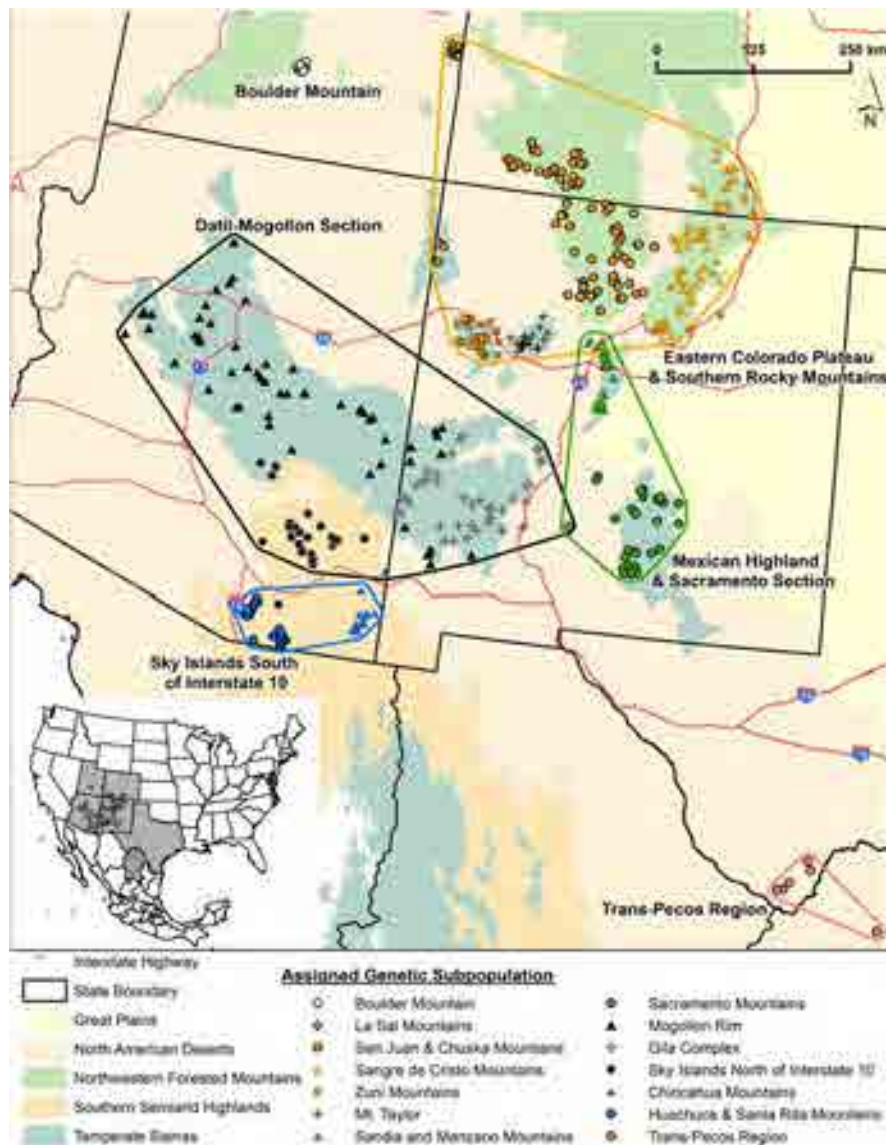


FIGURE 1 Distribution of genetic samples and subpopulations of American black bears (*Ursus americanus*) in the American Southwest and northern Mexico. GENELAND identified 6 and 14 subpopulations using the uncorrelated (polygons) and correlated (symbols) allele frequency models, respectively. The 6 larger subpopulations are named clusters.

Zaragoza and New Mexico. At present, black bears from the Trans-Pecos region have been documented in the Davis Mountains, Texas, ~150km south of black bears found in the Guadalupe Mountains on the New Mexico and Texas border. We genotyped all individuals using the ZFX-ZFY sex marker and 15 microsatellite loci (CXX20, G1A, G1D, G10B, G10C, G10H, G10J, G10L, G10M, G10O, G10P, G10U, G10X, MU50, and MU59; Durnin et al., 2007; Ostrander et al., 1993; Paetkau et al., 1998; Paetkau & Strobeck, 1995; Taberlet et al., 1997). Wildlife Genetics International in Nelson, British Columbia, Canada, generated all genotypes. Detailed laboratory protocols for microsatellite amplification and assignment error can be found in Paetkau (2003) and Gould et al. (2018). We obtained permits under the Convention on International Trade in Endangered Species (Export Permits 12US86418A/9, 13US19950B/9, 13US199551B/9, 14US43944B/9, 15US61420B/9, 15US69493B/9, 15US69502B/9) to export samples to Canada for analysis. Our research was authorized by the New Mexico Department of Game and Fish (Taking Protected Wildlife for Scientific and or Education

Purposes Permit 3504) and approved by the New Mexico State University Institutional Animal Care and Use Committee (Protocol number 2011-027).

2.3 | Describing genetic structure and estimating gene flow

We conducted all genetic analyses in program R version 3.5.2 unless otherwise specified (R Core Team, 2018). We tested for linkage disequilibrium (LD) using the R package GENEPOP and null alleles and deviations from Hardy-Weinberg equilibrium (HWE) using the R package POPGENREPORT (version 3.0.0; Adamack & Gruber, 2014; version 1.0.5; Rousset et al., 2017). We conducted a significance test for null alleles by assessing if a bootstrapped 95% confidence intervals (CI) for each locus overlapped zero, whereby overlap would indicate that the frequency of null alleles does not differ significantly from zero. We applied a Bonferroni correction ($\alpha = 0.05$ divided by the number of

pairwise comparisons for each test) of $\alpha \leq 0.0005$ (LD) and $\alpha \leq 0.003$ (HWE) to reduce the likelihood of a false-positive significance test, and we generated allele-frequency statistics for each locus in POPGEN-REPORT. For each identified subpopulation, we quantified genetic diversity using unadjusted private alleles (A_p) and private alleles using rarefaction (A_{PR}), which accounts for differences in sample size among subpopulations, using HP-RARE v1.0 (Kalinowski, 2004, 2005). We also quantified genetic diversity by estimating expected (H_E) and observed (H_O) heterozygosity and allelic richness using rarefaction (A_R) with the R package DIVERSITY (version 1.9.9; Keenan et al., 2013). We used DIVERSITY to calculate deviations from random mating (F_{IS}) and genetic differentiation among subpopulations (F_{ST}) along with their 95% CI based on 1000 bootstrap iterations. We classified values of F_{ST} from 0.05–0.14, 0.15–0.24, and ≥ 0.25 as moderate, high, and very-high differentiation, respectively, and considered differentiation to be biologically meaningful if the lower CI was ≥ 0.05 (Hartl & Clark, 1997).

We used two Bayesian clustering programs to characterize population structure, GENELAND and STRUCTURE (Guillot et al., 2005; Pritchard, 2000). Both programs use multi-locus genotypes to infer the number of genetic subpopulations (K) maintaining both Hardy-Weinberg and linkage equilibrium. GENELAND, however, uses spatial data to infer the spatial boundaries that separate the K subpopulations (Guillot et al., 2005). Because GENELAND has been shown to outperform other Bayesian clustering methods in detecting barriers to dispersal in fewer generations for species with higher dispersal abilities (Blair et al., 2012; Safner et al., 2011), we based our inferences on GENELAND. Results from the STRUCTURE analysis were similar and are available, along with the methods, in Appendix S1. We performed 10 independent runs using the uncorrelated and correlated allele frequency models. We used both models because the former is less sensitive to departures from model assumptions while the latter is more apt to detect subtle genetic differentiation (Guillot et al., 2008; The Geneland Development Group, 2018). We varied K from 1 to 31 (the maximum number of sampling locations +1) and then used the model with the highest mean posterior probability to select K and assigned individuals to the population in which their estimated proportion of ancestry (i.e., the Q-value) was the greatest. We optimized all models using 500,000 Markov Chain Monte Carlo iterations, 1000 burn in, a 100-iteration thinning interval, an uncertainty of 2 km for GPS coordinates, and a maximum rate of 1650 nuclei for the Poisson-Voronoi tessellation (three times the number of individuals). We implemented our analysis in the R package GENELAND using program R (version 3.4.4; R Core Team, 2018; The Geneland Development Group, 2018). After assessing population structure, we again assessed for LD, null alleles, and deviations from HWE, and if these tests failed then we reassessed for population structure until tests were not significant.

2.3.1 | Environmental variables

Available food resources should influence habitat selection, as black bears must accumulate large-fat stores for both hibernation and

reproduction (Costello et al., 2003) and food for bears in arid environments is tied to precipitation (precip; Zlotin & Parmenter, 2008). Black bears are forest obligates and have evolved morphological and behavioral adaptations associated with exploiting forest stands (Herrero, 1972) and they require thermal refugia (Lara-Díaz et al., 2018) because they are susceptible to hyperthermia (Sawaya et al., 2017). We modeled these features using canopy height (canopy), percent canopy (percan), and water bodies (water) as canopy provides thermal cover and water is necessary for thermoregulation, especially if bears crossed more inhospitable land cover such as desert. Male black bears have been shown to use less rugged areas (Costello, 2010; Johnson et al., 2015; Onorato, Hellgren, Van Den Bussche, & Skiles Jr., 2004), so we used a Terrain Ruggedness Index (TRI) to represent potential movement corridors. Linear-water features (streams) contain food, escape, and thermal cover, and are travel corridors (Atwood et al., 2011; Johnson et al., 2015). Roads can elicit negative behavioral and genetic effects and can influence bear distribution (Dixon et al., 2007; Gould et al., 2019), so we assessed their effect by estimating road density (rd. density). Interstates and highways (rd. major), which if not acting as barriers, may inhibit gene flow by heightening mortality rates (Little et al., 2017). We did not explore the influence of other anthropogenic activities such as agriculture or human settlements because the former is uncommon and sparsely distributed across New Mexico while the latter is correlated with road density.

We determined the spatial extent of the environmental variables, and subsequent resistance surfaces, by buffering all sample locations by 61 km based on the maximum-dispersal distance for black bears in the Sangre de Cristo and Mogollon mountains, New Mexico (Costello, 2010). We calculated mean-summer precipitation (Apr-Sep; continuous covariate), using WorldClim2 monthly precipitation levels from 1970 to 2000 (<http://worldclim.org/version2>; Fick & Hijmans, 2017). We obtained percent canopy (continuous covariate) at a 30m resolution using the U.S Geological Survey Global Tree Canopy Cover dataset (<https://www.landcover.usgs.gov>; Hansen et al., 2013). We obtained canopy height (continuous covariate) at a 1 km resolution using the National Aeronautics and Space Administration EARTHDATA Spatial Data Access Tool (<https://daac.ornl.gov>). We obtained location data for streams (binary covariate) and water bodies (binary covariate) from the National Hydrography Dataset (<https://www.usgs.gov/core-science-systems/ngp/national-hydrography>). We derived TRI (continuous covariate) using a National Elevation Dataset 30m digital elevation model (www.nationalmap.gov) and the Benthic Terrain Modeler in ArcMAP. We calculated road density (km/25 km²; continuous covariate) and major roads (categorical covariate) using data from Open Street Map (www.openstreetmap.org). For major roads, we used three classifications: interstate highways, state highways, and county roads. We resampled each resistance layer to a 5 km resolution using bilinear interpolation to reduce the computational intensity of the optimization process given the large extent of the study area without sacrificing an accurate characterization of the landscape (McRae et al., 2008).

We created and manipulated all resistance surfaces using ArcMAP v10.4.1 (Environmental Systems Research Institute, Redlands, CA, USA). We assessed correlation among covariates using a Pearson's correlation coefficient of $r \geq |0.60|$. We found a correlation between canopy height and percent canopy ($r = 0.72$) and removed the latter from our analysis.

2.3.2 | Generating the resistance surface

We used the R package *RESISTANCEGA* to optimize resistance surfaces, assess the effect of pairwise-effective distance on pairwise-genetic distance, and conduct model selection while accounting for non-independence among the pairwise data (version 4.1-0.2.1; Peterman, 2018; Peterman et al., 2014). *RESISTANCEGA* optimizes resistance surfaces using a genetic algorithm (a process based on the theory of natural selection) that eliminates the subjective assignment of resistance values by expert opinion and the limited exploration of the optimized parameter space (Peterman, 2018; Peterman et al., 2014). The optimization process begins with the selection of parameter values that control the transformation, shape of the transformation, and resistance value for a continuous surface, or if a categorical surface, the assignment of values to each resistance level. After each iteration, pairwise effective distances among all individuals are calculated and a linear mixed-effects model is then fit to the data where effective distance is used to predict genetic distance among individuals (Clarke et al., 2002; Peterman, 2018; Peterman et al., 2014). The relative support for the combination of parameter values at each iteration is assessed using an objective function from the mixed-effects model, and once the objective function can no longer be improved, surface optimization is completed.

We quantified effective landscape distance using random-walk commute times in the R package *GDISTANCE* (version 1.2-2; Van Etten, 2017). We quantified pairwise-genetic distance using the individual-based metric proportion of shared alleles (D_{ps}) in the R package *ADEGENET* (version 2.1.1; Jombart, 2008). We applied a monomolecular and Ricker transformation along with their inverse, reverse, and inverse-reverse forms to each continuous-resistance covariate to explore the functional relationship between each covariate and resistance to movement. We constructed our model using a maximum of three covariates due to computational intensity and assessed the relative support among resistance surface models using Akaike's Information Criterion adjusted for small sample size (AICc) with models >2 AICc units from the top model being discounted (Burnham & Anderson, 2002; Hurvich & Tsai, 1989) and by calculating the model weight (w_i). We conducted the optimization process in program R (version 3.4.4; R Core Team, 2017) using the Bridges high-performance computing system at the Pittsburgh Supercomputing Center (Nystrom et al., 2015; Towns et al., 2014).

To explore how geographic distance vs. landscape distance affects pairwise-genetic distance, we used AICc to rank the fit of linear mixed-effects models using Euclidean distance, the top-ranked resistance surface, and a model that combined both.

2.3.3 | Relative degree and direction of gene flow

We investigated asymmetric gene flow by estimating relative migration among the estimated subpopulations using the *divMigrate* function in the R package *DIVERSITY* where maximum relative gene flow is set at 1 and minimum at 0 (Keenan et al., 2013; Sundqvist et al., 2016). We calculated G_{ST} , a measure of population differentiation and an analog of F_{ST} , for network plots, conducted 1000 bootstrap iterations to generate 95% CIs to evaluate if asymmetric gene flow was significant and chose to display connections ≥ 0.50 .

3 | RESULTS

3.1 | Describing genetic structure

We genotyped 550 (285M:265F) individuals from 28 localities (Appendix S2: Table S1). We found a moderate percentage of null alleles (4–12%) across all loci in this total sample (Appendix S2: Table S2). We found 82% of the pairwise comparisons among loci ($n = 105$) for LD to be significant ($P < 0.0005$ after Bonferroni correction) and all loci were out of HWE ($p < .003$ after Bonferroni correction; Appendix S2: Tables S3–S4). These metrics suggest that genetic structuring may occur among black bears across the Southwest.

The uncorrelated allele frequency model in *GENELAND* identified 6-regional genetic clusters: Boulder Mountain, Utah (BM), the eastern Colorado Plateau and Southern Rocky Mountains (ECPSRM), the Datil-Mogollon Section (DMS), the Mexican Highland and Sacramento sections (MHSS), the Sky Islands south of Interstate 10 (SIS), and the Trans-Pecos region (TP; Figure 1; Appendix S2: Figure S1). The presence of null alleles was suggested at loci CXX20 (BM), G10H (ECPSRM), G10J (SIS and TP), G10O (MHSS and SIS), and MU50 (BM and DMS; Appendix S3: Table S1). We found the CXX20 locus to be non-randomly associated with G10B and G10H in the BM subpopulation (Appendix S3: Tables S2–S4). The G10U and G10L loci were out of HW proportions in the ECPSRM and DMS, respectively (Appendix S3: Table S5). The presence of null alleles and linkage disequilibrium suggests these loci may not accurately represent genetic structure and diversity while deviations from HW proportions suggest there could be additional genetic structure that was not detected under the uncorrelated allele frequency model.

Allelic richness was lowest in the SIS ($A_R = 3.91$) and highest in the DMS ($A_R = 5.43$); the TP had the second highest allelic richness despite small sample size (Table 1). The number of private alleles using rarefaction was lowest in DMS ($A_{PR} = 0.09$) and highest in the TP ($A_{PR} = 1.79$; Table 1; Appendix S3: Table S6). Observed heterozygosity ranged from 0.42 to 0.64 was slightly lower than H_E (0.44–0.62) for all regional subpopulations except for the TP (Table 1). The F_{IS} estimates suggested deviations from random mating within the ECPSRM and DMS subpopulations, but along with H_O being lower than H_E for both subpopulations, it is more likely that a Wahlund effect, rather than nonrandom mating, is occurring, which indicates greater substructure within these two regions (Wahlund, 1928).

TABLE 1 Number of individuals (N), private alleles (A_P), private alleles using rarefaction (A_{PR}), allelic richness using rarefaction (A_R), observed (H_O) and expected (H_E) heterozygosity, and a measure of deviations from random mating (F_{IS}) and its 95% confidence interval (LCI and UCI) based on 1000 bootstrap iterations for American black bear (*Ursus americanus*) subpopulations in the American Southwest and northern Mexico.

Subpopulation	Acronym	State	N	A_P	A_{PR}	A_R	H_O	H_E	F_{IS}	LCI	UCI
Regional											
Boulder Mountain	BM	UT	21	3	0.41	4.25	0.56	0.58	0.02	-0.08	0.08
Eastern Colorado Plateau and Southern Rocky Mountains	ECPSRM	CO/NM/UT	142	8	0.26	4.61	0.48	0.50	0.04	0.01	0.06
Datil-Mogollon Section	DMS	AZ/NM	247	2	0.09	5.43	0.57	0.59	0.04	0.01	0.05
Mexican Highland and Sacramento sections	MHSS	NM	65	2	0.19	4.66	0.56	0.58	0.02	-0.03	0.06
Sky Islands South of Interstate 10	SIS	AZ	55	0	0.21	3.91	0.42	0.44	0.04	-0.02	0.08
Trans-Pecos region	TP	TX	20	21	1.79	5.07	0.64	0.62	-0.03	-0.14	0.02
Mountain Range											
Boulder Mountain	BM	UT	21	3	0.25	4.14	0.56	0.58	0.02	-0.09	0.07
La Sal Mountains	LSM	UT	28	1	0.07	4.63	0.56	0.58	0.01	-0.07	0.05
San Juan and Chuska mountains	SJC	CO/NM	82	1	0.06	4.89	0.56	0.57	0.01	-0.03	0.04
Sangre de Cristo Mountains	SCM	CO/NM	81	1	0.09	4.73	0.61	0.59	-0.02	-0.06	0.00
Zuni Mountains	ZM	NM	33	0	0.04	5.01	0.54	0.53	0.00	-0.07	0.03
Mt. Taylor	MT	NM	23	1	0.03	4.36	0.55	0.54	0.00	-0.11	0.06
Sandia and Manzano mountains	SMM	NM	34	1	0.02	4.34	0.57	0.57	0.00	-0.07	0.03
Mogollon Rim	MR	AZ	63	0	0.01	4.26	0.50	0.52	0.03	-0.02	0.07
Gila complex	GC	NM	44	1	0.04	3.95	0.46	0.47	0.02	-0.05	0.05
Sacramento Mountains	SM	NM	31	1	0.04	4.05	0.55	0.55	-0.02	-0.09	0.02
Sky Islands North of Interstate 10	SIN	AZ	35	0	0.02	4.25	0.48	0.48	-0.01	-0.07	0.03
Huachuca and Santa Rita mountains	HSRM	AZ	39	0	0.02	3.45	0.39	0.40	0.03	-0.04	0.08
Chiricahua complex	CHC	AZ	16	0	0.04	3.87	0.48	0.45	-0.06	-0.18	0.01
Trans-Pecos region	TP	TX	20	21	1.39	4.89	0.64	0.62	-0.03	-0.13	0.02

TABLE 2 Estimated pairwise genetic differentiation (F_{ST}) and their 95% confidence intervals based on 1000 bootstrap iterations for regional subpopulations identified by GENELAND using the uncorrelated allele frequency model for American black bears (*Ursus americanus*) in the American Southwest and northern Mexico.

	BM	ECPSRM	DMS	MHSS	SIS	TP
BM	-					
ECPSRM	0.14 (0.10–0.17)	-				
DMS	0.21 (0.17–0.25)	0.03 (0.03–0.04)	-			
MHSS	0.16 (0.12–0.19)	0.04 (0.03–0.05)	0.06 (0.05–0.08)	-		
SIS	0.25 (0.21–0.29)	0.09 (0.08–0.11)	0.09 (0.07–0.11)	0.11 (0.10–0.13)	-	
TP	0.30 (0.27–0.34)	0.33 (0.31–0.35)	0.40 (0.38–0.43)	0.33 (0.31–0.36)	0.44 (0.42–0.47)	-

Notes: Bolded values signify statistically significant differentiation.

Abbreviations: BM, Boulder Mountain; DMS, Datil-Mogollon Section; ECPSRM, Eastern Colorado Plateau and Southern Rocky Mountains; MHSS, Mexican Highland and Sacramento sections; SIS, Sky Islands South of Interstate 10; TP, Trans-Pecos.

Genetic differentiation was the lowest between the ECPSRM and DMS ($F_{ST} = 0.03$) and highest between the TP and SIS ($F_{ST} = 0.44$). Overall, the two most isolated subpopulations, BM and the TP, displayed the highest levels of genetic differentiation compared to all other subpopulations (Table 2).

The correlated allele frequency model identified 14-genetic clusters that closely tracked the sampled mountain ranges (Appendix S2:

Figure S1). The BM and TP subpopulations from the regional results remained while the larger clusters were broken down into 12 subpopulations (Figure 1). We did not find evidence of null alleles (Appendix S4: Table S1–S8). All loci within each respective subpopulation were in HWE (Appendix S4: Table S9). Because there was no discernable pattern of null alleles, LD, or HW disequilibrium for ≥ 1 locus at ≥ 1 subpopulation we retained all loci in our analyses (Morin et al., 2010).

The TP subpopulation retained the highest number of private alleles ($A_{PR} = 1.39$) while the Mogollon Rim (MR) was estimated to have the least number of private alleles ($A_{PR} = 0.01$; Table 1). The Chiricahua complex (CHC) and the Huachuca-Santa Rita mountains (HSRM) subpopulations both exhibited a fixed allele (122bp) at the MU50 locus (Appendix S4: Table S10), these two subpopulations are south of Interstate 10. Heterozygosity was lowest in the HSRM and highest in the TP (Table 1). The F_{IS} estimates did not suggest deviations from random mating (Table 1). Pairwise differentiation was high or very-high when subpopulations were compared to the BM, HSRM, and TP subpopulations ($F_{ST} \geq 0.15$; Table 3), this was not unexpected as both the BM and TP populations are isolated from the other populations. The La Sal Mountains (LSM), another somewhat isolated subpopulation along the Utah–Colorado border, was moderately differentiated from all other subpopulations except for three subpopulations to the south: the Sangre de Cristo Mountains (SCM), the San Juan and Chuska mountains (SJC), and Zuni Mountains (ZM; Table 3), all relatively close geographically. Genetic differentiation was low to moderate among the remaining subpopulations (Table 3).

3.2 | Landscape features regulating gene flow

The top-ranked resistance-surface model was well supported ($w_i = 1.00$), substantially outperformed the second-ranked model ($\Delta AIC_c = 47.18$), and included canopy, precipitation, and TRI (Appendix S5: Tables S1 and S2). The transformations that best represented the relationship between canopy, precipitation, and TRI with resistance to movement were the inverse monomolecular, inverse Ricker, and monomolecular, respectively, indicating that resistance decreased as canopy increased, decreased as precipitation increased until the covariate reached moderate levels at which point resistance started to increase, and increased as TRI increased (Table 4). More simply, resistance was lowest in areas with higher forest canopy, higher levels of precipitation, and less rugged landscapes. Precipitation contributed the most to the top-ranked resistance surface (58%) followed by canopy (40%) with a small contribution from TRI (2%). This top-ranked model received considerable support when compared to Euclidean distance alone, suggesting isolation by resistance better explained the observed-genetic pattern than isolation by distance (Table 4). A model composed of both effective and Euclidean distance, however, outperformed ($w_i = 1.00$) the top-ranked resistance model suggesting isolation by distance is still an important component explaining genetic distance (Table 4). Our analysis did not show support for any resistance-based models that included road density or major roads (Appendix S5: Tables S1 and S2).

3.3 | Relative degree and direction of genetic connectivity

The directional relative migration network-clustered populations in the northern part of our study region along the Colorado–New

Mexico border (ECPSRM) with populations located in the central portions of our study region, in the states of Arizona and New Mexico (DMS and MHSS), suggesting high rates of gene flow among these regional subpopulations. Estimated gene flow among the remaining subpopulations was low as most of the pairwise-relative migration values (87%) were half of that occurring between the highest values from central Arizona and western New Mexico (DMS) to the Colorado–New Mexico border (ECPSRM; Figure 2; Appendix S3: Figure S1; Appendix S3: Table S7). There was a pronounced south-to-north linkage pattern of asymmetric gene flow from central Arizona and western New Mexico (DMS) to the Colorado–New Mexico border (ECPSRM) and central New Mexico (MHSS), from southern Arizona (SIS) to central New Mexico (MHSS), and from Texas and northern Mexico (TP) to the Colorado–New Mexico border (ECPSRM; Figure 2; Appendix S3: Figure S1; Appendix S3: Table S7). The mountain range subpopulations exhibited a similar pattern with subpopulations from the central portion of the study area clustering together and asymmetric gene flow in a northward direction (Figures 1 and 3; Appendix S4: Figure S1; Appendix S4: Table S11).

4 | DISCUSSION

Our study further supports the hypothesis that the Southwest served as a fourth Pleistocene refugium for the American black bear during the LGM and that their present-day genetic structure is most likely a result of vicariant events as habitat fragmentation occurred when glaciers receded post-LGM. The Trans-Pecos population originated from the Sierra Madre Oriental, a north to south running mountain range in northeast Mexico, and is more closely related to the eastern lineage of black bears that occupied the American Southeast refugium (Onorato, Hellgren, Van Den Bussche, & Doan-Crider, 2004). The other more westerly populations would have likely arisen from the Sierra Madre Occidental, a parallel mountain range in western Mexico that is separated from the Sierra Madre Oriental by the Chihuahuan Desert (Varas-Nelson, 2010). Our sampled populations were highly structured with those from central Arizona, central New Mexico, and southern Colorado clustering together; these populations were distinct but related to populations within the Sky Islands border region and all of these populations were distinct from Trans-Pecos and Boulder Mountain. Populations would be expected to show genetic structure if repeated episodes of isolation and admixture occurred, driven by changes in habitat distribution.

4.1 | The influence of forest refugia on genetic structure

Our analyses supported the hypothesis that the current genetic structure is a consequence of Pleistocene–Holocene vicariance whereby bears occupied forest refugia during the LGM, but then followed changes in the distribution of forests as the Holocene dried

TABLE 3 Estimated pairwise genetic differentiation (F_{ST}) and their 95% confidence intervals based on 1000 bootstrap iterations for mountain range subpopulations identified by GENELAND using the correlated allele frequency model for American black bears (*Ursus americanus*) in the American Southwest and northern Mexico.

	BM	LSM	SJC	SCM	ZM	MT	SMM
BM	–						
LSM	0.15 (0.11–0.19)	–					
SJC	0.15 (0.11–0.19)	0.04 (0.02–0.06)	–				
SCM	0.14 (0.11–0.18)	0.05 (0.03–0.07)	0.03 (0.02–0.04)	–			
ZM	0.18 (0.13–0.22)	0.06 (0.04–0.09)	0.03 (0.01–0.04)	0.04 (0.03–0.06)	–		
MT	0.18 (0.14–0.24)	0.08 (0.05–0.11)	0.03 (0.01–0.05)	0.06 (0.05–0.09)	0.04 (0.02–0.08)	–	
SMM	0.17 (0.13–0.21)	0.08 (0.06–0.10)	0.04 (0.03–0.06)	0.04 (0.03–0.06)	0.04 (0.02–0.07)	0.04 (0.02–0.06)	–
MR	0.20 (0.16–0.24)	0.09 (0.07–0.11)	0.05 (0.04–0.06)	0.06 (0.05–0.08)	0.02 (0.01–0.03)	0.05 (0.03–0.09)	0.06 (0.05–0.08)
GC	0.23 (0.19–0.27)	0.09 (0.07–0.12)	0.05 (0.04–0.06)	0.07 (0.06–0.09)	0.02 (0.01–0.04)	0.06 (0.04–0.09)	0.06 (0.04–0.09)
SM	0.16 (0.13–0.21)	0.10 (0.08–0.12)	0.07 (0.06–0.09)	0.08 (0.07–0.10)	0.09 (0.06–0.12)	0.07 (0.05–0.09)	0.04 (0.02–0.07)
SIN	0.20 (0.16–0.24)	0.09 (0.07–0.11)	0.06 (0.04–0.07)	0.07 (0.05–0.08)	0.03 (0.01–0.04)	0.07 (0.04–0.10)	0.07 (0.05–0.09)
HSRM	0.27 (0.23–0.32)	0.15 (0.13–0.18)	0.14 (0.13–0.16)	0.13 (0.12–0.15)	0.12 (0.10–0.15)	0.16 (0.13–0.19)	0.13 (0.11–0.16)
CHC	0.22 (0.18–0.27)	0.11 (0.09–0.14)	0.10 (0.07–0.12)	0.09 (0.07–0.12)	0.07 (0.05–0.11)	0.13 (0.09–0.18)	0.11 (0.08–0.14)
TP	0.30 (0.27–0.34)	0.33 (0.30–0.37)	0.34 (0.32–0.37)	0.32 (0.30–0.35)	0.37 (0.33–0.40)	0.36 (0.33–0.40)	0.34 (0.32–0.37)
	MR	GC	SM	SIN	HSRM	CHC	TP
BM							
LSM							
SJC							
SCM							
ZM							
MT							
SMM							
MR	–						
GC	0.01 (0.00–0.03)	–					
SM	0.09 (0.07–0.11)	0.11 (0.08–0.13)	–				
SIN	0.02 (0.00–0.04)	0.03 (0.02–0.06)	0.09 (0.07–0.12)	–			
HSRM	0.12 (0.10–0.15)	0.15 (0.12–0.18)	0.17 (0.14–0.20)	0.10 (0.08–0.13)	–		
CHC	0.08 (0.05–0.12)	0.09 (0.05–0.13)	0.13 (0.10–0.16)	0.06 (0.03–0.10)	0.08 (0.05–0.12)	–	
TP	0.38 (0.36–0.41)	0.41 (0.38–0.45)	0.34 (0.31–0.37)	0.40 (0.38–0.44)	0.46 (0.43–0.49)	0.40 (0.37–0.43)	–

Notes: Bolded values signify statistically significant differentiation.

Abbreviations: BM, Boulder Mountain; CHC, Chiricahua complex; GC, Gila complex; HSRM, Huachuca and Santa Rita mountains; LSM, La Sal Mountains; MR, Mogollon Rim; MT, Mt. Taylor; SM, Sacramento Mountains; SJC, San Juan and Chuska mountains; SMM, Sandia and Manzano mountains; SCM, Sangre de Cristo Mountains; SIN, Sky Islands north of Interstate 10; TP, Trans-Pecos region; ZM, Zuni Mountains.

and warmed (Pleistocene–Holocene Vicariance Hypothesis). The Southwest likely served as a refugium for black bears during various periods in the Pleistocene and Holocene when habitats in more northerly latitudes were dominated by more cold-adapted plant species that black bears do not typically use (Betancourt et al., 1990). Paleoeological reconstruction reveals considerable forest habitat available to black bears throughout the Southwest. This forest was widespread and found throughout lower elevation areas in what is currently Chihuahuan and Sonoran desert. In certain areas, these forested habitats were stable for 10,000–20,000 years, and were often found at lower elevations than they are today (Holmgren et al., 2006; McAuliffe & Van Devender, 1998; Van Devender, 1990a,

1990b). As climates aridified, forest habitats either moved up in elevation, moved north dependent upon precipitation patterns, soil moisture regimes, and winter temperatures, or both. Evidence of these expansion and isolation events can also be found in the fossil record. Fossil specimens identified as modern day black bear have been discovered at 12 relatively low-elevation Pleistocene sites (mean = 1495 m; range = 1171–1716 m) dated to the mid- and late-Wisconsin age (~11,000–65,000 BP) within the present day Chihuahuan and Sonoran deserts (Harris, 1987, 1989, 1993, 2003; Messing, 1986; Saunders, 1977; Skinner, 1942; Slaughter, 1975). Thus, for much of the late Pleistocene and into the early Holocene, the dominant paleovegetation community of the region was a

TABLE 4 Model selection results for two optimization runs derived using Akaike's Information Criterion corrected for small sample size (AIC_c) comparing the top-ranked resistance surface optimized using linear mixed-effects models with maximum likelihood population effects parameterization to models composed of Euclidean distance (Distance Only) and Euclidean plus the top-ranked resistance surface (Top resistance surface + Distance).

Model	AIC_c	ΔAIC_c	w_i	Contribution	Transformation	Shape	Magnitude
Optimization run 1							
Top resistance surface + Distance	-388853.00	0.00	1.00	-	-	-	-
Top resistance surface	-387083.80	1769.20	0.00	-	-	-	-
Canopy height	-	-		40	Inverse	0.51	1272.21
					Monomolecular		
Precipitation	-	-		58	Inverse Ricker	3.33	1585.36
Terrain ruggedness index	-	-		02	Monomolecular	2.87	318.72
Distance Only	-378750.20	10102.80	0.00	-	-	-	-
Optimization run 2							
Top resistance surface + Distance	-388853.00	0.00	1.00	-	-	-	-
Top resistance surface	-387096.20	1756.80	0.00	-	-	-	-
Canopy height	-	-		40	Inverse	0.51	1272.21
					Monomolecular		
Precipitation	-	-		58	Inverse Ricker	3.33	1585.36
Terrain ruggedness index	-	-		02	Monomolecular	2.87	318.72
Distance Only	-378750.20	10102.80	0.00	-	-	-	-

Notes: We ranked models by the difference in AIC_c (ΔAIC_c) between the top model and competing models and evaluated model support using model weights (w_i). Optimization results are also reported including the percent contribution of each covariate to the total surface resistance (Contribution), transformation applied to each covariate (Transformation) along with the shape and magnitude of each transformed covariate.

piñon-juniper-oak woodland that black bears inhabited, similar to the plant community selected by black bears in the Sky Islands today (Onorato et al., 2003). The isolated Sky Island mountain ranges, currently inhabited by black bears, were most likely functionally connected by this piñon-juniper-oak woodland (Van Devender, 1990a).

Black bears are omnivorous, but vegetation, fruits, and nuts comprise 70–90% of the diet, supplemented with insects and vertebrates (Delgadillo Villalobos et al., 2019). In spring, they feed on grasses and other vegetation, in mid-late summer on soft mast, such as berries, and in late summer–fall prior to hibernation they forage on hard mast, such as acorns and piñon pine nuts (Beck, 1991; Costello et al., 2001; Onorato et al., 2003). In lower elevations within the Southwest, they also feed on sotol (*Dasyliion* spp.), yucca (*Yucca* spp.), and prickly pear cactus (*Opuntia* spp.; Delgadillo Villalobos et al., 2019). Although found in semiarid shrublands, black bears are primarily a forest-adapted species and forests are important habitats across their range (Evans et al., 2017; Gould et al., 2019; Onorato et al., 2003). Thus, it stands to reason that black bears would track the abundance of their main food over the short term, which would explain contemporary movements and dispersal patterns and populations would track the distribution of their primary habitat over the long term, which would explain species distribution and population genetic structure.

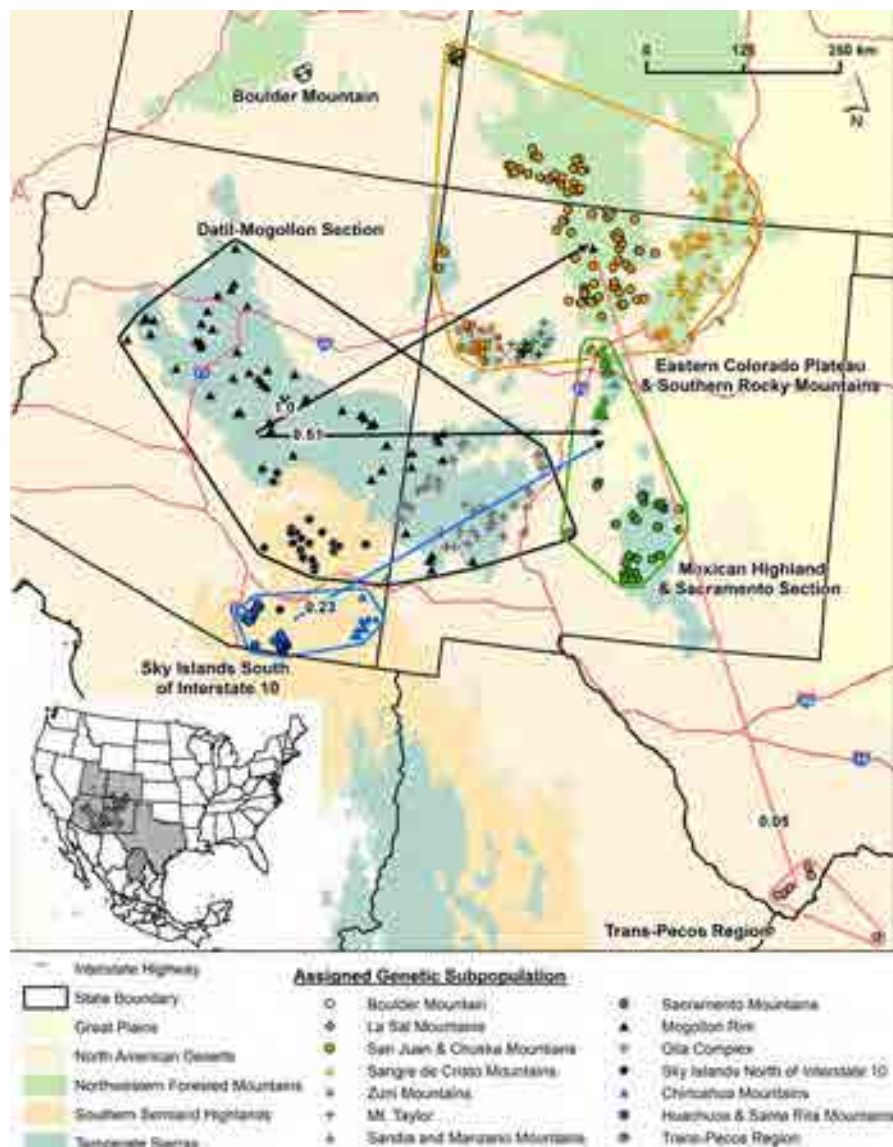
4.2 | The influence of transportation infrastructure on genetic structure and gene flow

Our analyses did not support the hypothesis that interstate highways are limiting the movement of black bears across the Southwest

(Anthropocene Filter Hypothesis). The uncorrelated allele frequency model failed to detect such a genetic pattern at the regional level and the correlated frequency model often clustered bears together that were on opposite sides of major interstates. For example, bears from the Mogollon Rim (MR) population in Arizona were found on both sides of Interstates 17 and 40; bears from the Zuni Mountains (ZM) population in New Mexico also clustered together from both sides of Interstate 25 and 40; bears from the Sandia and Manzano mountains (SMM) population in New Mexico were found on both sides of Interstate 40; bears from the Gila complex (GC) in New Mexico were found on both sides of Interstate 25, although primarily to the west; and bear populations from the Sky Islands North of Interstate 10 (SIN) and from the Chiricahua complex (CHC) of Arizona were found on both sides of Interstate 10.

Roads, urbanization, and interstate highways can negatively influence carnivore populations and the size of the interstate (e.g., number of traffic lanes) and relative traffic flow may be contributing factors as well (Riley et al., 2014; Serieys et al., 2015). Perhaps one of the most extreme cases has occurred in the Santa Monica Mountains of southern California where the morass of urbanization and grand thoroughfares has restricted population size and caused degradation in genetic variation in mountain lions (*Puma concolor*; Riley et al., 2014). Although bear resource use is negatively affected by roads (Gould et al., 2019), the effect of roads on bear movements and gene flow varies across their range. Roads had little effect on movements in remote areas such as in Idaho (Cushman et al., 2006) but had major impacts on movement patterns and genetic structure in more heavily urbanized areas such as Florida (Dixon et al., 2007; McCown et al., 2009). The highways in the Southwest receive less

FIGURE 2 Directional relative migration network based on G_{ST} values for American black bear (*Ursus americanus*) subpopulations in the American Southwest and northern Mexico. The network visualized shows significant asymmetrical migration values for subpopulations identified using the uncorrelated allele frequency model in program GENELAND.



traffic volume and are narrower than heavily populated areas like California or Florida, so their impedance to bear movement would be expected to be reduced. Riparian underpasses could also focus movement across Southwest highways as bears are less likely to traverse the desert scrub matrix and are more likely to be close to streams (Jensen et al., 2022). Furthermore, black bears have a relatively long generation time and interstate highways are recent, anthropogenic barriers or filters, and their current genetic structure may not reflect the impact of interstate highways as there has been insufficient time for populations to diverge among those bisected by interstates (Blair et al., 2012; Epps et al., 2005; Safner et al., 2011).

A handful of observed long-distance and cross-interstate movements by bears supports the hypothesis that interstates in the Southwest are not yet a barrier to bear movement and thus have most likely not influenced gene flow. We genotyped five individuals (three males and two females) that we identified as being approximately 90km, 150km, 300km, and 360km away from where they were originally captured, collected, or detected by collaborating agencies. These observed movements required the individuals

to cross Highway 70, Interstate 25, or Interstate 40. Finally, Liley and Walker (2015) placed a GPS collar on a male bear on the New Mexico–Colorado border that subsequently traveled to central Colorado and crossed Interstate 25 twice before returning to New Mexico, a cumulative distance of 1482 km. These observations show that bears in the Southwest can travel long distances and cross both highways and interstates when doing so.

4.3 | The scale of population genetic structure in Southwestern black bear populations

Regionally, subpopulation boundaries followed the distribution of three major ecoregions (Omernik & Griffith, 2014): the Northwestern Forested Mountains contained populations in the Eastern Colorado Plateau and Southern Rocky Mountains (ECPSRM) and Boulder Mountain, Utah (BM); the Temperate Sierras harbored bears from the Datil-Mogollon Section (DMS) and the Mexican Highlands and Sacramento Section (MHSS); and

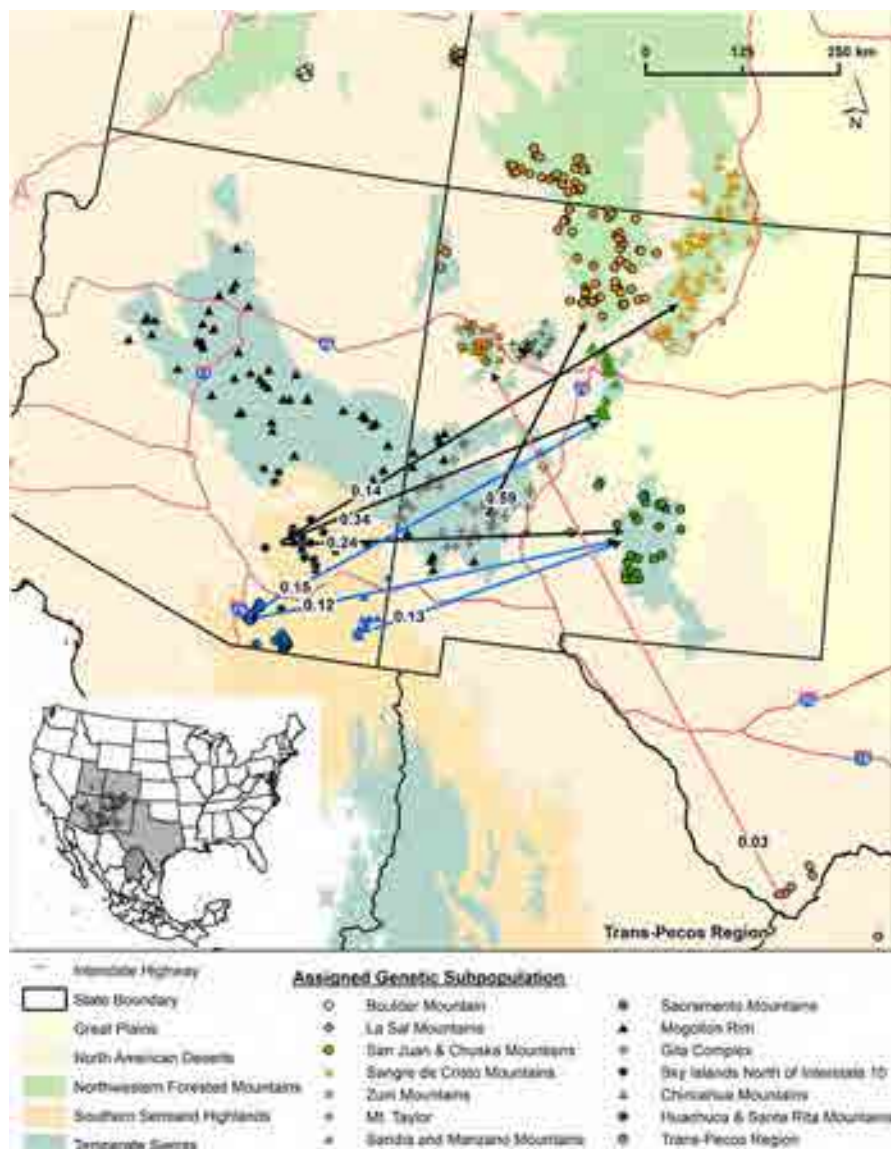


FIGURE 3 Directional relative migration network based on G_{ST} values for American black bear (*Ursus americanus*) subpopulations in the American Southwest and northern Mexico. The network visualized shows significant asymmetrical migration values for subpopulations identified using the correlated allele frequency model in program GENELAND.

the Southern Semi-Arid Highlands contained populations from the Sky Islands South of Interstate 10 (SIS). Low genetic differentiation and relatively high gene flow among the three largest subpopulations suggest these subpopulations (ECPSRM, DMS, and MHSS) form the core contemporary Southwest black bear population. The SIS in southern Arizona shows moderate differentiation from this core population, which is surprising given their proximity (distance between the SIS and the DMS is ~20km) and is likely due to the relatively inhospitable habitat matrix separating the Sky Islands region from other subpopulations. The Sky Islands are a series of “montane islands separated by a desert sea” where the intervening landscape matrix of primarily Chihuahuan or Sonoran desert acts as a semi-permeable barrier to black bear dispersal and gene flow (Lomolino et al., 1989). Atwood et al. (2011) also found genetic substructure among black bear populations along the US–Mexico border within the Sky Islands region.

There was a relatively high degree of genetic differentiation when comparing Boulder Mountain, Utah and the Trans-Pecos

region in west Texas and northeast Mexico to the other Southwest subpopulations. We believe this differentiation is due to genetic isolation rather than incomplete sampling. The origination of the Boulder Mountain population is more enigmatic and more information is needed to determine if it is a product of eastward expansion by populations from the Pacific Northwest refugium or through the expansion and isolation of populations from the north (Lackey et al., 2013; Malaney et al., 2018; Puckett et al., 2015).

We had a small sample from the Trans-Pecos region, but that subpopulation had the highest allelic richness, the highest observed heterozygosity, many private alleles, and some private alleles occurred at high frequency, indicating a period of isolation and genetic differentiation followed by little to no connectivity (Slatkin, 1985). The existence of private alleles in the Trans-Pecos region is most likely a product of isolation followed by bears recolonizing west Texas from the Sierra Madre Oriental (Onorato et al., 2007; Onorato, Hellgren, Van Den Bussche, & Doan-Crider, 2004). Bears in the Sierra Madre Occidental are genetically distinct from those in the Sierra Madre Oriental

(Varas-Nelson, 2010). The high levels of genetic diversity may partly be a product of migration-dispersal events due to hard mast crop failure in Big Bend National Park, Texas. Those events resulted in the movement of bears back to the Sierra del Carmen, Mexico, and invariably subsequent movements back to west Texas (Onorato et al., 2003; Onorato, Hellgren, Van Den Bussche, & Doan-Crider, 2004).

The unique genetic variation of the Trans-Pecos subpopulation also reflects the ancestral relationship between the eastern Mexican and eastern American black bear populations that are hypothesized to have occupied the American Southeast refugium before diverging 67–31 kya (Pedersen et al., 2021, Van Den Bussche et al., 2009). Pedersen et al.'s (2021) hypothesis that gene flow between black bear populations in the Sierra Madre Occidental and Oriental was inhibited by the Chihuahuan Desert conflicts with paleomidden evidence that shows pygmy conifer woodlands dominated the present-day Chihuahuan Desert during the Pleistocene (Betancourt et al., 1990). Furthermore, black bear fossils have been discovered at low-elevation Pleistocene caves dated to ~11,000–65,000 BP within the present-day Chihuahuan Desert (Harris, 1987, 1989, 1993, 2003; Messing, 1986; Saunders, 1977; Slaughter, 1975). These caves could be sampled for ancient environmental DNA or ancient DNA could be amplified from the fossils themselves to further our understanding of the distribution of refugia and the movements and genetic structure of bears in the American Southwest and northern Mexico.

4.4 | The influence of landscape resistance and geographic distance on gene flow

Our estimates of the relative degree and direction of gene flow also suggested that gene flow occurred from south to north and was high among the regionally central subpopulations where contiguous forest existed. Limited gene flow among these central subpopulations and the southern Madrean Sky Island Archipelago appeared to be filtered by the mosaic of less hospitable habitat found in the lowlands. The relative degree of gene flow was also affected by the geographic distance among subpopulations. The Boulder Mountain, Utah population (BM) and the Trans-Pecos population in west Texas and northeast Mexico (TP) were isolated from the other populations and showed little gene flow with them. This pattern was not unexpected as ~200 km of the Colorado Plateau and ~430 km of the Chihuahuan Desert separates the BM and TP populations from their nearest subpopulation, respectively.

The consistent pattern of asymmetric gene flow northward is indicative of prehistoric range expansion. Varas-Nelson (2010) noted a similar pattern in northern Mexico where the migration rate from Sierra El Nido in Sonora to Sierra San Luis in Chihuahua, ~250 km to the north, was 2.5× greater than the migration rate southward. Northward expansion also supports previous research that postulated that the Southwest refugium dominated the genetic assemblage of the Intermountain West before admixing along the US–Canada border with bears that originated from the Great Lakes region (Pelletier et al., 2011; Puckett et al., 2015).

Our resistance-based models of gene flow revealed that areas with higher canopy cover and precipitation, essentially forested habitats, were associated with higher rates of gene flow and within these areas, gene flow was facilitated by less rugged areas. Gene flow was also affected by geographic distance. Thus, populations connected by contiguous forest had high gene flow (e.g., Eastern Colorado Plateau and Southern Rocky Mountains, Datil-Mogollon Section, Mexican Highlands, and Sacramento Section) and populations separated by desert and isolated by distance had lower gene flow (e.g., Trans-Pecos and Boulder Mountain). Because female black bears are highly philopatric, the effect of distance on gene flow may be governed by their behavior, but also mediated by long-distance dispersal events by male bears with male bears also having been shown to select against ruggedness (Apps et al., 2006; Johnson et al., 2015; Lara-Díaz et al., 2018; Pelletier et al., 2011). So, it appears that habitat most likely acts as a conduit (e.g., forest) or filter (e.g., desert) to bear movement and that geographic distance plays an important role owing to intersexual differences in movement behavior.

4.5 | Conservation implications

American black bears in the Southwest occupy a naturally fragmented landscape with low-density subpopulations linked together into a metapopulation (Gould et al., 2018; Onorato, Hellgren, Van Den Bussche, & Doan-Crider, 2004). Habitat loss and fragmentation owing to climate change, anthropogenic land use, and US–Mexico border security could increase the extinction risk of individual subpopulations and sever linkages among key subpopulations within the metapopulation (Lara-Díaz et al., 2021).

Climate change is contributing to a rise in aridity and temperature in the Southwest and has led to increases in insect outbreaks, intense droughts, and catastrophic wildfires resulting in substantial tree mortality reducing the distribution and quality of bear habitat over the long term (Gould et al., 2019; Thorne et al., 2018; Williams et al., 2010). Increasing human development and population growth is likely to increase human population density and traffic rates resulting in higher rates of road mortality, which could lower genetic connectivity and enhance fragmentation, heightening the extinction risk for some subpopulations (Dixon et al., 2007; Ernest et al., 2014; Riley et al., 2014). Finally, the US–Mexico border wall poses a threat to the persistence of bears in the Southwest. The current border wall spans ~1125 km, and in the recent past, the US government proposed to increase the length of the border wall and change vehicle barriers that are permeable to bears, to impassable pedestrian barriers that would impede cross-border migration and dispersal (4–10 m tall, 5–10 cm wide gaps; Flesch et al., 2010). The current wall and more impenetrable barriers could sever linkages between populations in the Sierra Madre Occidental of northern Mexico with those in southern Arizona and New Mexico (Atwood et al., 2011; Varas-Nelson, 2010) and the Sierra Madre Oriental of northern Mexico with those in west Texas (Hellgren et al., 2005; Onorato, Hellgren,

Van Den Bussche, & Doan-Crider, 2004). Binational collaboration between the United States and Mexico could be crucial to the future persistence and viability of the black bear metapopulation in southwestern North America and represents a unique conservation opportunity.

AUTHOR CONTRIBUTIONS

Matt Gould: Conceptualization (equal); formal analysis (equal); methodology (equal); writing – original draft (equal); writing – review and editing (equal). **James W Cain III:** Conceptualization (equal); funding acquisition (equal); writing – original draft (equal); writing – review and editing (equal). **Todd Atwood:** Writing – review and editing (equal). **Larisa Harding:** Writing – review and editing (equal). **Heather E. Johnson:** Writing – review and editing (equal). **Dave P Onorato:** Writing – review and editing (equal). **Frederic Winslow:** Writing – review and editing (equal). **Gary Roemer:** Conceptualization (equal); funding acquisition (equal); methodology (equal); writing – original draft (equal); writing – review and editing (equal).

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CONFLICT OF INTEREST

None declared.

DATA AVAILABILITY STATEMENT

Microsatellite data used in this study are available through USGS ScienceBase, <https://doi.org/10.5066/P91COLPR>.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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U.S. Fish and Wildlife Service

Estimating Black Bear Density in New Mexico Using Noninvasive Genetic Sampling Coupled with Spatially Explicit Capture- Recapture Methods

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**Estimating Black Bear Density in New Mexico Using Noninvasive Genetic Sampling
Coupled with Spatially Explicit Capture-Recapture Methods**

Federal Aid in Wildlife Restoration Project W93 R56 2.0

Final Report to The New Mexico Department of Game and Fish

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EXECUTIVE SUMMARY

During the 2004–2005 to 2015–2016 hunting seasons, the New Mexico Department of Game and Fish (NMDGF) estimated black bear abundance (*Ursus americanus*) across the state by coupling density estimates with the distribution of primary habitat generated by Costello et al. (2001). These estimates have been used to set harvest limits. For example, a density of 17 bears/100 km² for the Sangre de Cristo and Sacramento Mountains and 13.2 bears/100 km² for the Sandia Mountains were used to set harvest levels. The advancement and widespread acceptance of non-invasive sampling and mark-recapture methods, prompted the NMDGF to collaborate with the New Mexico Cooperative Fish and Wildlife Research Unit and New Mexico State University to update their density estimates for black bear populations in select mountain ranges across the state.

We established 5 study areas in 3 mountain ranges: the northern (NSC; sampled in 2012) and southern Sangre de Cristo Mountains (SSC; sampled in 2013), the Sandia Mountains (Sandias; sampled in 2014), and the northern (NSacs) and southern Sacramento Mountains (SSacs; both sampled in 2014). We collected hair samples from black bears using two concurrent non-invasive sampling methods, hair traps and bear rubs. We used a gender marker and a suite of microsatellite loci to determine the individual identification of hair samples that were suitable for genetic analysis. We used these data to generate mark-recapture encounter histories for each bear and estimated density in a spatially explicit capture-recapture framework (SECR). We constructed a suite of SECR candidate models using sex, elevation, land cover type, and time to model heterogeneity in detection probability and the spatial scale over which detection probability declines. We used Akaike's Information Criterion corrected for small sample size (AIC_c) to rank and select the most supported model from which we estimated density.

We set 554 hair traps, 117 bear rubs and collected 4,083 hair samples. We identified 725 (367 M, 358 F) individuals; the sex ratio for each study area was approximately equal. Our density estimates varied within and among mountain ranges with an estimated density of 21.86 bears/100 km² (95% CI: 17.83 – 26.80) for the NSC, 19.74 bears/100 km² (95% CI: 13.77 – 28.30) in the SSC, 25.75 bears/100 km² (95% CI: 13.22 – 50.14) in the Sandias, 21.86 bears/100 km² (95% CI: 17.83 – 26.80) in the NSacs, and 16.55 bears/100 km² (95% CI: 11.64 – 23.53) in the SSacs. Overall detection probability for hair traps and bear rubs, combined, was low across all study areas and ranged from 0.00001 to 0.02. We speculate that detection probabilities were affected by failure of some hair samples to produce a complete genotype due to UV degradation of DNA, and our inability to set and check some sampling devices due to wildfires in the SSC. Ultraviolet radiation levels are particularly high in New Mexico compared to other states where NGS methods have been used because New Mexico receives substantial amounts of sunshine, is relatively high in elevation (1,200 m – 4,000 m), and is at a lower latitude. Despite these sampling difficulties, we were able to produce density estimates for New Mexico black bear populations with levels of precision comparable to estimated black bear densities made elsewhere in the U.S.

Our ability to generate reliable black bear density estimates for 3 New Mexico mountain ranges is attributable to our use of a statistically robust study design and analytical method.

There are multiple factors that need to be considered when developing future SECR-based density estimation projects. First, the spatial extent of the population of interest and the smallest average home range size must be determined; these will dictate size of the trapping array and spacing necessary between hair traps. The number of technicians needed and access to the study areas will also influence configuration of the trapping array. We believe shorter sampling occasions could be implemented to reduce degradation of DNA due to UV radiation; this might help increase amplification rates and thereby increase both the number of unique individuals identified and the number of recaptures, improving the precision of the density estimates. A pilot study may be useful to determine the length of time hair samples can remain in the field prior to collection. In addition, researchers may consider setting hair traps and bear rubs in more shaded areas (e.g., north facing slopes) to help reduce exposure to UV radiation. To reduce the sampling interval it will be necessary to either hire more field personnel or decrease the number of hair traps per sampling session. Both of these will enhance detection of long-range movement events by individual bears, increase initial capture and recapture rates, and improve precision of the parameter estimates. We recognize that all studies are constrained by limited resources, however, increasing field personnel would also allow a larger study area to be sampled or enable higher trap density.

In conclusion, we estimated the density of black bears in 5 study areas within 3 mountains ranges of New Mexico. Our estimates will aid the NMDGF in setting sustainable harvest limits. Along with estimates of density, information on additional demographic rates (e.g., survival rates and reproduction) and the potential effects that climate change and future land use may have on the demography of black bears may also help inform management of black bears in New Mexico, and may be considered as future areas for research.

INTRODUCTION

Setting sustainable harvest limits for game species is one of the main duties of state wildlife management agencies. To this end, state agencies spend a large portion of their annual budget on population surveys to estimate abundance and population trends of game animals. Survey methodologies for large ungulates are well developed and can provide relatively robust estimates of common game species such as deer (*Odocoileus* spp.) and elk (*Cervus canadensis*). In contrast, estimating the abundance or density of large carnivores like American black bears (*Ursus americanus*), which are cryptic and occur at low densities is more difficult because their behavior makes the survey methods used for ungulates ineffective, e.g., assuming perfect detection probability (Miller 1990, Obbard et al. 2010). Historically, many state agencies set harvest limits for carnivores based on harvest data (Hristienko and McDonald 2007), including sex ratio and age structure of the harvested animals, which, along with other analytical approaches, can be used to infer harvest effects on a population (Garshelis 1990). Yet, hunter selectivity and sex-specific vulnerability may influence harvest composition (Miller 1990, Beston and Mace 2012). Thus, additional information provided by abundance and density estimates generated from robust statistical methods can aid in setting harvest limits for black bear populations.

New Mexico's most recent black bear density estimates were derived from a comprehensive, decade-long study on black bear ecology in the 1990s in which researchers estimated study area specific density using population reconstruction (Downing 1980), or backdating, to estimate the minimum population size during the study and then divided that estimate by the effective trapping area (ETA; Costello et al. 2001) to obtain a minimum density estimate. The ETA is an estimate of the actual area used by identified individuals to account for home ranges that straddle the study area boundary and may bias abundance estimates (Dice 1938, Wilson and Anderson 1985). Costello et al. (2001) estimated the ETA using the distribution of live-capture trap sites buffered by the mean activity radius of adult bears. Their minimum density estimate for the more northern, mesic, and presumably more productive Sangre de Cristo Mountains was 17.0 bears/100 km² (310 km² study area) while their estimate for the more southern, xeric, and presumably less productive Mogollon Mountains was 9.4 bears/100 km² (423 km² study area). It is important to note that backdating a population fails to account for undetected individuals or provide measures of uncertainty in estimates, thereby producing only a minimum population estimate. They extrapolated these minimum density estimates to similar black bear habitat throughout New Mexico assigning areas with habitat conditions in between the Sangre de Cristo Mountains and Mogollon Mountains a density equal to the mean of the two minimum density estimates (i.e., 13.2 bears/100 km²). Costello et al. (2001) estimated the statewide minimum population by multiplying minimum density by the area of statewide primary habitat identified through their habitat suitability analysis, which introduces another source of uncertainty that was not quantified. Along with the density estimates, Costello et al. (2001) provided the NMDGF with a population model that incorporated the new density estimates, harvest data, mast survey data, and the relationship between mast production and reproductive success to model abundance and trend of black bear abundance in each Bear Management Zone (BMZ). These model-based abundance estimates, coupled with yearly harvest and mast survey data, have been the basis for establishing black bear harvest limits in New Mexico (Rick Winslow, NMDGF, personal communication). Although live-capture provides a wealth of information on age, dispersal, fecundity, health, home range size, and mortality rates, it

is still inferentially limited due to small sample sizes. While Costello et al. (2001) was a progressive and highly informative study on New Mexico black bears, the capabilities of the technology at that time limited their ability to estimate abundance and density.

Capture-recapture (CR) is a common method for estimating abundance and density of animals and associated parameter uncertainty (Williams et al. 2002). Abundance estimates using CR are determined by comparing the ratio of uniquely marked individuals to unmarked individuals captured each sampling occasion in live capture studies (Pollock et al. 1990). Gould and Kendall (2013) summarize CR methodology and recent advances. Low capture probabilities and sample sizes inherent with species that typically reside at the low densities characteristic of carnivore populations hinders management agencies from utilizing traditional CR techniques for some species (Mills et al. 2000, Settlage et al. 2008). Noninvasive genetic sampling (NGS) revolutionized CR research by providing the ability to use remotely collected DNA samples to identify individuals (Waits and Paetkau 2005). Consequently, NGS enabled researchers to estimate population parameters for carnivores by increasing detection probability, increasing sample size of individuals detected, increasing the size of the study area, decreasing tag loss, and decreasing invasiveness compared to live capture studies (Woods et al. 1999, Mills et al. 2000). However, density estimators using traditional non-spatial CR methods are often less reliable because of the ad hoc and arbitrary estimate of the ETA, which introduces an unquantifiable error (Wilson and Anderson 1985, Parmenter et al. 2003).

Spatially explicit capture-recapture (SECR) models remedy this issue by estimating the number of home range centers within the study area, and subsequently density, directly, using a spatial point process (Efford 2004, Gopalaswamy 2013). By using SECR models, accounting for edge effects has been rooted in statistical theory and incorporated into the modeling process thereby eliminating the need to estimate ETA. Furthermore, integrating the distribution and location of sampling devices into the model eliminates individual heterogeneity related to unequal trap exposure (Borchers 2012). To date, SECR methods have shown improved parameter estimation compared to non-spatial methods with simulated datasets (Ivan et al. 2013, Whittington and Sawaya 2015) and similar or lower density estimates in empirical comparisons (Obbard et al. 2010, Stetz et al. 2014, Whittington and Sawaya 2015), particularly when distance to edge and sampling effort are not included in CR models. Although the accuracy of any density estimate is unknown, use of statistically robust estimation methods yields greater confidence in a management agency's ability to set defensible management objectives that will help ensure the long-term viability of harvested animal populations.

In light of advances in sampling (Woods et al. 1999) and statistical methods (Efford 2004), NMDGF began a collaborative project with the New Mexico Cooperative Fish and Wildlife Research Unit (NMCFWRU) and New Mexico State University (NMSU) to update their density estimates for New Mexico black bear populations. These estimates will then be used by NMDGF to set harvest limits in the respective study areas. Our (NMCFWRU and NMSU) objectives were to estimate the density of black bears ≥ 1 year of age in primary bear habitat within 7 of the 14 BMZs located within the Sangre de Cristo (BMZs 3, 4, and 5), Sandia (BMZ 8), and Sacramento Mountains (BMZs 11, 12, 13), New Mexico. We used non-invasive genetic samples from hair traps and bear rubs in combination with SECR models to estimate density for each study site.

STUDY AREA

We conducted our research in the Sangre de Cristo, Sandia, and Sacramento Mountains, New Mexico constituting 5 study areas: northern (NSC; 6,400 km²) and southern Sangre de Cristo Mountains (SSC; 3,525 km²), Sandia Mountains (300 km²), and northern (NSacs; 925 km²) and southern Sacramento Mountains (SSacs; 2,775 km²). Interstate 25 and Interstate 40 separated the 3-mountain ranges. The sampling area for each study area was limited to primary habitat identified by Costello et al. (2001; Figure 1). Costello et al. (2001) used the New Mexico Gap Analysis land cover map (NMGAP, Thompson et al. 1996) to classify primary habitat as all closed-canopy forest and woodland types. All 5 study areas were managed as multiple-use forests encompassing portions of 4 National Forests (Carson, Cibola, Lincoln, and Santa Fe), 6 wilderness areas (Columbine-Hondo, Latir Peak, Pecos, Sandia Mountain, Wheeler Peak, and White Mountain), and 25 private landowners. Maximum elevation was 4,011 m, 3,254 m, and 3,649 m for the Sangre de Cristo, Sandia, and Sacramento Mountains and minimum elevations were approximately 1,900 m, 1,700 m, and 1,500 m, respectively. The Southern Rocky Mountains floristic district characterizes the Sangre de Cristo Mountains while the Sandia and Sacramento Mountains are characterized by the Mogollon floristic district (McLaughlin 1992). Dominant vegetation types in the study areas include: oak–mountain mahogany (*Quercus* spp. – *Cercocarpus* spp.) scrublands; piñon pine (*Pinus edulis*) - juniper (*Juniperus* spp.) woodlands; ponderosa pine (*P. ponderosa*), white pine (*P. monticola*), Douglas fir (*Pseudotsuga menziesii*), aspen (*Populus tremuloides*), Engleman spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*) mixed-forest, and bristlecone (*P. aristata*) and limber (*P. flexilis*) pine forests (Costello et al. 2001). Important mast-producing species include oak, piñon pine, juniper, algerita (*Berberis haematocarpa*), chokecherry (*Prunus virginiana*), gooseberry (*Ribes* spp.), bear corn/squawroot (*Conopholus alpina*), cactus fruits (*Opuntia* spp.) and sumac (*Rhus* spp.; Kaufmann et al. 1998, Costello et al. 2001).

METHODS

Field Sampling

We used hair traps (Woods et al. 1999) and bear rubs (Kendall et al. 2008) concurrently to sample black bear populations (Sawaya et al. 2012, Stetz et al. 2014). We sampled the black bear populations by systematically distributing a grid of 5-km x 5-km cells, with a randomly determined origin, across the landscape. A 5-km x 5-km cell size allowed us to place 4 hair traps within the average fixed kernel female home range in the Sangre de Cristo Mountains (27.6 km²; Costello et al. 2001). We then set hair traps across primary habitat in areas most likely to encounter bears (Figure 2, 3, 4; Costello et al. 2001). We chose trap site locations based on suspected travel routes, occurrence of seasonal forage (e.g., green grass and ripe soft and hard mast), and presence of bear sign. We set hair traps and bear rubs across 4 sampling occasions in the NSC (22 April – 5 September 2012) and SSC (29 April - 9 September 2013) and across 6 sampling occasions in the Sandias, NSacs, and SSacs (5 May – 6 August 2014). Due to logistical constraints, a sampling occasion in the NSC and SSC lasted 4 weeks whereas the sampling occasion for the Sandias, NSacs, and SSacs was 2 weeks.

A hair trap consisted of a single strand of barbed wire wrapped around ≥ 3 trees with a lure pile constructed from woody debris, rocks, pine needles, and leaves at the center (Woods et al. 1999). During each sampling occasion in the NSC and SSC, 1 of 4 non-consumable lures (cow blood/fish emulsion mixture, anise oil, fatty acid scent tablet, or skunk tincture/lanolin

mixture) was randomly selected and applied to the lure pile to attract bears into the enclosure and increase the novelty of hair traps to increase recapture rates. In the Sandias, NSacs, and SSacs we randomly selected and applied 1 of 2 non-consumable lures (cow blood/fish emulsion mixture or skunk tincture/lanolin mixture) each occasion. Based on our judgement in the field, we eliminated anise oil and fatty acid scent tablets because their scent duration and dispersal distance was inferior compared to the other two lures. Therefore, we believe the cow blood/ fish emulsion and skunk tincture/lanolin mixtures provided a better opportunity to attract bears over a longer period of time and greater distance. When a bear passed over or under the wire to investigate the lure pile, a barb snagged a tuft of hair from the individual. We assumed that cubs of the year were too small to be sampled by the barbed wire based on the size of cubs photographed at hair traps by trail cameras. Thus, sub-adults and adults were our sampled population. A sample consisted of all hair caught in one barb, and we used our best judgement to define hair samples collected from the lure pile. We deposited each hair sample in a separate paper coin envelope. We sterilized the barbed wire with a propane torch to ensure we removed any remaining hair to prevent false recaptures during the next sampling occasion. Hair traps were moved (100 m – 2.5 km) each occasion to help increase novelty and recapture rates (Boulanger and McLellan 2001, Boulanger et al. 2004, Boulanger et al. 2008).

Bears rub on trees, power poles, barbed-wire fences, wooden signs, and road signposts (Burst and Pelton 1983, Green and Mattson 2003). We opportunistically identified and collected hair from bear rubs along trails used to navigate to hair traps. We identified bear rubs by evidence of rubbing behavior such as a smoothed surface and snagged hair on the surface (Kendall et al. 2008, 2009). We attached 3-short strands of barbed wire vertically to the rub structure in order to collect discrete, higher quality hair samples (Kendall et al. 2008, 2009, Stetz et al. 2014). Rubs were identified at varying time intervals across sampling occasions, however, once established they were checked concurrently with nearby hair traps. We collected hair samples only from the barbed wire to ensure that the samples collected were from individuals that visited the rub during the sampling occasion and we sterilized the barbed wire to prevent false recaptures (Kendall et al. 2009). All hair samples were stored in an airtight container on silica desiccant at room temperature.

Genetic Analysis

We identified individuals by comparing multilocus genotypes generated for hair samples using 8 polymorphic microsatellite loci (G1D, G10B, G10L, G10M [Paetkau et al. 1995]; G10H, G10J, G10U [Paetkau et al. 1998]; MU59 [Taberlet et al. 1997]). We used the amelogenin or ZFX/ZFY markers to identify the sex of the individual (Paetkau 2003, 2004; Yamamoto et al. 2002; Durin et al. 2007). We selected specific markers for individual identification by ensuring that the mean expected heterozygosity for each marker was between 0.70 and 0.80 (Paetkau 2003, 2004). These markers were determined from an initial subsample from the NSC population in 2012. Because NGS-collected samples may contain low quantity and quality DNA (e.g., hair vs. tissue), genotyping errors may create or delete individuals, which may bias estimates (Mills et al 2000, Lukacs and Burnham 2005). Paetkau (2003) suggested that the largest source of genotyping error resulted from human error when identifying alleles at a locus, which only training and experience could reduce. Therefore, we sent our genetic samples to Wildlife Genetics International (WGI), which is a genetics laboratory that specializes in strict laboratory and error-checking methods that reduce genotyping errors that may arise from poor quality or small quantities of DNA (Paetkau 2003, Kendall et al. 2009). The laboratory has conducted over

2,000 projects including successfully identifying 653 samples without error during a blind sample test (Kendall et al. 2009). Thus, WGI has established a reputation for integrity and high quality work.

First, we eliminated samples that contained insufficient genetic material for analysis (no root, ≤ 1 guard hair, or < 5 underfur hairs) or appeared to be from heterospecifics. Next, we used either the G10J or ZFX/ZFY marker as a prescreen to remove low quality hair samples that were likely to fail during the multilocus genotyping phase. After the prescreen, we amplified the 9 candidate markers for each sample. We eliminated samples that failed to amplify at ≥ 3 loci or that amplified ≥ 3 alleles at 1 marker because they indicated a mixed sample from 2 individuals. We reanalyzed the samples that failed at < 3 loci resulting in either a full 9-locus genotype or a discarded sample. We examined pairs of samples that were mismatched at 1 or 2 markers (1MM pairs or 2MM pairs) for evidence of amplification or human error. We then reamplified and resequenced the mismatched pair for these samples under the assumption that genotyping error may have created the similarity between the two samples (Paetkau 2003). If a 1MM or 2MM pair remained between samples, then we considered the two samples to be from separate individuals, otherwise, we identified and corrected the genotyping error and we concluded that the two samples were from the same individual. We assigned individual ID to each sample with a unique multilocus genotype based upon the first sample to identify the individual's genotype. We calculated the expected and observed heterozygosity for the Sangre de Cristo, Sandia, and Sacramento Mountains using program GENEPOP (Genepop on the Web, Raymond and Rousset, 1995). Detailed laboratory methods may be found in Paetkau (2003, 2004).

Density Estimation

We used genotypes of individual samples to generate capture-recapture encounter histories for each uniquely identified black bear. We then used these capture histories to estimate density using spatially explicit capture-recapture (SECR) models (Efford 2004, Efford et al. 2009a, Efford et al. 2013) with the R package “secr” (Efford 2013). We used SECR to estimate 3 parameters: density (D), detection probability (g_0), and the spatial scale over which the detection probability declines (σ ; Efford et al. 2004). We used a half-normal detection function for our observation model, which represents the probability of detecting an individual as a function of the individual's home range location relative to the detection device (Efford et al. 2009a). We then specified a homogeneous Poisson distribution as our state model to represent the spatial distribution of animals across the sampling grid. We only included primary habitat as identified by Costello et al. (2001) for black bears in New Mexico for our habitat mask. The habitat mask identifies the area of habitat/non-habitat within and buffered around the trapping grid. We estimated the state space (i.e., the trapping grid and all individuals potentially exposed to capture outside the trapping grid) using the secr function suggest.buffer for each study area. However, this buffer is not to be confused with the ad hoc method of identifying a buffer using the ETA. Instead, the suggested buffer is the area of integration and includes all animals with a non-zero probability of detection (Ivan et al. 2013). Habitat may extend beyond the mask but individuals outside the buffer have a negligible probability of encounter (Borchers and Efford 2008, Royle et al. 2014). Derived from the capture data using suggest.buffer, we set the habitat mask buffer for the NSC, SSC, Sandias, NSacs, and SSacs as 18.75 km, 25.40 km, 13.23 km, 14.84 km, and 11.03 km, respectively. Variability in sampling effort may negatively bias density estimates and reduce the ability to explain variation in detection probability (Efford et al. 2013). We accounted

for variable sampling effort by using the number of days each hair trap and bear rub was active (Kendall et al 2009, Sawaya et al 2012, Efford et al. 2013).

We tested for variation due to time (t), sex, elevation (elev), detector type (type; hair trap versus bear rub), and land cover classification (veg) as predictors of g_0 , and σ . Elevation was standardized prior to analyses by subtracting the mean and dividing by the standard deviation (Gelman and Hill 2007). We did not consider behavioral models because we did not provide a food reward. We modeled D only using sex because we did not expect bear density to vary by time, land cover type, or elevation. We entered sex into our models as a session covariate. We modeled g_0 and σ concurrently by fitting 4 models that varied by time, sex, land cover type, and elevation. We also included models that varied by temporal variation for g_0 and land cover for σ , temporal variation for g_0 and elevation for σ , land cover for g_0 and temporal variation for σ , and elevation for g_0 and temporal variation for σ . We chose temporal variation and sex as covariates because multiple studies have reported that detection probability and movement patterns fluctuate over the course of the sampling period and differ between males and females (Kendall et al. 2009, Sawaya et al. 2012, Stetz et al. 2014, Ciucci et al. 2015). We selected elevation and land cover to represent the spatial heterogeneity of food resources exploited by black bears. We hypothesized that this heterogeneity could influence g_0 and σ depending on the presence or absence and distribution of food on the landscape. However, we did not include both land cover type and elevation in the same model due to concerns of multicollinearity. We also constructed models with temporal variation for g_0 and σ in addition to additive variation with either elevation or land cover. We included additive effects because we hypothesized that g_0 and σ are likely to vary because of the black bear mating season, hyperphagic foraging behavior during late summer and early fall, and the temporally variable distribution of food resources on the landscape.

We extracted the elevation for each detector using the National Elevation Dataset 30 m resolution digital elevation model. We extracted land cover using the Interagency Landfire Project (www.landfire.gov; Rollins 2009) land cover classification at 30 m spatial resolution. We combined 6 Landfire land cover classifications into 5 categories: aspen – conifer, mixed conifer (combination of Douglas fir and white pine), piñon pine – juniper, ponderosa pine, and spruce – fir. Variability in abundance and distribution of each land cover classification across study areas resulted in a different number of categories and, consequently, number of parameters in each model among study areas. Aspen-conifer and spruce-fir were only included in the NSC and SSC. Mixed-conifer was included in all study areas except the Sandia Mountains. Piñon-juniper and ponderosa pine were included in all study areas. We extracted elevation and assigned the dominant land cover classification surrounding the location of each detector using ArcGIS 10.2.1 (Environmental Systems Research Institute, Inc. [ESRI], Redlands, California, USA). Each model serves as a hypothesis modeling the heterogeneity in the data for each estimable parameter. We used Akaike's Information Criterion corrected for small sample size (AIC_c) to rank our final model set (Akaike 1973, Hurvich and Tsai 1989). We used the difference in AIC_c score (ΔAIC_c) between the top-ranked model and competing models to compare relative support, and we provide the AIC_c weights (w_i) to show the proportional support for each model (Burnham and Anderson 2002). We used model averaging to account for model selection uncertainty when the top ranked model in the final model set garnered less than 0.90 of the model weight (Burnham and Anderson 2002).

We conducted our study with authorization under Convention on International Trade in Endangered Species Export Permits 12US86417A/9, 13US19950B/9, and 14US43944B/9, and New Mexico Department of Game and Fish Authorization for Taking Protected Wildlife for Scientific and/or Education Purposes Permit 3504. All procedures were approved by the New Mexico State University Institutional Animal Care and Use Committee (Protocol number 2011-027).

RESULTS

Field Sampling

We set 557 hair traps that were open for 57,010 trap days and we collected 3,825 hair samples. In addition, we identified and sampled 112 bear rubs, which yielded 258 hair samples over 7,007 trap days (Figure 2, 3, and 4; Tables 1 and 2). Sampling effort varied across study areas and was dependent on the number of hair traps and bear rubs set, the length of a sampling occasion for each study area (4 weeks vs. 2 weeks), and the accessibility of areas due to stochastic weather events and wildfire. The number of hair traps that collected ≥ 1 hair sample ranged from 28% to 42% with most traps collecting a hair sample in 1 – 2 sampling occasions. The number of hair samples collected during a particular occasion increased over the course of the summer and decreased towards the conclusion of sampling with peak collection during June and July (Table 2).

Genetic Analysis

The mean observed heterozygosity for our suite of genetic markers was 0.73 (Table 3). The number of individuals that were mismatched at 1 or 2 markers was extremely low with 3, 0, 0, and 0 observed 1MM-pairs and 0, 4, 0, and 4 observed 2MM-pairs and 3, 0, 0, and 0 for the NSC, SSC, Sandias, and Sacramento Mountains, respectively. Excluding the NSC, the observed mismatched pairs fell within the expected mismatch distribution for each population (Paetkau 2003). The deviation from expectation observed in the NSC was likely due to chance (D. Paetkau, WGI, personal communication). From the 4,083 total hair samples collected, we eliminated 27.7% from the genotyping process. Reasons for excluding hair samples included: the sample contained insufficient genetic material for analysis (26.1%), was not of black bear origin (1.49%), or contained DNA from more than one individual (0.17%). We attempted to genotype 2,950 (72.3%) hair samples but were only able to generate a full 9-loci genotype for 49.6% of the eligible samples and identified 726 (368 M: 358 F) individuals (Table 4). The observed sex ratio for each study area was approximately equal. Genotyping success varied across study areas (43% - 60%), but overall, our success rates were lower than the 75% success rate observed in similar studies (D. Paetkau, WGI, personal communication). Contrary to our prediction, when we shortened the length of the sampling occasion from 4 weeks (NSC and SSC) to 2 weeks (Sandias, NSacs, and SSacs), we increased the percentage of successful genotypes by 4%.

Density Estimation

We detected the majority (61% – 85%) of individuals in each study area only once with similar average number of detections of males (1.19 – 1.67) and females (1.14 – 1.56; Table 5). The number of unique individuals detected during each occasion for the NSC, NSacs, and SSacs increased over the course of sampling, peaking mid-summer, and subsequently decreasing towards the end of the season (Figure 5); this pattern was similar to the total number of hair

samples collected per sampling occasion (Table 3). However, the number of unique individuals detected continued to increase over the course of the summer reaching its highest point during the last sampling occasion for both the SSC and the Sandias. Mean maximum recapture distance for males ranged from 4.23 to 12.46 km with a maximum distance of 52 km by one individual in the NSC ($n = 3 - 33$). Mean maximum recapture distance for females ranged from 0.38 to 4.59 km with a maximum distance of 47 km by one individual, also in the NSC ($n = 4 - 23$; Table 5). Three individuals were detected in two study areas. The first two detections were males we detected in the NSC in 2012 and then again in the SSC in 2013, and the third was a female we detected in the SSC in 2013 and then again 90 km away in the Sandias in 2014.

The most supported model for the NSC received all model weight and suggested that time and land cover type were important covariates explaining both g_0 and σ (Table 6). The top model ($w_i = 0.87$) for the SSC included time and elevation, whereas the second highest-ranking model ($w_i = 0.13$) included time and land cover type (Table 7). The top model ($w_i = 0.96$) for the Sandias indicated that both g_0 and σ varied by sex (Table 8). The highest-ranking model ($w_i = 0.96$) for the NSacs included time and land cover type for both g_0 and σ (Table 9). There was higher model selection uncertainty for the SSacs than any other site, but the most supported model ($w_i = 0.50$) included land cover type for both g_0 and σ (Table 10). The second and third ranked models included time and land cover, and time and elevation, respectively; these three top-ranked models contained all of the model weight (Table 15). For the NSC, we were able to fit all models except when g_0 and σ were modeled concurrently with elevation (i.e., $g_0 \sim \text{elev}$, $\sigma \sim \text{elev}$), concurrently with time and elevation (i.e., $g_0 \sim t + \text{elev}$, $\sigma \sim t + \text{elev}$), independently with elevation (i.e., either $g_0 \sim \text{elev}$, $\sigma \sim \text{constant}$; or $g_0 \sim \text{constant}$, $\sigma \sim \text{elev}$), independently with time and elevation (i.e., either $g_0 \sim t + \text{elev}$, $\sigma \sim \text{constant}$; or $g_0 \sim \text{constant}$, $\sigma \sim t + \text{elev}$), and with time and elevation for different parameters (i.e., either $g_0 \sim t$, $\sigma \sim \text{elev}$; or $g_0 \sim \text{elev}$, $\sigma \sim t$) because of computational limitations. For the NSacs, we did not fit a model using detector type to predict g_0 and σ concurrently because only one bear rub was set.

Detection probability (g_0) was highest for the Sandias ($g_0 = 0.02$), but overall, g_0 was low across all study areas (Table 11). The final model for all study areas, except the Sandias, did not support a sex effect. Despite having the highest g_0 relative to the other study areas, the precision of the Sandias density estimate was the lowest; whereas, the NSC density estimate was the most precise despite a low g_0 (Table 11). Mean density estimates varied within and between mountain ranges (range 16.55 to 21.86 bears/100 km²) and were model averaged for the SSC and SSacs (Table 11).

DISCUSSION

Our study provided the most current density estimates for multiple New Mexico black bear populations in over a decade (Costello et al. 2001). Our results suggest that densities are similar (SSacs) to or higher (NSC, SSC, Sandia, and NSacs) than the previous estimates used by NMDGF (17 bears/100 km² and 13.2 bears/100 km²) to manage New Mexico black bear populations. The differences in estimated density could be a result of an increasing black bear population, simple variation in population density due to time, a difference in the state of environmental conditions, or different sampling and analytical methods. For example, Costello et al. (2001) did not account for uncollared individuals in their density estimation approach and thus likely underestimated the density of the population by not accounting for imperfect detection. Furthermore, their abundance and density estimates provided no measure of

uncertainty because their estimation technique was not statistically based and did not provide a measure of uncertainty. As a result, Costello et al. (2001) used minimum abundance to derive their density estimates, which may explain at least some of the difference in our density estimates given we estimated mean density. Regardless, unless populations are extremely stable, we would expect density of a population to vary across space and with time.

The relative importance of the covariates we selected for modeling parameters was similar across study areas. The top model for all study areas held density constant suggesting an equal sex ratio in each population. Time of the detection event and the land cover type or elevation at which the detector was deployed were helpful covariates in modeling heterogeneity in both g_0 and σ for all study areas except the Sandia Mountains, which included sex of the individual detected as an important explanatory variable. The importance of temporal variability is likely a result of seasonal reproductive and foraging behaviors (Alt et al. 1980, Garshelis and Pelton 1981, Costello et al. 2003). Black bear mating season begins with den emergence, which can be as early as late March, peaks in June, and typically ends by July (Costello et al. 2001). During this period, males move more as they traverse their home range searching for receptive females (Young and Ruff 1982, Costello 2008, Lewis and Rachlow 2011). Mast season begins in July, with peak masting occurring during late summer and early fall (Costello 2008). At this time, bears begin to enter a hyperphagic state when they increase daily caloric intake from 8,000 kcal to 15,000 – 20,000 kcal to build up fat stores for hibernation and reproduction in females (Nelson et al. 1980). Bear home range size and distance between sequentially recorded movements increases as bears travel outside their core area to exploit the spatially and temporally variable mast (Ostfeld et al. 1996, Costello 2008), which is an important food source and highly correlated with black bear reproductive output in New Mexico (Costello et al. 2003). Increased movement rates and enlarged home range size during mating and hyperphagia would likely affect trap exposure rates on the landscape, thus affecting g_0 and σ .

The influence of land cover and elevation is likely a function of black bears responding to spatio-temporal changes in food abundance (Costello and Sage 1994, Costello et al. 2001, Mazur et al. 2013, McCall et al. 2013). Using scat surveys, Costello et al. (2001) reported that grasses, forbs, and ants tend to dominate bear diets during the pre-mast season (den emergence – 20 July). As the summer progresses, early mast season (21 July – 15 September) diets included soft mast species including chokecherry, squawroot (*Conopholis alpina*), and gooseberry as well as acorns (56% of scat volume). Diets during the late mast season (15 September – den entrance) are dominated by acorns (87% of scat volume) and supplemented with juniper berries (Costello et al. 2001). Mid-elevation land cover types (i.e., mixed conifer) are likely to contain a higher abundance of pre-mast species (grass and forbs) due to earlier snowmelt (compared to higher elevations) and moist conditions near riparian areas compared to dry, lower elevations. As snow melts, grasses and forbs will increase in abundance and distribution. With the arrival of monsoonal rains, soft mast will begin to ripen at lower elevations. Once oak acorns ripen in late summer/early fall, black bears begin to shift their attention towards vegetation types containing abundant acorns.

The main challenge we faced was genetic samples failing to produce a reliable genotype (i.e., not generating an individual ID for a particular hair sample). The inability to assign a reliable genotype to half of our genetic samples (44% - 61%) reduced the number of unique individuals and spatial recaptures (i.e., recapture of individuals at different traps) available for analysis. Consequently, this led to low detection probability and likely affected estimation of σ

inducing larger standard errors and less precise density estimates (Efford et al. 2004, Sollmann et al. 2012, Sun et al. 2014). The relatively more precise NSC density estimate, despite a low g_0 , may be a result of a greater number of unique individuals and recaptures, which provided sufficient data for the model to predict unobserved movement distances (Table 5; Sollmann et al. 2012, Sun et al. 2014). Interestingly, despite having the highest estimated g_0 among all study areas, the density estimate for the Sandias was the least precise, which may have been influenced by a low number of recaptures for both sexes, a low g_0 for males, a large individual heterogeneity in male movement patterns, and/or an over-partitioning in data due to estimating sex specific detection parameters (i.e., g_0 and σ). However, we believe the greatest factor affecting the density estimate is the number of individuals detected. Detecting fewer individuals results in less data to estimate the model parameters. Consequently, small sample size coupled with few recaptures can result in wider confidence intervals (Sun et al. 2014), which is likely the case for the Sandia density estimate. Our second highest-ranking model for the Sandias estimated density as 18.4 bears/100 km², which is still higher than the current density estimate used to manage the population (13.2 bears/100 km²). Replicative sampling may help provide more information on the density of the Sandias.

In the SSC, we likely lost hair samples due to two forest fires, the Tres Lagunas and Jaroso Fires (Figure 6). The Tres Lagunas Fire started 30 May 2013 and burned 4,135 ha just below the southern boundary of the Pecos Wilderness. The Jaroso Fire started 10 June 2013 and burned 4,511 ha in the northwest corner of the Pecos Wilderness. We suspect these fires contributed to a less precise density estimate for the SSC. These fires affected 450 km² (12.7%) of the trapping grid and prevented us from checking hair traps located in close proximity to the fire primarily during the second and third sampling occasions (3–13% of total hair traps). Moreover, many of the fire-affected traps were in relatively high quality bear habitat where we would expect higher bear abundance. Anecdotally, post-fire these hair traps consistently yielded more hair samples than hair traps located in some areas that were unaffected by the fires. The inability to collect samples in this area may have reduced the number of new individuals detected, and, more importantly, most likely reduced the number of recaptures necessary for more precise parameter estimates. The limited access also prevented us from identifying more bear rubs across the SSC, restricting our ability to utilize multiple sampling methods and hindering our ability to minimize the impacts of capture heterogeneity (e.g., age, sex, reproductive status) caused by any one survey method (Boulanger et al. 2008). The use of hair traps and bears rubs concurrently has also been shown to increase the precision of parameter estimates compared to those generated by hair traps alone (Sawaya et al. 2012, Stetz et al. 2014), and likely aided our ability to generate more precise density estimates given our low amplification rates. We also hypothesize that the presence of fire on the landscape increased movements of individuals (Cunningham and Ballard 2004) as seen by our estimate of σ for the SSC, which is 3x – 24x larger than the other study areas.

Overall, a net loss in sampling occasions and hair samples reduced the amount of data available for the SSC analysis. The few individuals we recaptured in each occasion and the large number of unique bears identified in the last occasion, after the fires were extinguished or contained, support our argument that the fires in the SSC affected our model parameter estimates. Ideally, as a population is sampled the number of unique individuals captured declines

over time (i.e., fewer unmarked individuals are encountered). Yet, in the SSC we captured 34% of all unique individuals during the last sampling occasion. While the number of individuals detected the last occasion in the NSC is still high (20%), it seems that the fires in the SSC influenced our ability to detect bears in this area as compared to the NSacs and SSacs (both 10%; Figure 5). Limited access to these hair traps during the fires led to longer sampling occasions and greater exposure to environmental conditions (i.e., exposure increased from 4 weeks to ≥ 8 weeks), subjecting hair samples to longer periods of environmental exposure, particularly to ultraviolet radiation (UV).

We suspect that for all study areas UV radiation is the main factor explaining failure of hair samples to produce a complete genotype (Stetz et al. 2015). Ultraviolet radiation causes DNA degradation by the formation of chemical compounds known as dimers. Dimers form by the binding of two adjacent, pyrimidine-nucleotide bases (cytosine and thymine) on a single strand of the double helix instead of binding between cross-strand partners (Jagger 1985). This fusion forms a bulge in the chemical structure of the DNA preventing DNA polymerase from progressing past the dimer and correctly duplicating the sequence, which prevents further amplification of the DNA molecule resulting in an incomplete genotype. Consequently, we suspect that the inability to assign an identity to a large portion of the genetic samples may have reduced the number of unique individuals and recaptures across all study areas. Multiple factors influence UV levels and, subsequently, its effects on DNA degradation including cloud cover, elevation, latitude, time of day, time of year, length of exposure, season, ozone depletion, and atmospheric turbidity (Piazena 1996, Stetz et al. 2015). For example, UV radiation increases with decreasing cloud cover, increases with elevation (9.0% – 11.0% per 1,000 m), and increases with lower latitude (Blumthaler et al. 1997). New Mexico receives substantial amounts of sunshine (Albuquerque 76% vs. U.S 58% average annual possible sunshine; NOAA 2004), is relatively high in elevation (1,200 m – 4,000 m), and is at a lower latitude than other geographic areas where NGS methods have been used to estimate bear abundance and density. Collectively, these factors result in UV radiation levels across much of New Mexico being higher than across most of the U.S. Further, we would expect UV radiation levels to be 1% – 26% higher in our study areas compared to those for Albuquerque, NM (Figure 7; NOAA 2015) because our study areas were typically located at higher elevations. Reducing sampling interval length should increase genotyping success, however, when we reduced our sampling interval from 4 to 2 weeks (which is a common time frame used by similar NGS studies), in the Sandias, NSacs, and SSacs we observed only a marginal improvement in genotyping success (4%). Surprisingly, the lowest genotyping success rate was in the SSacs (44%) given sampling occasions in the SSacs were 2 weeks shorter than the NSC and SSC. Thus, we suggest researchers consider conducting a pilot study to determine the optimal sampling interval for reducing UV degradation of DNA within hair samples particularly for study areas in the southwestern U.S.

Despite these sampling difficulties, we were able to produce density estimates with comparable levels of precision as those obtained in black bear studies conducted elsewhere in the U.S. (Table 12). We believe these estimates were possible due to the large extent of our study areas, which allowed us to detect a larger proportion of the population within each mountain range, increased the potential number of recaptures, and buffered the data from the low

amplification success rates. In addition, we believe because there was no observable spatial pattern in the collection locations of samples that failed to amplify we were still able to gather an adequate representation of movement of individuals on the landscape due to our sampling intensity and use of multiple survey methods. This allowed us to model unobserved movement distances (Sollmann et al. 2012). However, a small data set affected the Sandias estimate resulting in larger confidence intervals than the other study areas, particularly the NSC. It is likely that precision for these two study areas was influenced by the number of individuals detected (NSC: $n = 379$ vs. Sandias: $n = 18$).

Black bears are naturally difficult to sample due to their cryptic behavior and large home ranges. Furthermore, spatially and temporally stochastic environmental (e.g., mast oak and wildfire; Cunningham et al. 2003, Mazur et al. 2013) and anthropogenic (e.g., recreation and roads; Boyle and Samson 1985, Kasworm and Manley 1988) factors confound black bear detection by influencing the distribution of individuals across the landscape. In New Mexico, the abundance and distribution of mast oak heavily influences black bear fitness and movement patterns as they accrue adequate fat reserves for hibernation and reproduction for females (Costello et al. 2001, Costello et al. 2003, Inman et al. 2007). Under the assumption of a count index, multiple years of low black bear harvest may indicate a declining population while multiple years of high black bear harvest may indicate an increasing population. While observed harvest numbers may be a function of a changing population, the observed changes in harvest could be a product of various factors unrelated to the number of animals harvested. In years with average or above average precipitation levels, acorn and soft mast abundance increases. During these times, black bear movement rates are smaller due to the high availability of food on the landscape. Smaller movement rates reduce black bear exposure to hunters resulting in hunters observing, and subsequently, harvesting fewer individuals (Costello et al. 2001, Fieberg et al. 2010). However, when food crops fail, particularly acorn crops, black bear home range size increases, along with hunter harvest rates, due to the increased movements of black bears searching for food (Costello et al. 2001, Fieberg et al. 2010).

In developing sampling designs for future SECR-based black bear density estimation projects, there are multiple considerations. First, the spatial extent of the population must be determined (Sun et al. 2014). Sollmann et al. (2012) suggested that trapping arrays could be smaller than an average male home range but 1.5x larger than the average female home range. Yet, they cautioned that a small trapping array might not provide an accurate representation of movement patterns necessary to inform σ . A larger trapping array may buffer against stochastic environmental events (e.g., mast crop failure) which may cause individuals to move larger distances (McCall et al. 2013). If trapping arrays are large, there is a reduced chance that individuals will move off of the study area and thus not be detected. Selecting study area boundaries is an important aspect to consider when trying to avoid violating geographic closure of the study area. The spacing between hair traps will also influence the spatial extent of the trapping array. Non-spatial CR literature has suggested a trapping density of 4 traps per individual home range, which we adhered to, however, recent simulation work has suggested only 2 hair traps per individual home range may be required when using SECR models (Sollmann et al. 2012, Sun et al. 2014). We stress that an accurate representation of the smallest average home range size is necessary to prevent traps from being spaced too far apart. When traps are spaced too widely, the number of unique individuals and recaptures declines causing a decrease in the precision of the parameter estimates (Sun et al. 2014). If hair traps can be spaced

closer together, then a regular trapping array configuration may be used, however, if they cannot, then a cluster configuration may be preferred with clusters wider than the spacing between hair traps (Sun et al. 2014). Use of fewer traps has the benefit of decreasing the trapping array size, reducing the sampling occasion length reducing environmental exposure, or reducing the number of technicians required for the study potentially saving both time and money. However, depending on the extent of the population, the size of the study area, and available resources it may not be possible to sample all available black bear habitat. In that case, it may be more appropriate to distribute multiple, smaller trapping arrays randomly across the available sampling area instead of one large array (Wilton et al. 2014).

We suggest that future efforts to estimate the density of black bear populations in New Mexico may need to shorten the length of the sampling occasion to reduce DNA degradation via UV radiation, which will increase microsatellite amplification success helping to reduce genotyping errors and increase the number of individual genotypes identified (Stetz et al. 2015). When we decreased sampling occasion length from 4 weeks to 2 weeks the genotype success rate increased by only 4% (Sandia and Sacramento Mountains: 52% vs. SSC: 48%). Thus, a pilot study may be useful to determine the length of time hair samples can remain in the field prior to collection. In addition, researchers may consider setting hair traps and bear rubs in more shaded areas (e.g., north facing slopes) to help reduce exposure to UV radiation. This may help increase the amplification success for hair samples. Increasing the number of personnel would be preferable over fewer hair traps because it would allow for a larger study area or a denser trapping array to be sampled, which should increase detection of long-range movements helping to inform σ , increase recapture rates, and increase the precision of parameter estimates (Sollmann et al. 2012). A larger study area will also place density estimates at the spatial scale at which state agencies make management decisions (Dreher et al. 2007). Personnel should be able to check and reset, on average, 3 – 5 hair traps per day depending on road density. For example, we were able to check more traps in the Sacramento Mountains ($n = 148$) than the SSC ($n = 141$) in half the time (2 weeks vs. 4 weeks, respectively) due to the higher road density in the Sacramento Mountains. Increased seasonal personnel will certainly increase cost, but this cost will be offset by a reduction in total sampling time per season. The other option is to reduce the number of hair traps resulting in a smaller study area or an increased distance between hair traps. A small study area, relative to home range size, will increase the probability that individuals travel off the sampling grid and are unavailable for capture. Individuals will also be unavailable for capture when traps are widely spaced relative to home range size causing some home ranges to fall in between hair traps. Both scenarios will reduce the number of unique individuals identified, the number of recaptures, and ultimately the precision of the parameter estimates (Sollmann et al. 2012, Sun et al. 2014). Careful consideration of these factors must be taken into account when reducing the number of hair traps to ensure a reasonable tradeoff between study area size and the distance between hair traps.

To estimate density, we used SECR models. The SECR analysis may be performed using inverse prediction (Efford 2004), maximum likelihood (ML; Borchers and Efford 2008), or Bayesian based methods (Royle et al. 2009). Inverse prediction was the original constitution of SECR models, but it is applied only to single catch traps (e.g. Sherman-live traps), due to the lack of a ML based single-catch model. Inverse prediction is limited in regards to model selection and the inclusion of parameter covariates (Borchers and Efford 2008). The two prominent statistical paradigms in SECR-based analyses are ML and Bayesian with both

methods providing similar density estimates (Borchers and Efford 2008, Royle et al. 2009). The ML framework is advantageous because these models require less computation time compared to Bayesian methods (Noss et al. 2012). Although, we note that larger study areas and finer discretization increases the necessary computation time for a model. Maximum likelihood methods may require less user knowledge compared to the Bayesian because the latter requires a prior distribution be specified and “model warnings” are often prompted if an error has occurred during model fitting (Noss et al. 2012, Efford 2013). However, users should evaluate model output carefully regardless of statistical paradigm chosen. Bayesian models may be preferred in cases where data sets with small sample size are expected (Noss et al. 2012) because ML models rely on asymptotic theory, which requires larger sample sizes in order to approach normality (Gerber and Parmenter 2015). Model output generated by a Bayesian approach may be difficult to decipher due to the mechanisms of the analysis. To interpret model output, a researcher must be able to understand the influence of model priors, the distribution of the MCMC chains, the posterior model output, and other results generated by the model (Noss et al. 2012). Inverse prediction and ML based SECR models may be fitted in either program DENSITY, which offers a Graphical User Interface (GUI), or the R package “secr” (Efford et al. 2004, Efford 2013). The secr package allows a wider range of analyses including modeling density surfaces and telemetry-integrated capture-recapture, and it provides the user greater flexibility in model optimization and processing. Bayesian estimation may be conducted in either program SPACECAP (Gopalaswamy et al. 2012), which offers a GUI, or in Program R using JAGS (Just Another Gibbs Sampler) in the BUGS (Bayesian inference Using Gibbs Sampling) language (Royle et al. 2014). For our study, we chose to estimate density using the ML based approach because the statistical knowledge and expertise of our research laboratory is rooted in ML theory.

In conclusion, we estimated the density of black bears in 5 study areas within 3 mountains ranges of New Mexico. Our estimates will aid the NMDGF in setting sustainable harvest limits. In addition to density estimates, information on demographic rates (e.g., survival rates and reproduction) and the potential effects that climate change and future land use may have on the demography of black bears may also help inform management of black bears in New Mexico, and may be considered as future areas for research.

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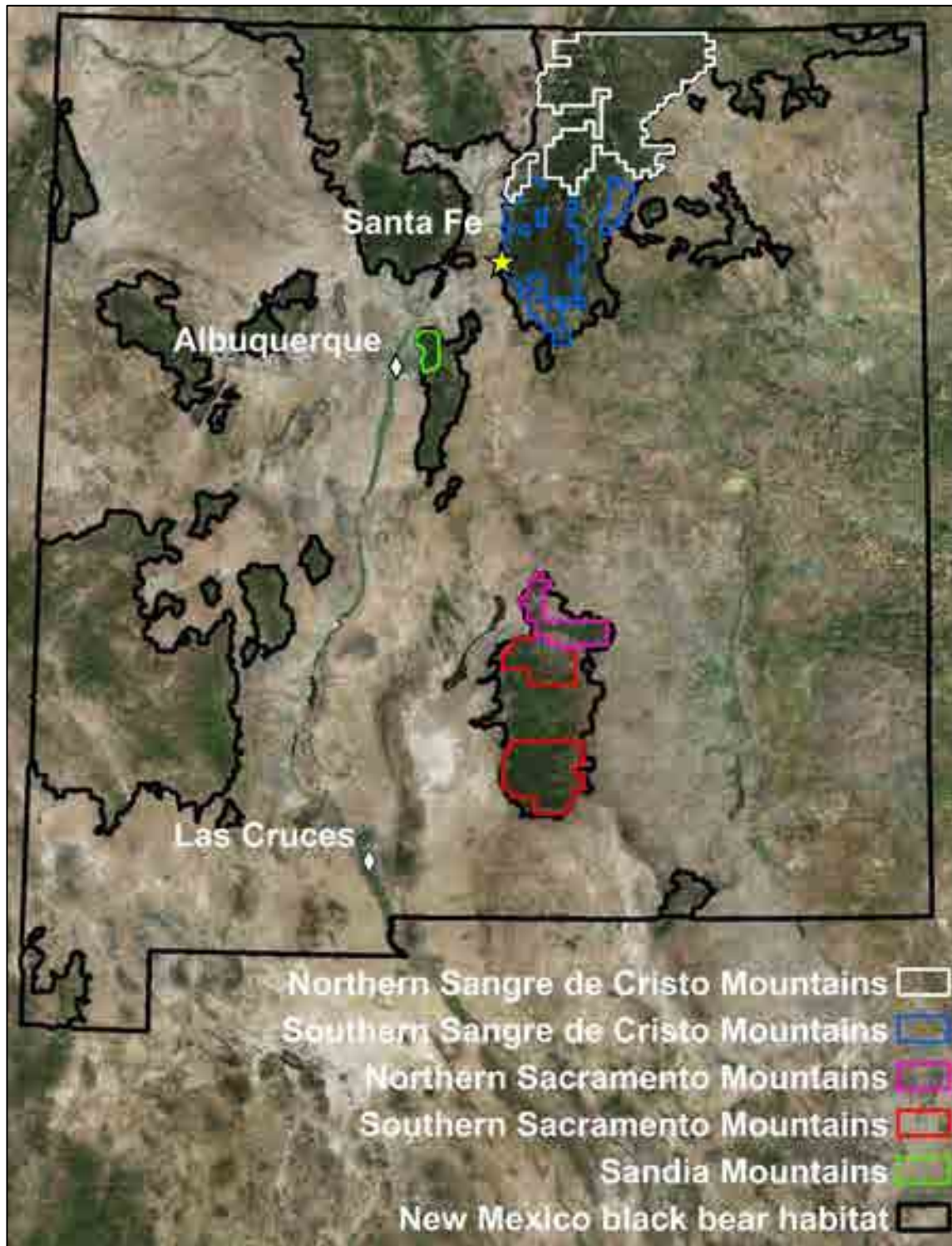


Figure 1. Aerial imagery of black bear habitat in New Mexico highlighting the study areas located within the Sangre de Cristo Mountains, Sandia Mountains, and Sacramento Mountains.

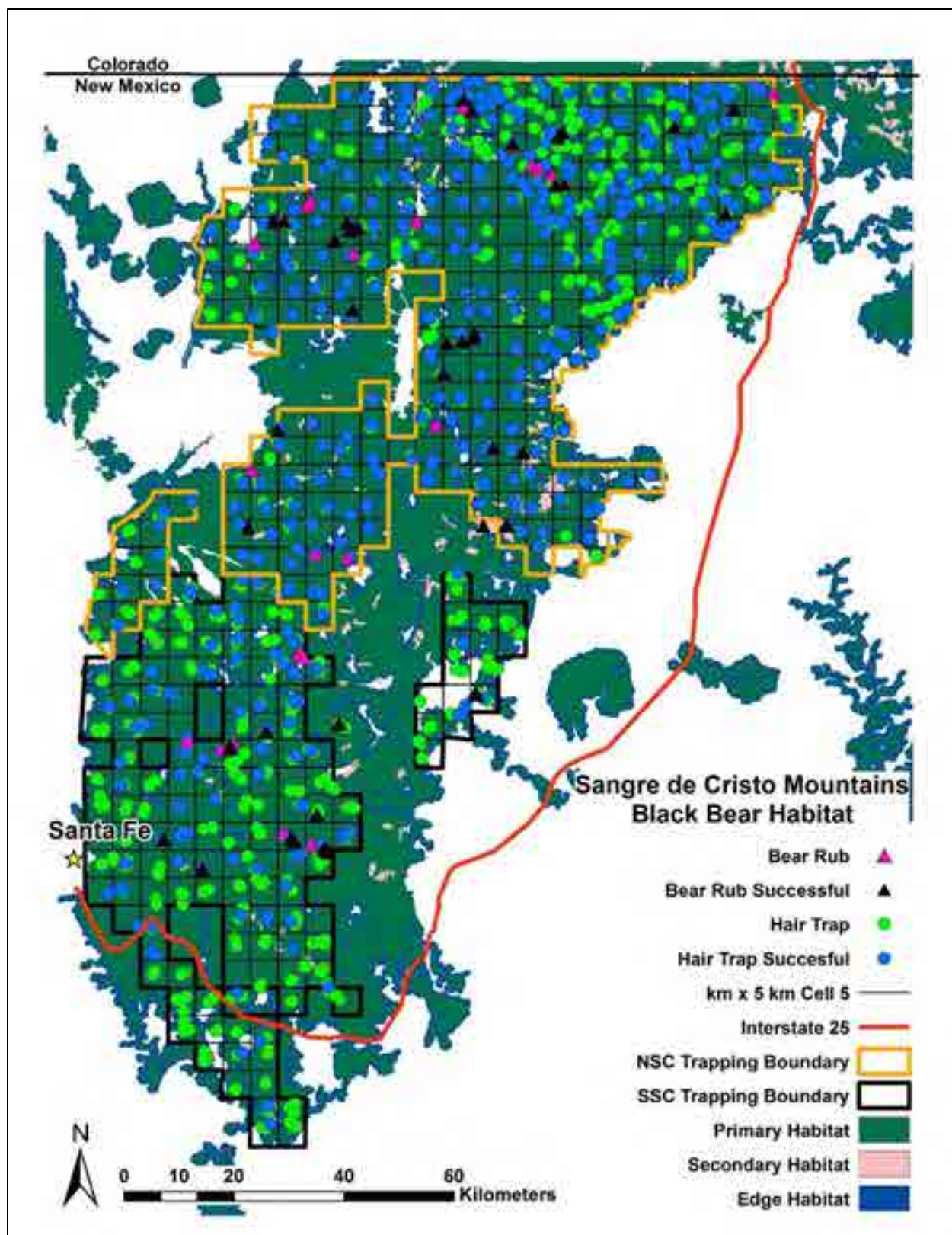


Figure 2. Black bear habitat identified by Costello et al. (2001) overlaid with hair traps and bear rubs set for the northern Sangre de Cristo Mountains, NM in 2012 and 2013.

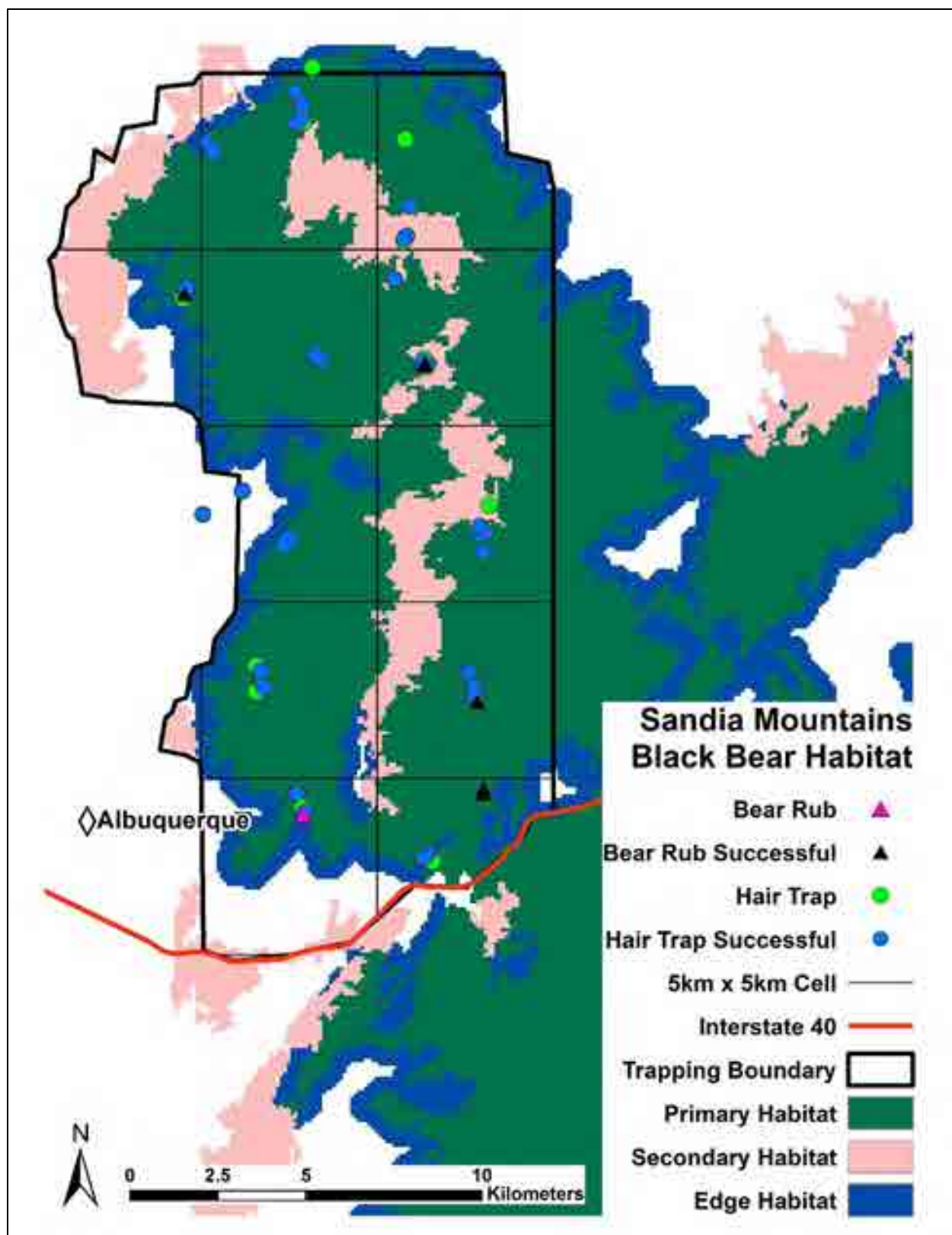


Figure 3. Black bear habitat identified by Costello et al. (2001) overlaid with hair traps and bear rubs set for the Sandia Mountains, NM in 2014.

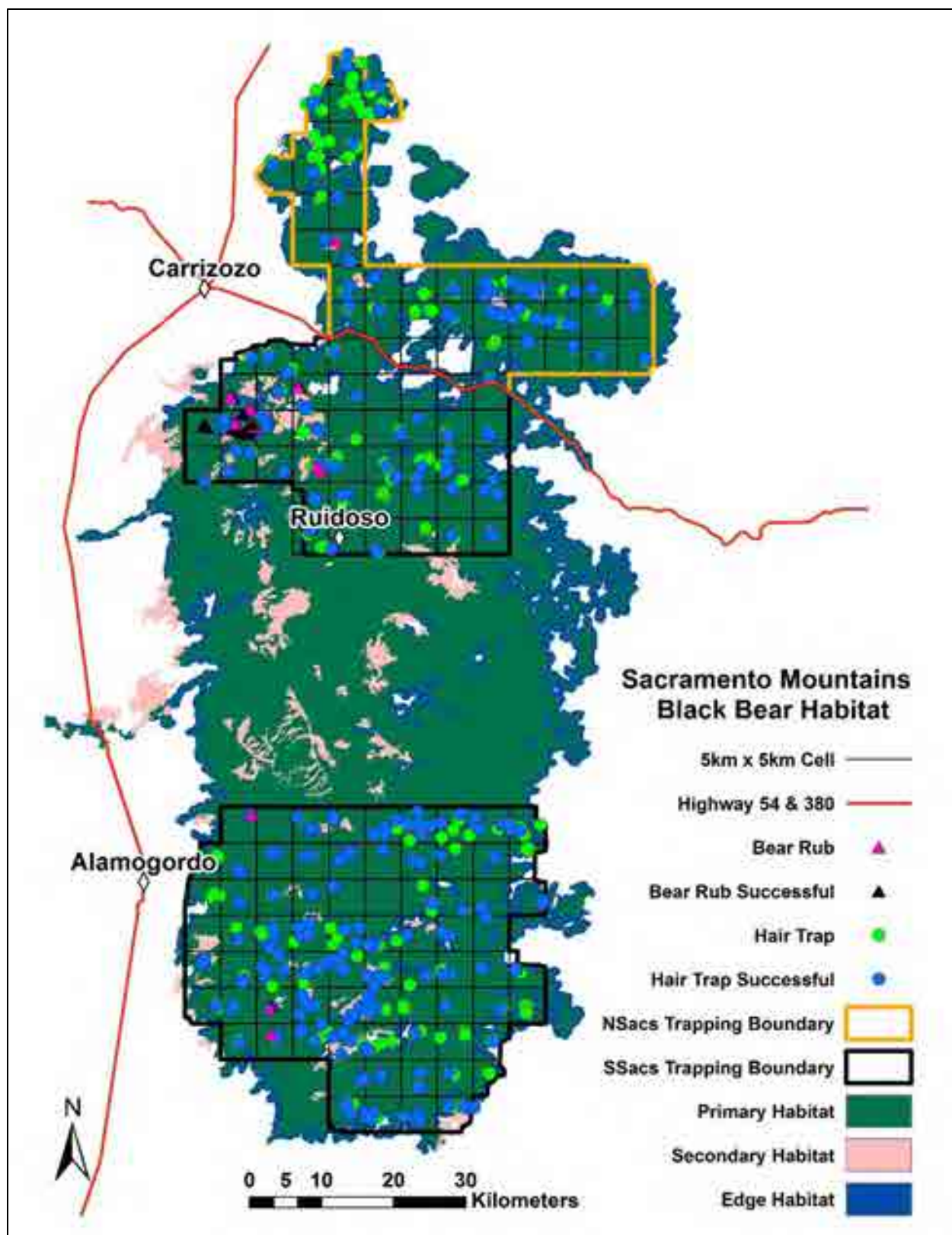


Figure 4. Black bear habitat identified by Costello et al. (2001) overlaid with hair traps and bear rubs set for the Sacramento Mountains, NM in 2014.

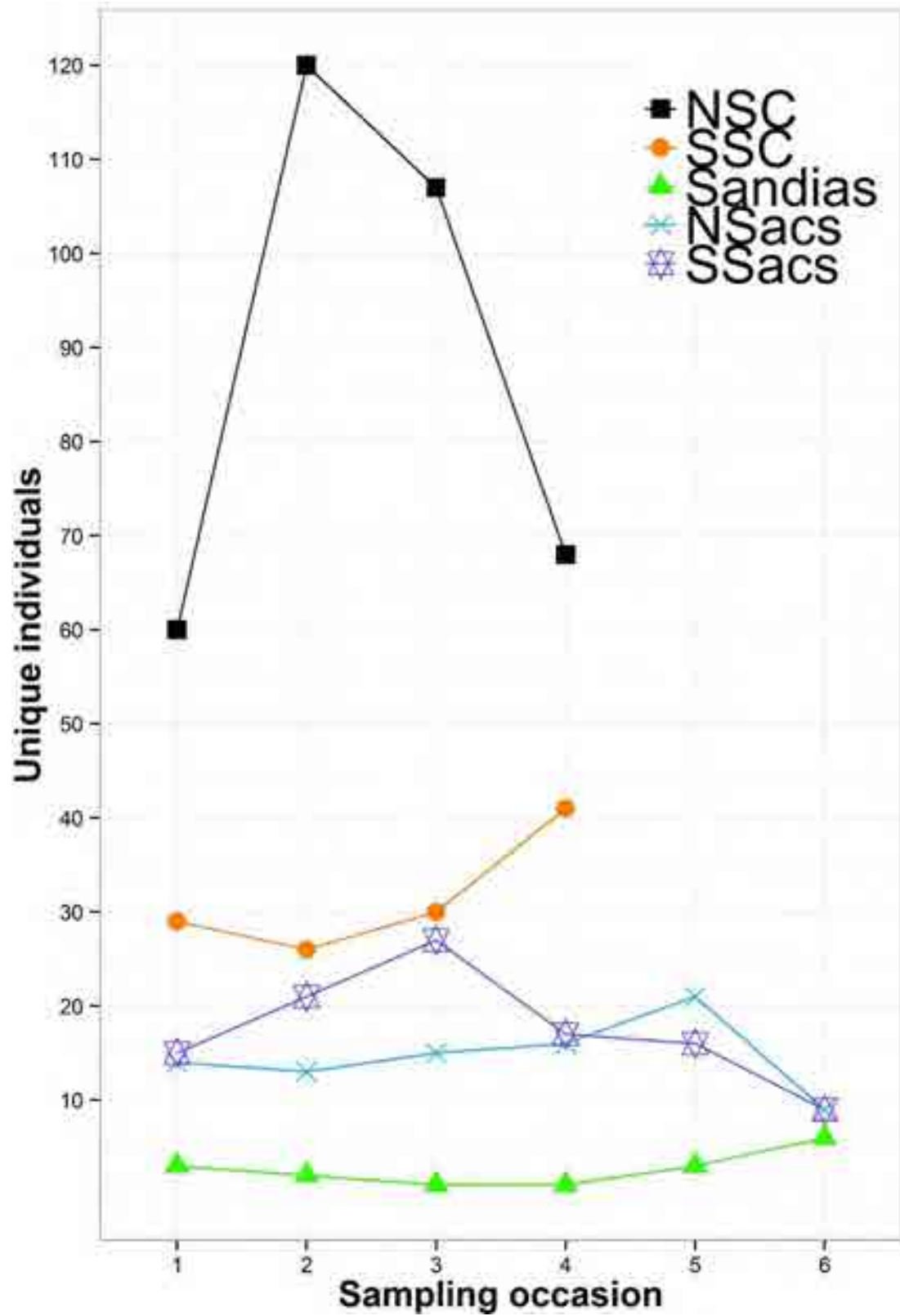


Figure 5. Number of unique individuals detected by hair traps and bear rubs combined for each sampling occasion in the Northern (NSC) and Southern (SSC) Sangre de Cristo, Sandia, and Northern (NSacs) and Southern (SSacs) Sacramento Mountains, NM.

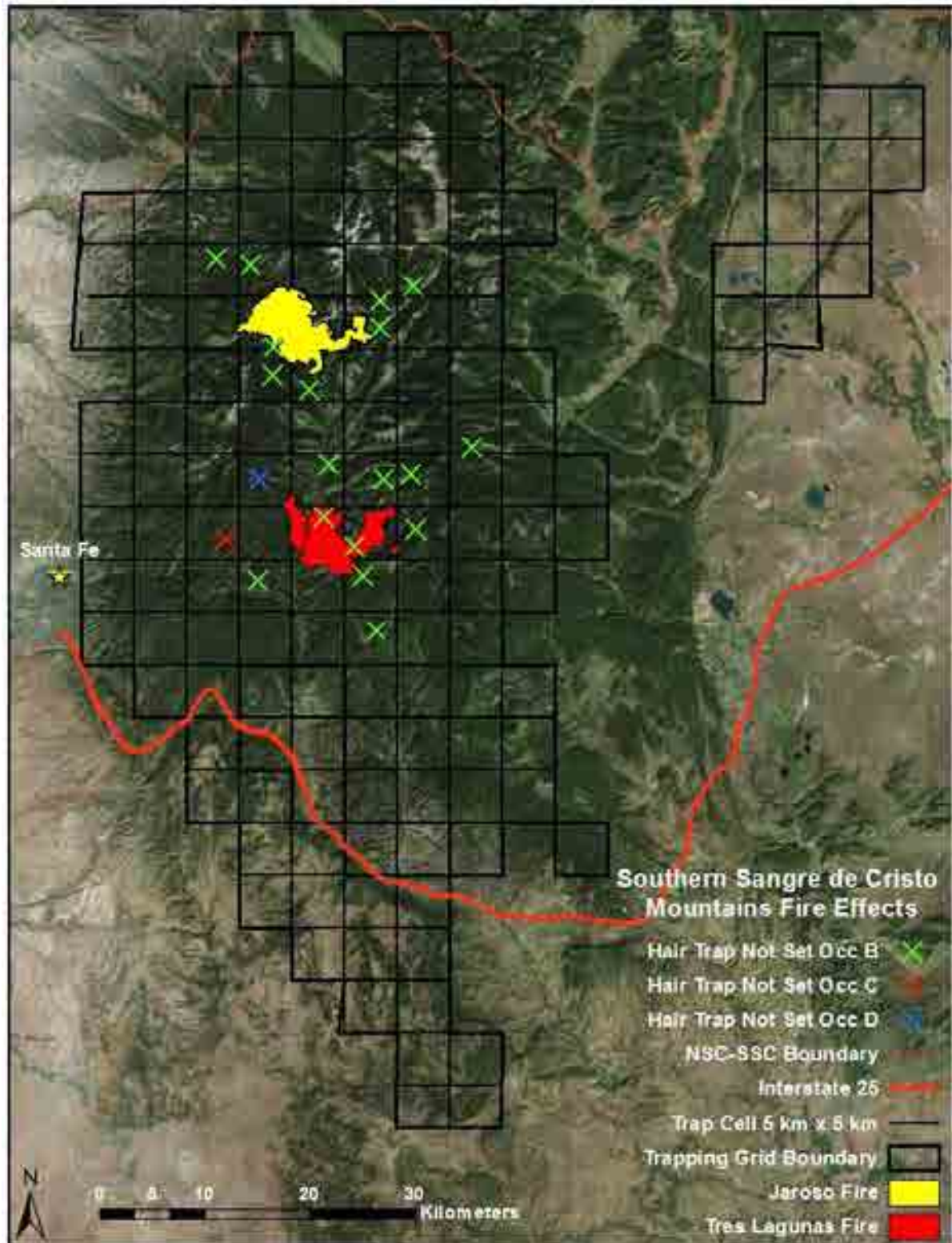


Figure 6. Map of hair traps not deployed due to the Jaroso and Tres Lagunas fires in the southern Sangre de Cristo Mountains, NM in 2013.

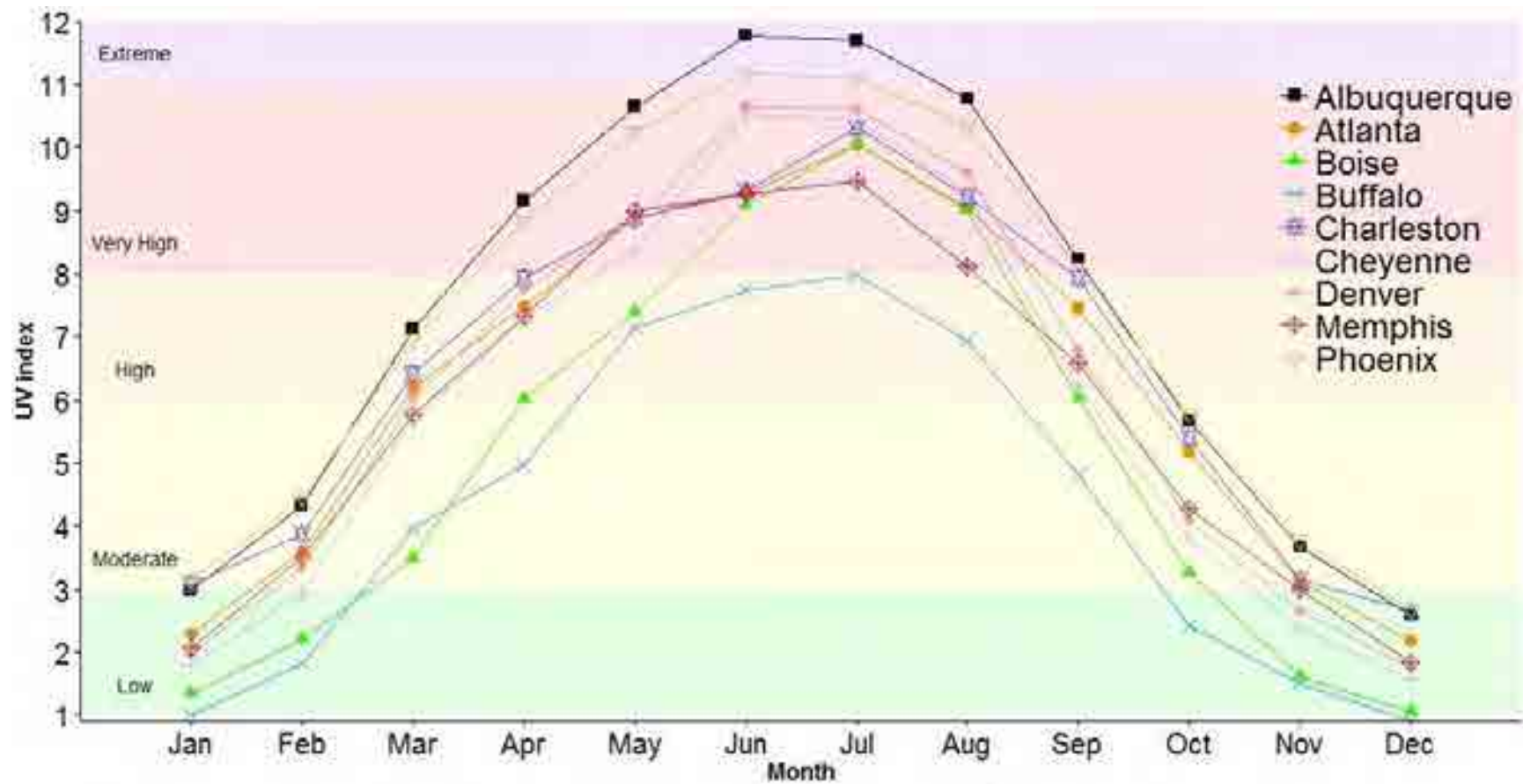


Figure 7. Mean montly ultraviolet index (UVI) generated by the National Oceanic and Atmospheric Administration showing estimated noontime intensity of ultraviolet radiation coupled with the World Health Organization human health hazard UVI classification for Albuquerque, NM, Atlanta, GA, Boise, ID, Buffalo, NY, Charleston, SC, Cheyenne, WY, Denver, CO, Memphis, TN, and Phoenix, AZ, USA in 2012.

Table 1. Field sampling summary statistics allocated by number of detector types set (hair traps = HR & bear rub = BR), for the Northern (NSC) and Southern (SSC) Sangre de Cristo, Sandia, and Northern (NSacs) and Southern (SSacs) Sacramento Mountains, NM.

Study Area	HT ^a	HT Sites ^b	HT Hit ^c	HT Effort ^d	BR ^a	BR Effort ^d
NSC	256	1018	0.36	28,183	46	3,730
SSC	141	537	0.29	15,768	25	1,816
Sandias	12	69	0.42	979	7	293
NSacs	37	217	0.41	2,990	1	56
SSacs	111	656	0.29	9,090	33	1,112
Total	557	2497	0.33	57,010	112	7,007

^a Number of sampling detectors set.

^b Number of sampling detectors cumulatively summed across all sampling occasions.

^c Number of traps which collected ≥ 1 hair sample over the all sampling occasions.

^d Sampling effort represented by the number of days a sampling detector (hair trap & bear rub) was set summed across all detectors and all sampling occasions.

Table 2. The total number of hair samples collected across sampling occasions (1-6) and detector type (hair trap:bear rub) , and the overall total for the Northern (NSC) and Southern

Study Area	1	2	3	4	5	6	Total
NSC	312 (299:13)	634 (582:52)	597 (571:26)	374 (339:35)	-	-	1917 (1791:126)
SSC	145 (141:4)	125 (124:1)	184 (183:1)	273 (246:27)	-	-	727 (694:33)
Sandias	8 (8:0)	30 (30:0)	23 (19:4)	28 (19:9)	51 (35:16)	37 (31:6)	177 (142:35)
NSacs	49 (49:0)	58 (58:0)	77 (73:4)	75 (73:2)	123 (118:5)	82 (79:3)	464 (450:14)
SSacs	93 (93:0)	143 (143:0)	183 (179:4)	135 (118:17)	129 (118:11)	115 (97:18)	798 (748:50)
Total	607 (590:17)	990 (937:53)	1064 (1025:39)	885 (795:90)	303 (271:32)	234 (207:27)	4083 (3825:258)

(SSC) Sangre de Cristo, Sandia, and Northern (NSacs) and Southern (SSacs) Sacramento Mountains, NM.

Table 3. Number of alleles, expected heterozygosity (H_E), and observed heterozygosity (H_O) for eight microsatellite markers used for individual identification of American black bears in the Sangre de Cristo Mountains, Sandia Mountains, and Sacramento Mountains, NM.

Marker	<u>No. Alleles</u>			<u>H_E</u>			<u>H_O</u>		
	Sangres	Sandias	Sacramentos	Sangres	Sandias	Sacramentos	Sangres	Sandias	Sacramentos
G10L	8.00	6.00	6.00	0.80	0.81	0.74	0.80	0.78	0.73
G1D	7.00	4.00	5.00	0.76	0.76	0.61	0.76	0.56	0.60
G10H	12.00	6.00	8.00	0.76	0.77	0.63	0.76	0.61	0.60
G10M	6.00	4.00	6.00	0.72	0.73	0.71	0.70	0.72	0.72
G10B	7.00	4.00	4.00	0.72	0.72	0.68	0.72	0.83	0.65
G10J	9.00	6.00	7.00	0.71	0.78	0.73	0.72	0.67	0.72
MU59	10.00	4.00	5.00	0.70	0.49	0.50	0.71	0.50	0.50
G10U	9.00	6.00	6.00	0.65	0.78	0.69	0.66	0.78	0.70
Mean	8.50	5.00	5.88	0.73	0.73	0.66	0.73	0.68	0.65

Table 4. Number of samples collected, number of samples that contained enough genetic material for analysis (samples analyzed), the proportion of samples that produced a successful genotype (Sample Success) and the number of unique individuals identified by each detector type (hair trap only = HT; bear rub only = BR; hair trap and bear rub = HTBR) for the Northern (NSC) and Southern (SSC) Sangre de Cristo, Sandia, and Northern (NSacs) and Southern (SSacs) Sacramento Mountains, NM.

Study Area	Samples Collected	Samples Analyzed	Sample Success	Unique Individuals		
				M (HT:BR:HTBR)	F (HT:BR:HTBR)	Total (HT:BR:HTBR)
NSC	1917	1416	0.49	190 (171:18:1)	189 (179:10:0)	379 (350:28:1)
SSC	727	517	0.48	67 (63:2:2)	64 (61:2:1)	131 (124:4:3)
Sandias	177	115	0.53	9 (5:1:3)	9 (8:1:0)	18 (13:2:3)
NSacs	464	360	0.61	49 (46:0:3)	39 (38:0:1)	88 (54:0:4)
SSacs	798	542	0.44	53 (50:2:1)	57 (53:3:1)	110 (103:5:2)
Total	4083	2950	0.50	368 (335:23:10)	358 (339:16:3)	726 (674:39:13)

Table 5. A summary of the capture history data for both male and female black bears identified by samples collected across the Northern (NSC) and Southern (SSC) Sangre de Cristo, Sandias, and Northern (NSacs) and Southern (SSacs) Sacramento Mountains,

	Males								Females							
	N ^a	Det ^b	Avg ^c	SD ^d	Max ^e	R ^f	MMR (km) ^g	MaxD (km) ^h	N ^a	Det ^b	Avg ^c	SD ^d	Max ^e	R ^f	MMR (km) ^g	MaxD (km) ^h
NSC	190	239	1.26	0.43	3	33	7.57	52.03	189	216	1.14	0.35	3	23	3.98	47.41
SSC	67	80	1.19	0.38	3	8	12.46	29.33	64	77	1.20	0.39	2	12	2.53	20.33
Sandias	9	15	1.67	0.46	2	3	8.27	9.84	9	14	1.56	0.73	3	4	0.38	0.69
Nsacs	49	74	1.51	0.74	5	14	9.22	36.18	39	58	1.49	0.72	3	12	2.47	7.05
Ssacs	53	69	1.30	0.41	3	10	4.23	8.02	57	73	1.28	0.54	3	11	4.59	14.88
Total	368	477	1.39	0.48	5	68	8.35	27.08	358	438	1.33	0.55	3	62	2.79	18.07

NM.

^a Number of animals detected.

^b Total number of detections across all sampling occasions.

^c Average number of detections per individual detected across all sampling occasions.

^d Standard deviation for the average number of detections.

^e Maximum number of detections of a single individual across all sampling occasions.

^f Number of recaptured individuals across all sampling occasions.

^g Mean maximum recapture distance.

^h Maximum distance moved by an individual.

Table 6. The final set of *a priori* spatially explicit capture-recapture models for the Northern Sangre de Cristo Mountains, NM in 2012.

D^a	g0^a	σ^a	K^b	AIC_c^c	ΔAIC_c^d	w_i^e	Dev^f
constant	t + veg	t + veg	17	3149.15	0.00	1.00	3113.46
constant	t	t	9	3201.03	51.88	0.00	3182.54
constant	veg	veg	11	3216.43	67.28	0.00	3193.71
constant	t	veg	10	3221.75	72.59	0.00	3201.15
constant	veg	t	10	3236.73	87.58	0.00	3216.14
constant	type	type	5	3251.32	102.17	0.00	3241.16
constant	sex	sex	5	3271.17	122.02	0.00	3261.01
constant	constant	constant	3	3271.37	122.22	0.00	3265.31
sex	constant	constant	4	3273.42	124.26	0.00	3265.31

^a Model parameters a function of: sex; t = time variation; type = detector type, veg = land cover type; + = additive effect; constant = no variation.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference between the top ranked model and the *i*th ranked model.

^e Model weight.

^f Model deviance = -2(log-likelihood).

Table 7. The final set of *a priori* spatially explicit capture-recapture models for the Southern Sangre de Cristo Mountains, NM in 2013.

D^a	g0	σ	K^b	AIC_c^c	ΔAIC_c^d	w_i^e	Dev^f
constant	t + elev	t + elev	11	1169.98	0.00	0.87	1145.76
constant	t + veg	t + veg	17	1173.85	3.87	0.13	1134.44
constant	veg	t	10	1195.99	26.01	0.00	1174.16
constant	elev	t	7	1197.67	27.69	0.00	1182.76
constant	t	veg	10	1199.07	29.09	0.00	1177.24
constant	t	elev	7	1199.91	29.93	0.00	1185.00
constant	veg	veg	11	1205.12	35.14	0.00	1180.90
constant	t	t	9	1210.10	40.12	0.00	1190.61
constant	elev	elev	5	1210.48	40.50	0.00	1200.00
constant	sex	sex	5	1214.90	44.92	0.00	1204.42
constant	type	type	5	1216.35	46.37	0.00	1205.87
constant	constant	constant	3	1223.86	53.88	0.00	1217.67
sex	constant	constant	4	1225.92	55.94	0.00	1217.60

^a Model parameters a function of: elev = elevation; sex; t = time variation; type = detector type; veg = land cover type; + = additive effect; constant = no variation.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference between the top ranked model and the *i*th ranked model.

^e Model weight.

^f Model deviance = -2(log-likelihood).

Table 8. The final set of *a priori* spatially explicit capture-recapture models for the Sandia Mountains, NM in 2014.

D^a	g0^a	σ^a	K^b	AIC_c^c	ΔAIC_c^d	w_i^e	Dev^f
constant	sex	sex	5	209.23	0.00	0.96	194.23
constant	constant	constant	3	216.23	6.99	0.03	208.51
constant	elev	elev	5	219.20	9.97	0.01	204.20
sex	constant	constant	4	219.59	10.36	0.00	208.51
constant	type	type	5	219.84	10.60	0.00	204.84
constant	veg	veg	5	219.97	10.74	0.00	204.97
constant	t	elev	9	235.19	25.96	0.00	194.69
constant	t	veg	9	238.34	29.11	0.00	197.84
constant	elev	t	9	243.24	34.00	0.00	202.74
constant	veg	t	9	243.52	34.29	0.00	203.02
constant	t	t	13	311.75	102.52	0.00	194.75
constant	t + elev	t + elev	15	451.94	242.71	0.00	189.35
constant	t + veg	t + veg	15	461.61	252.38	0.00	191.61

^a Model parameters a function of: elev = elevation; sex; t = time variation; type = detector type; veg = land cover type; + = additive effect; constant = no variation.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference between the top ranked model and the *i*th ranked model.

^e Model weight.

^f Model deviance = -2(log likelihood).

Table 9. The final set of *a priori* spatially explicit capture-recapture models for the Northern Sacramento Mountains, NM in 2014.

D^a	g0^a	σ^a	K^b	AIC_c^c	ΔAIC_c^d	w_i^e	Dev^f
constant	t + veg	t + veg	17	868.31	0.00	0.96	825.57
constant	veg	t	10	874.86	6.55	0.04	852.01
constant	t	veg	10	880.74	12.44	0.00	857.89
constant	veg	veg	7	883.07	14.76	0.00	867.67
constant	t + elev	t + elev	15	910.39	42.08	0.00	873.72
constant	sex	sex	5	910.45	42.14	0.00	899.71
constant	t	t	13	922.95	54.65	0.00	892.04
constant	elev	elev	5	923.70	55.39	0.00	912.97
constant	t	elev	9	925.73	57.42	0.00	905.42
constant	elev	t	9	928.60	60.30	0.00	908.30
constant	constant	constant	3	951.19	82.88	0.00	944.91
sex	constant	constant	4	952.25	83.94	0.00	943.77

^a Model parameters a function of: elev = elevation; sex; t = time variation; veg = land cover type; + = additive effect; constant = no variation.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference between the top ranked model and the *i*th ranked model.

^e Model weight.

^f Model deviance = -2(log-likelihood).

Table 10. The final set of *a priori* spatially explicit capture-recapture models for the Southern Sacramento Mountains, NM in 2014.

D^a	g0^a	σ^a	K^b	AIC_c^c	ΔAIC_c^d	w_i^e	Dev^f
constant	veg	veg	7	1168.68	0.00	0.50	1153.58
constant	t + veg	t + veg	17	1169.62	0.94	0.31	1128.97
constant	t + elev	t+ elev	15	1170.58	1.90	0.19	1135.47
constant	veg	t	10	1180.23	11.54	0.00	1158.00
constant	type	type	5	1182.05	13.37	0.00	1171.48
constant	elev	elev	5	1182.51	13.83	0.00	1171.93
constant	elev	t	9	1184.24	15.56	0.00	1164.44
constant	t	t	13	1186.59	17.91	0.00	1156.80
constant	t	elev	9	1191.22	22.54	0.00	1171.42
constant	t	veg	10	1193.33	24.65	0.00	1171.10
constant	constant	constant	3	1196.53	27.85	0.00	1190.31
constant	sex	sex	5	1198.08	29.40	0.00	1187.50
sex	constant	constant	4	1198.54	29.86	0.00	1190.16

^a Model parameters a function of: elev = elevation; sex; t = time variation; type = detector type; veg = land cover type; + = additive effect; constant = no variation.

^b Number of model parameters.

^c Akaike's Information Criterion adjusted for small sample size.

^d The difference between the top ranked model and the *i*th ranked model.

^e Model weight.

^f Model deviance = -2(log-likelihood).

Table 11. Density and model parameter estimates, coefficient of variation of the density estimate (CV), detection probability at the activity center (g_0), spatial scale over which detection probability declines (σ ; km), and their 95% confidence intervals for the Northern (NSC) and Southern (SSC) Sangre de Cristo, Sandia, and Northern (NSacs) and Southern (SSacs) Sacramento Mountains, NM. Competing models for the SSC and SSacs were model averaged. We performed all analyses within a spatially explicit capture-recapture framework.

Study Area	D ^a	g_0^b	σ^c	\hat{D}^d	CV(\hat{D})	\hat{g}_0^e	$\hat{\sigma}^f$
NSC	constant	t + veg	t + veg	21.86 (17.83 – 26.80)	0.10	0.00060 (0.000233 - 0.001528)	3.31 (2.09 – 5.25)
SSC	constant	t + elev	t + elev	19.74	0.18	0.00001	18.35
	constant	t + veg	t + veg	(13.77 – 28.30)		(0.000006 – 0.000052)	(12.73 – 26.46)
Sandias	constant	sex	sex	25.75 (13.22 – 50.14)	0.35	0.02941 ^g	0.76 ^g
						(0.010779 – 0.077689)	(0.49 – 1.15)
						0.00163 ^h (0.000480 – 0.005488)	4.99 ^h (2.46 – 10.09)
NSacs	constant	t + veg	t + veg	20.17 (15.35 – 26.52)	0.14	0.00266 (0.000580 – 0.012125)	5.42 (2.03 – 14.44)
SSacs	constant	veg	veg	16.55	0.18	0.00318	2.67
	constant	t + veg	t + veg	(11.64 – 23.53)		(0.001087 - 0.009279)	(1.69 – 4.21)
	constant	t + elev	t + elev				

^a Final model structure for the secr parameter, density (D).

^b Final model structure for the secr parameter, detection probability (g_0).

^c Final model structure for the secr parameter, σ , the spatial scale over which detection probability declines.

^d Black bear density estimate (bears/100 km²) with the 95% confidence intervals in parentheses.

^e Detection probability (g_0) parameter estimate with the 95% confidence intervals in parentheses.

^f σ (km) parameter estimate with the 95% confidence intervals in parentheses.

^g Parameter estimate for female black bears.

^h Parameter estimate for male black bears.

Table 12. Mean density estimates for black bears (bears/100 km²) and 95% CIs in parentheses for noninvasive genetic sampling studies conducted in the United States that also used a spatially explicit capture-recapture framework.

State	\hat{D}	Reference
Ozark Highlands, Missouri	1.7 (1.1 – 2.4)	Wilton et al. 2014
Carver Bay, South Carolina	4.6 (2.4 – 6.7)	Drewry et al. 2013
Southern Black Bear Range, New York	9.1 (7.6 – 11.3)	Sun et al. 2014
Picture Rocks National Lakeshore, Michigan	10.5 (8.5 – 12.7)	Sollmann et al. 2012
Glacier National Park, Montana ^a	12.0 (10.0 – 14.4)	Stetz et al. 2014 ^a
Southern Sacramento Mountains, New Mexico	16.5 (11.6 – 23.5)	This Study
Southern Sangre de Cristo Mountains, New Mexico	19.7 (13.8 – 28.3)	This Study
Fort Drum Military Installation, New York	20.0 (15.0 – 26.0)	Gardner et al. 2010
Northern Sacramento Mountains, New Mexico	20.1 (15.3 – 26.5)	This Study
Northern Sangre de Cristo Mountains, New Mexico	21.8 (17.8 – 26.8)	This Study
Sandia Mountains, New Mexico	25.7 (13.2 – 50.1)	This Study
Spanish Peaks, Colorado	44.0 (32.1 – 55.8)	Apker et al. 2009
Lewis Ocean Bay, South Carolina	33.9 (22.9 – 44.8)	Drewry et al. 2013
Alligator River National Wildlife Refuge, North Carolina 2004	37.0 (30.7 – 43.2)	Tredick et al. 2009
Great Dismal Swamp National Wildlife Refuge, North Carolina and Virginia	46.0 (34.6 – 57.3)	Tredick et al. 2009
Alligator River National Wildlife Refuge, North Carolina 2003	57.0 (47.9 – 66.0)	Tredick et al. 2009
Pocosin Lakes National Wildlife Refuge, North Carolina 2002	58.0 (49.1 – 66.8)	Tredick et al. 2009
Pocosin Lakes National Wildlife Refuge, North Carolina 2003	77.0 (65.4 – 88.5)	Tredick et al. 2009

^a Black bear population sympatric with grizzly bears (*Ursus arctos*).



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Going into the 21st century: a perspective on trends and controversies in the management of the American black bear

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Abstract: We surveyed 52 jurisdictions across continental North America to gather comparative information on management strategies for American black bear (*Ursus americanus*) for the late 1980s and the start of the 21st century. Specifically, we asked about: population estimates and targets, harvest objectives and hunting methods (spring hunt, use of bait, use of dogs), hunter and harvest data, and trends in human–bear conflicts. Most population estimates were derived through a subjective process of extrapolation and expert opinion and were used as the basis for adjusting management practices. In 17 jurisdictions that had spring hunts, estimated black bear populations increased by 6%, compared to a 51% increase in the 21 jurisdictions with fall-only seasons. Estimated populations increased by 87% in the 14 jurisdictions without hunting seasons. Another 10 jurisdictions had reports of occasional transient bears but no resident population. Jurisdictions with liberal hunting regimes tended to maintain human–bear conflict at stable levels, whereas those with more restrictive regimes appeared to experience a growing trend. We suggest that the goal of management should be to balance the goals of maintaining viable black bear populations, safeguarding human welfare and property, and satisfying the needs of stakeholders in a cost-effective manner. Hunting and proactive education and awareness programs are keys to achieving that balance. By setting appropriate harvest objectives and hunting methods to regulate the density and distribution of black bears, in conjunction with measures to deter bears from associating people and dwellings with food, agencies should be better able to manage for human–bear conflict in the 21st century.

Key words: American black bear, animal care, animal rights, baiting, dogs, human–bear conflict, lethal and non-lethal control, management, pets, population estimate, spring hunt, trap-and-transport, *Ursus americanus*

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Prior to and during most of the 20th century, black bear (*Ursus americanus*) habitat across North America diminished and became fragmented (Hellgren and Maehr 1992) as agriculture and logging expanded, linear development (railways, powerline corridors, access roads) extended, and human settlements grew. Early settlers killed black bears indiscriminately for food and market value, as well as in defense of people, livestock, and crops (Alexander 1890, Cardoza 1976). However, during the 20th century, the value of wildlife and the need for active conservation became recognized through laws and policy (Reiger 1986, Miller 1990).

Estimated black bear populations in the United States grew by 13% from 1970 (Cowan 1972) to the late-1980s (Garshelis and Hristienko 2006) and were

considered stable by Miller (1990). Many factors likely contributed to the recovery and increase, including removal of bounties, reduced killing as ‘vermin,’ implementation of conservative hunting seasons and regulations (particularly the protection of females and cubs), hunting and firearm restrictions around communities, reduced hunter access to private land, and designation as threatened or endangered where applicable. In conjunction with reduced mortality, suitable habitat expanded through the natural succession of abandoned and converted farmland, logged and burned areas, and through increased availability of human-sourced foods such as garbage, birdfeed, and crops. Now that black bear populations have been restored over most of their range, the focus of management is shifting from increasing populations and providing recreational hunting opportunities to resolving issues

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brought about by abundance (Organ and Ellingwood 2000).

Concurrent with the expansion in numbers and distribution of bears and people, human–bear conflicts have increased, as evidenced by governments drafting policies and legislation to deal with problem bears, more scientific studies on the subject, and increased coverage in the popular media. Many of these issues (crop damage, vehicle collisions, and residential property damage) are similar to other human–wildlife conflicts; however, unlike most other wildlife species that conflict with people (with the exception of large cats, *Felis* spp.), black bears can be a threat to personal safety. These concerns have been fueled by media reports of bear–human encounters involving human injury, including 12 fatalities since 2000. These deaths account for 21% of all recorded black bear-related fatalities since 1900 (S. Herrero, University of Calgary, Calgary, Alberta, Canada, personal communication, 2006).

The objectives of this paper are: (1) to report on the status of black bear populations and their management in North America at the start of the 21st century, and (2) to offer our perspective on managing black bear populations as we move forward.

Status determination

Ten provincial, 2 territorial (Nunavut, Canada, was combined with the Northwest Territories for comparative purposes), and 49 state wildlife agencies in continental North America were contacted by telephone in 2002 to initiate contact and to identify which jurisdictions allowed hunting of black bears. Later that year, a survey was sent via email to identify hunting methods and trends in black bear populations and human–bear conflicts. In 2004, these jurisdictions were resurveyed to gain information on bear management planning, legal hunter harvests, and regulations concerning the feeding of bears.

The first survey was based on McLaughlin and Smith (1990), who summarized management strategies practiced by 41 jurisdictions in the late 1980s. Managers were asked to estimate population size and assess trend (stable, growing, declining) and severity of (manageable, serious, minimal) human–bear conflict during 1987–1989 and 1999–2001. Managers were asked to declare whether population estimates were based on empirical data (densities

derived from field research conducted within the jurisdiction) or educated guesses. Respondents were also asked to identify which harvest management practices (spring hunting, fall hunting, baiting, use of dogs) were in place during these periods and to summarize the number of nuisance complaints, bears relocated, bears destroyed, total compensation paid for damage caused by bears, and program delivery costs.

Subsequent contacts were made to resolve questions and to ensure that questionnaires were completed. In June of 2003, all respondents were asked to verify the accuracy of the tabulated responses from the 2002 survey.

A second survey was emailed to the same contacts in February 2004 asking whether their agency had a formal black bear management plan during 1985–2001, or by 2004, and if they had a black bear population management target, harvest objective, or both. In the absence of a management plan, the agency was asked if they followed an unwritten policy (as expressed by members of a regulatory board or in press releases by agency management). Agencies were also asked to identify any regulations prohibiting the feeding of bears, intentional or inadvertent, and the year they were enacted.

Each manager was asked to provide the following harvest data for each year from 1985 to 2001 inclusive; total males harvested, total females harvested, total harvest, and number of bear hunters. The average number of black bear hunters, black bears harvested, and the percent of female bears taken during 1987–89 and 1999–2001 inclusive was computed for each jurisdiction. In instances where data were not available for the periods requested, the closest 3 years of complete hunter harvest information (e.g., Michigan, 1990, 1991, 1992) was averaged. If a jurisdiction suspended a hunting practice, we summed hunter harvest data with equal intervals pre-and-post change (e.g., Colorado suspended baiting, spring hunting, and hound hunting in 1994 thus, we calculated pre-change as 1986–93 and post-change as 1994–2001).

Results

Responses to both email surveys were received from all 10 provinces, 2 territories and 49 states in continental North America. Twenty-two agencies (1 provincial and 21 state) reported no bear hunting season or no resident black bear populations.

Table 1. Hunting seasons, legal methods, estimated population sizes (as reported by provincial bear biologists), and current nuisance levels for black bears in Canadian provinces for the late 1980s and 2001.

Jurisdiction	Late 1980s			2001			Human–bear conflicts	
	Season ^a	Methods ^b	Population estimate ^c	Season ^a	Methods ^b	Population estimate ^c	Trend	Level
Alberta	both	bait	35.0–40.0	both	bait	35.0–40.0	stable	manageable
British Columbia	both	hounds	120.0–160.0	both	hounds	120.0–160.0	stable	minimal
Manitoba	both	bait	25.0–35.0	both	bait	25.0–35.0	stable	manageable
New Brunswick	both	bait	13.0–15.0	both	bait	14.0–16.0	growing	manageable
Newfoundland ^d	both	bait	8.0	both	bait	8.0	growing	minimal
NW Territories ^e	both	neither	>5.0	both	neither	10.0	stable	manageable
Nova Scotia	fall	bait	8.0–10.0	fall	bait	8.0–10.0	stable	manageable
Ontario	both	both	65.0–75.0	fall	both	75.0–100.0	growing	manageable
Quebec	both	both	60.0	both	bait	60.0	growing	manageable
Saskatchewan	both	bait	24.0–30.0	both	bait	35.0–40.0	stable	manageable
Yukon	both	neither	10.0	both	neither	10.0	stable	manageable

^aFall, spring, or both.^bBait, hounds, both, or neither.^cMultiples of 1,000.^dExcludes Labrador.^eNorthwest Territories, includes Nunavut.

Trends in black bear populations

Four of 11 Canadian jurisdictions reported increases in estimated bear populations (Table 1) between 1988 and 2001, although in 2 of those cases the estimated ranges overlapped. The remaining 7 jurisdictions reported stable population estimates. All of the Canadian jurisdictions except Prince Edward Island (where black bears have been extirpated) allowed some form of bear hunting.

Of 33 US states that reported resident black bear populations in both 1988 and 2001, 28 reported an increase in estimated abundance during that period (Tables 2, 3). Some states reported wide population ranges and others reported a single number without any estimate of variation. Three states reported a stable population over the interval and 2 states (Alabama, Montana) reported decreases. Fifteen states reported increases $\geq 100\%$ during the interval (Tables 2, 3). Nine states explicitly stated they used empirical data (Florida, Kentucky, Massachusetts, Minnesota, New Jersey, North Carolina, Pennsylvania, Utah, and Wisconsin) to derive their estimates. Methodologies used in the remaining jurisdictions ranged from fairly rigorous mark–recapture or modeling exercises using field data to educated guesses.

Trends in black bear management planning

Five of the 11 Canadian provinces and territories that hunted bears reported having a formal management plan by 2001 and 1 had a draft plan by

2004. Of the 6 provinces with management plans, 3 set population targets and harvest objectives and 1 set a harvest objective but no population target. The 2 remaining provincial management plans did not specify a population target or harvest objective.

Eighteen of 28 states that hunted bears reported having formal black bear management plans by 2001 and 21 states reported having a plan by 2004. Of these 21 states, 3 reported having a specific population target and harvest objective, 4 states had a population target but no harvest objective, and 1 state had a harvest objective but no population target. The 13 remaining state management plans did not identify a population target or harvest objective.

Harvest and hunters

Of 10 Canadian jurisdictions that had estimates of hunter numbers for both intervals (early: 1987–89, late: 1999–2001), only Nova Scotia reported increases from the early to late interval (Table 4). The decreases in the other 9 jurisdictions ranged from 2% to 210% (Table 4).

Eighteen US states had estimates of hunter numbers for both intervals (Table 5). Of those, 15 reported increases in estimated hunter numbers between the intervals, ranging from 14% to 238% (Table 5). In each state that prohibited baiting, spring hunting, hound hunting, or some combination of those methods (Colorado, Massachusetts, Oregon, Washington), hunter numbers increased by 32% to 112% for equal intervals, pre-and post

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Table 2. Hunting seasons, legal methods, estimated population sizes (as reported by state bear biologists), and current nuisance levels for black bears in US states for the late 1980s and 2001.

Jurisdiction	Late 1980s			2001			Human–bear conflicts	
	Season ^a	Methods ^b	Population estimate ^c	Season ^a	Methods ^b	Population estimate ^c	Trend	Level
Alaska	both	both	60.0–100.0	both	both	60.0–100.0	growing	manageable
Arkansas	fall	neither	2.4	fall	bait	4.0	stable	manageable
Arizona	both	hounds	2.0–2.5	both	hounds	2.0–2.5	stable	manageable
California	fall	hounds	20.0	fall	hounds	31.0	growing	manageable
Colorado	both	both	6.0–10.0	fall	neither	8.0–12.0	growing	manageable
Florida	fall	hounds	1.2–>1.8	no	neither	1.2–>1.8	growing	manageable
Georgia	fall	hounds	2.1	fall	hounds	2.2	growing	manageable
Idaho	both	both	20.0–25.0	both	both	20.0–25.0	stable	minimal
Maine	fall	both	19.0	fall	both	23.0	stable	manageable
Massachusetts	fall	hounds	<1.0	fall	neither	>2.0	growing	manageable
Michigan	fall	both	8.0–9.0	fall	both	19.0	growing	manageable
Minnesota	fall	bait	10.0–15.0	fall	bait	20.0–30.0	stable	manageable
Montana	both	neither	20.0–25.0	both	neither	20.0	growing	manageable
New Hampshire	fall	both	4.0	fall	both	4.9	growing	manageable
New Mexico	fall	hounds	4.8	fall	hounds	5.5	stable	manageable
New York	fall	neither	5.0	fall	neither	6.0	growing	manageable
North Carolina	fall	hounds	6.7	fall	hounds	10.7	growing	manageable
Oregon	both	both	22.0–27.0	both	neither	25.0–30.0	growing	minimal
Pennsylvania	fall	neither	7.5	fall	neither	15.0	growing	manageable
South Carolina	fall	hounds	0.3	fall	hounds	0.6	growing	manageable
Tennessee	fall	hounds	1.0	fall	hounds	2.0–2.5	growing	manageable
Utah	both	both	<1.0	both	both	3.0–3.5	stable	manageable
Vermont	fall	hounds	2.5	fall	hounds	3.5	growing	manageable
Virginia	fall	hounds	2.5–3.5	fall	hounds	5.0–6.0	growing	manageable
Washington	both	both	<20.0	both	neither	25.0–30.0	growing	manageable
West Virginia	fall	hounds	3.5–4.5	fall	hounds	12.0–15.0	growing	serious
Wisconsin	fall	both	8.1	fall	both	11.9	stable	manageable
Wyoming	both	bait	5.0–7.0	both	bait	5.0–7.0	growing	manageable

^aFall, spring, or both.^bBait, hounds, both, or neither.^cMultiples of 1,000.

change. Fourteen of 41 US states that reported having resident bear populations in 2001 did not allow any bear hunting, although Florida did have a hunting season in 1988 (Tables 2, 3). Since 2001, New Jersey (2003) and Maryland (2005) opened bear seasons after 33 and 50 year closures, respectively. For some states (Arkansas, Georgia, Idaho, Maine, North Carolina, New York, Virginia, Vermont), no separate bear hunting license or permit is required to hunt bears during some seasons, thus these hunter numbers may not encompass all hunters eligible to take bears.

In the 10 Canadian jurisdictions that had harvest estimates for 1987–89 and 1999–2001, 6 provinces reported increases, despite hunter numbers decreasing in 5 jurisdictions (Table 4).

Twenty-three of 26 US states that had estimates of total bear harvest for both intervals reported increases (Table 5). Arizona and Utah reported decreases in hunter numbers and harvest between

intervals, and Wyoming reported a decrease in hunter numbers and a relatively small increase in the average harvest (Table 5). Utah intentionally reduced the number of licences to reduce harvest. Two of the 3 states that banned hound and bait hunting (Oregon, Washington) reported 8% and 6% harvest decreases for equal intervals pre-and-post change, whereas Colorado reported a 28% increase. In Massachusetts, which banned hounds in 1996, the bear harvest increased by 26% between the pre-and-post intervals (377 and 476, respectively).

Although total big game license sales decreased by 1.5% in 18 US states between 1991 and 2001 (US Fish and Wildlife Service 2004), black bear license sales and harvest increased by 62% and 65%, respectively (Table 6). The trend in hunter numbers in Canada for the same period was reversed, decreasing by 40% while the harvest increased marginally by 2%. Black bear license sales in both countries represented <6% of total big game license sales.

Table 3. Estimated population sizes (as reported by state authority) and nuisance levels for black bears in jurisdictions without hunting seasons for the late 1980s and 2001.

Jurisdiction	Late 1980s	2001	Human–bear conflicts	
	Population estimate	Population estimate	Trend	Level
Alabama	200	50–100	stable	minimal
Connecticut		200	growing	manageable
Delaware		transients		
Illinois		no bears		
Indiana		no bears		
Iowa		transients		
Kansas		transients		
Kentucky	<100	<500	growing	manageable
Louisiana	<300	<500	growing	manageable
Maryland		250–450	growing	serious
Mississippi		<100	stable	minimal
Missouri		300–400	growing	manageable
Nebraska		transients		
Nevada		150–250	growing	serious
New Jersey	<300	1,400–1,800	growing	serious
North Dakota	<100	100–300	stable	minimal
Ohio		30–50	growing	manageable
Oklahoma		200–300	growing	manageable
Rhode Island		transients		
South Dakota		no bears		
Texas		<50	growing	manageable

Black bear hunting methods

Each of the 8 Canadian jurisdictions that allowed hunting bears with bait in 1988 allowed baiting in 2001 (Table 1). Baiting was mandatory in Nova Scotia. Ten of 11 jurisdictions in Canada allowed spring hunting in 1988, and 9 of 11 held spring hunts

in 2001 (Table 1). Ontario eliminated the spring season in 1999. Three jurisdictions allowed the use of hounds in 1988 (Table 1). In 2001, British Columbia and Ontario allowed hounds, but Quebec prohibited hunting with hounds in 1998.

Twelve of 28 states that hunted bears in 1988 allowed baiting (Table 2). In 2001, 10 of 27 states allowed baiting, with Colorado (1994), Oregon (1994), and Washington (1996) banning baiting and Arkansas permitting it in 2001. Eight states allowed at least limited spring bear hunting in 1988 (Table 2). In 2001, 7 of those states allowed some spring hunting whereas Colorado prohibited spring hunts in 1994. In 1988, 22 of 28 states allowed the use of hounds to hunt bears (Table 2). In 2001, 17 of 27 states allowed hunting with hounds, with Colorado (1994), Massachusetts (1996), Oregon (1994), and Washington (1996) enacting prohibitions on the use of hounds. Florida allowed hounds in 1988, but banned all bear hunting after 1993.

Human–bear conflict management

Ten jurisdictions provided partial or full compensation for damages to beehives, crops, or livestock caused by black bears. New Hampshire, West Virginia, Wisconsin, and Manitoba compensated for all these damages, whereas Pennsylvania and Ontario covered poultry, livestock, and beehives. Utah covered only livestock, Alberta and Colorado covered crops and livestock, Wyoming covered beehives and livestock, and Saskatchewan covered grain crops and beehives. California, Michigan, Minnesota, North

Table 4. Black bear hunter harvest data for Canadian provinces comparing the late 1980s with the early 21st century.

Jurisdiction	3 yr average (1987–1989)				3 yr average (1999–2001)			
	Hunters	Bear harvest	Harvest level ^a	female (%)	Hunters	Bear harvest	Harvest level ^a	Female (%)
Alberta	17,336	1,779	5	24	7,202	1,076	3	21
British Columbia	10,477	4,018	3	19	10,249	4,463	3	19
Manitoba	3,541 ^b	1,655 ^b	6 ^b	24 ^b	3,144	1,720	6	26
New Brunswick	4,834	966	6	41	4,351	1,715	11	34
Newfoundland ^c	4,375	457	6	3,267 ^c	334 ^c			
NW Territories			no formal harvest monitoring system					
Nova Scotia	225 ^d	62 ^d	1 ^d		647	233	3	26
Ontario	30,162	6,493	9	34	18,493	4,693	5	30
Quebec	22,877	2,844	5	36	7,400	3,696	6	30
Saskatchewan	4,784	1,379	5	30	4,365	2,158	6	31
Yukon	396	106	1	20	269	96	1	20

^aPercent harvested based on estimated population.

^b3-yr average is for 1987, 1988, 1990.

^cExcludes Labrador; 2001 only.

^d3-yr average is for 1988, 1989, 1990.

Table 5. Black bear hunter harvest data for US states comparing the late 1980s with the early 21st century.

Jurisdiction	3 yr average (1987–89)				3 yr average (1999–2001)			
	Hunters	Total harvest	Harvest level (%) ^a	Female (%)	Hunters	Total harvest	Harvest level (%) ^a	Female (%)
Alaska	Data not summarized on a state basis							
Arkansas	— ^b	62	1	55	— ^b	252	6	46
Arizona	4,701	240	11	43	4,290	227	8	46
California	11,048 ^c	1,331 ^c	7 ^c	36 ^c	18,495	1,724	6	41
Colorado	5,724	581	7	34	14,237	811	8	40
Florida	313	49	5	29	No season			
Georgia	— ^b	86	4	48	9,924	284	13	54
Idaho	14,467	1,201	5	34	^d	1,880	8	34
Maine	— ^b	2,579	14	46	13,130	3,779	16	45
Massachusetts	1,277	33	5	53	2,355	94	4	45
Michigan	4,370 ^e	1,016 ^e	12 ^e	39 ^e	7,208	1,902	10	42
Minnesota	5,400	1,666	13	42	16,067	4,151	17	44
Montana	11,048	1,331	7	36	18,495	1,724	6	41
New Hampshire	7,274 ^e	215 ^d	7 ^d	39 ^d	16,885	492	10	43
New Mexico	3,382	325	7	40	6,573	384	7	35
New York	— ^b	754	15	44	— ^b	852	14	41
North Carolina	— ^b	566	8	38	— ^b	1,463	14	40
Oregon	17,407	928	4		35,829	1,056	4	31
Pennsylvania	92,041	1,978	24	51	105,146	2,626	18	51
South Carolina	501	7	3	40	834	27	4	44
Tennessee	4,361	73	7	36	4,781	149	9	38
Utah	501	70	8	32	216	67	2	37
Vermont	— ^b	328	13	42	— ^b	476	14	42
Virginia	— ^b	589	20	37	16,063	930	17	34
Washington	12,220	1,443	7	36	32,858	1,228	4	33
West Virginia	6,792	384	10	41	21,243	1,190	9	37
Wisconsin	1,804	980	12	41	6,098	2,981	25	47
Wyoming	3,720	211	4	36	2,117	247	5	33

^aPercent of bears harvested of the estimated population.^bNo separate bear license.^c3-yr average is for 1987, 1988, 1990.^dNo surveys conducted.^e3-yr average is for 1990, 1991, 1992.

Carolina, Oregon, and Vermont all adopted policies to not relocate bears, but these jurisdictions may relocate transient bears in urban or suburban settings. California, New Jersey and Virginia practiced on-site treatment of problem bears, employing aversive conditioning during release.

Regulations governing the feeding of bears

By 2001, 2 jurisdictions in Canada (British Columbia, Yukon) and 12 in the US (Alaska, Arkansas, California, Colorado, Maryland, Montana, New Mexico, New York, South Carolina, Virginia, Washington, West Virginia) banned in-

Table 6. Change in black bear population estimates and harvest data in the United States and Canada between the late 1980s and the early 21st century.

Jurisdiction	3 yr average (1987–1989)					3 yr average (1999–2001)				
	Population	Bear hunters	Harvest	Harvest level	Female (%)	Population	Bear hunters	Harvest	Harvest level	Female (%)
United States ^a	155,950	193,571	12,812	9	40	227,150	313,727	21,080	9	40
Change (%)						46	62	65		
Canada ^b	405,500	99,007	19,759	5	29	434,500	59,387	20,184	5	26
Change (%)						7	–40	2		

^aArizona, California, Colorado, Maine, Michigan, Minnesota, Montana, New Hampshire, New Mexico, Oregon, Pennsylvania, South Carolina, Tennessee, Utah, Washington, West Virginia, Wisconsin, Wyoming.^bAlberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario, Québec, Saskatchewan, Yukon.

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tentional or inadvertent feeding of wildlife in a manner that could contribute to the habituation and food-conditioning of a bear. By 2004, 2 additional Canadian provinces (Alberta, Manitoba) and 4 more US jurisdictions (Florida, Kentucky, New Jersey, Pennsylvania) introduced anti-feeding regulations. In 2001, 10 jurisdictions (British Columbia, California, New Jersey, Michigan, Minnesota, New Hampshire, North Carolina, Oregon, Washington, Wisconsin) had formalized systems to document human–bear conflict which included a database to enter and retrieve data.

Perspective on black bear management Trends in populations

Management agencies have taken conservative approaches to managing black bears during what can be termed the population restoration phase of the latter half of the 20th century. This was due, in large part, to early research that portrayed the species as having one of the lowest rates of reproduction of any land mammal in North America (Jonkel and Cowan 1971), being among the slowest reproducing terrestrial mammals in the world (Bunnell and Tait 1981), and vulnerable to over-harvest (Bunnell and Tait 1980). More recently, research has indicated that some bear populations in the east and midwest are more productive than earlier reported, with most females having their first litters at 3 years old (some at 2 years) and a mean litter size for adult females approaching 3 cubs (Alt 1989, McLaughlin 1998, McDonald and Fuller 2001). Recruitment rates of around 1 cub per year, assuming 25–30% mortality (Bunnell and Tait 1985), are comparable to many hunted ungulate populations. Although most ungulates become reproductively mature at 1–2 years of age, their reproductive potential rarely extends past 15 years (V. Geist, University of Calgary, Calgary, Alberta, Canada, personal communication, 2006); black bears can successfully reproduce into their mid-twenties (Alt 1989, McLaughlin 1998, H. Hristienko unpublished data). For Manitoba, that means that >11,600 cubs are born each year if the black bear population has 25,000 animals, a female:male sex ratio of 55:45 (Pastuck 2001), 33% of females are available to breed in any year (Alt 1982), and an average litter size of 2.56 (Hristienko et al. 2004). Using an annual mortality rate of 18–47% for cubs (Kolenosky 1990)

results in an estimated 6,160–9,530 yearlings searching for a home range each year.

Pooled population estimates for North American black bear populations suggest a growth rate of 2% per year (Garshelis and Hristienko 2006) since the late 1980s. Decker et al. (1981) suggested that high bear populations will inevitably lead to human–bear conflicts because of the bear's attraction to human food sources, implying an association between the population densities of humans and bears. Because we are unlikely to be able to control the density and distribution of people, we are left with controlling the density and distribution of bears to reduce conflict between the two. That leads us to question: How do agencies manage black bear populations to sustain their abundance and distribution while maintaining them at levels that safeguard human welfare and property (wildlife acceptance capacity) in a cost-effective manner? By how agencies manage we mean not just philosophically in terms of how many bears there should be, but also mechanistically in terms of the practices employed to reach those goals.

Black bear management

Black bears are a long-lived species that occupy the top of the food chain and are capable of rapidly altering their behavior to adjust to environmental change (Ayers et al. 1986, Stirling and Derocher 1990). There is no evidence to show that black bear populations in settled areas of North America self-regulate or that bears dispersing beyond the periphery of their current range would fare poorly (Garshelis 1994). In fact, suburban woodland areas are becoming sanctuaries for bears, primarily because they provide food in the absence of significant perceived risks (to bears). A Nevada study attributed many traits of urban-interface bears to the availability of human foods, including the 70–90% smaller home ranges, 30% greater body mass, higher reproductive success, and later denning and slightly earlier emergence than wildland bears (Beckmann and Berger 2003a,b). Similarly, in New Hampshire and New Jersey, female bears occupying human residential areas had smaller home ranges than reported for bears in nearby less developed areas (Ellingwood 2003, MacKenzie 2003).

Animal-rights activists want no human interference through hunting, trapping, or problem animal destruction, so bears can 'naturally' seek their own population levels (R. Carmichael, Chair of Animal

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Use Committee, International Association of Fish and Wildlife Agencies [IAFWA], Winnipeg, Manitoba, Canada, personal communication, 2004). Both provincial and state wildlife management agencies and most animal-care organizations attempt to manage animal populations but use different means to achieve the same ends. Agencies manage free-ranging populations and attempt to provide human use within habitat limits (at or below biological carrying capacity), whereas animal-care organizations manage captive individuals based on the availability of space in shelters and homes (that is, at or below carrying capacity). In either case, when carrying capacity is exceeded, animals are removed by hunters or by a veterinarian or caregiver. Even with subsidized spaying and neutering programs, many pets are euthanized each year. The CBS News program *48 Hours* reported that in the US, 5 million domestic dogs and cats were deliberately killed in 2001.

If left unchecked, black bears can be a limiting factor to other species—moose (*Alces alces*) in Alaska (Osborne et al. 1991) and woodland caribou (*Rangifer tarandus caribou*) in Newfoundland (Mahoney et al. 1990). In the case of black bears living closely with people, bears can present the same type of nuisance situations as raccoons (*Procyon lotor*), foxes (*Vulpes* spp.), or uncontrolled pets (McLaughlin and Beck 1996). We believe public tolerance for these nuisances will erode and bear populations eventually will have to be controlled. This may be by hunters, by citizens (either legally or illegally), or by government agencies at public expense.

Lethal control

Hunting programs are usually structured to suit the demographics, geography, and local traditions of jurisdictions. The hunting methods permitted largely depend on hunter numbers, access, terrain, effectiveness, humaneness, public safety, and local culture, concurrent with species population dynamics (distribution, density, behavior, reproduction, recruitment, longevity, and natural mortality), all filtered through the lens of politics.

In addition to generating revenue to support wildlife conservation programs, provincial and state wildlife agencies view hunting as “a safe, legal, responsible use of the wildlife resource and a legitimate and effective means to control over-abundant game species in a cost-effective manner” (Wolgast et al. 2005:19). Hunting has been embraced by agencies as a core element of what is termed the North

American model of wildlife conservation (Prukop and Regan 2005). A well-managed harvest system achieves a sustained yield and places a positive value on black bears in terms of economic, social and biological benefits. The alternative to a goal-driven hunting program is often a reactive, individual-based approach to dealing with nuisance bears (McDonald 2003). Hunted populations seem to be more wary of humans (McCullough 1982, Herrero 1985, Swenson 1999) than unhunted populations.

Provincial and state human demographics appear to have a greater effect on hunting seasons than biological factors. We identified an east and south versus a west and north division, and urban jurisdictions tend to have more restrictive hunting regimes than jurisdictions with largely rural populations (Fig. 1). Estimated bear number increases were greater (87%) in the 14 jurisdictions that had resident populations but did not permit hunting than in jurisdictions that did permit hunting: 51% in the 21 jurisdictions that had only a fall-season and 6% in the 17 jurisdictions that had both spring and fall seasons (Fig. 2). We recognize that the estimates provided by managers were not always based on precise methodology and thus do not reflect absolute population trends (Garshelis and Hristienko 2006), and that some of the increases may have been by design. However, these estimates serve a management purpose and are necessary for adjusting bear harvests according to a perceived population trend.

Pennsylvania, Virginia, and Wisconsin all reported increasing bear populations and subsequent conflicts even though harvest rates in recent years were >20%. Previously, losses to hunting of 8% (Kolenosky and Strathearn 1987) and 14.2% (Miller 1990) were thought to be excessive for Ontario and North America, respectively.

Western and northern populations, where food is less abundant and hard mast often absent, certainly may need to be managed more conservatively than eastern populations. However, to reduce the high levels of human–bear conflict in many jurisdictions, harvest objectives to reduce or stabilize bear populations will need to be increased. This will require wildlife management agencies to change their philosophy *vis a vis* black bears from restoration to management (McDonald 2003). Even if these higher harvest objectives are significantly exceeded in a year, few bear populations should be at any serious risk. Through harvest monitoring and knowledge of population dynamics, agencies should be able to



Fig. 1. (a) Hunting season strategies across North America and the associated trend in human–black bear conflicts, 2001. (b) Range of black bear population estimates and growth in North America within associated management strategies, 2001.

respond quickly by reducing harvest objectives as has been demonstrated in some states (New Hampshire; M. Ellingwood, New Hampshire Department of Fish and Game, Concord, New Hampshire, USA, personal communication, 2006).

Opponents of bear hunting argue that hunting is not effective at reducing human–bear conflicts because of the low probability that hunters will kill the bears that actually cause problems, and that hunters preferentially target large males. By removing 1–5-year-old bears, the age group responsible for >70% of all reported nuisance conflict (Garshelis 1989, Shull 1994, Landriault 1998, Brown and Hamr 1999) and which are represented in the same proportion in most populations and harvests (Shull 1994, H. Hristienko unpublished data), managers are being proactive in addressing the

density and distribution aspect of the human–bear conflict issue.

Because variability in bear complaints is related to so many factors, it is difficult to arrive at a specific cause-and-effect relationship to explain large swings in nuisance activity from one year to the next. That said, New Jersey reduced bear complaints by 42% in 2004, the year after its first bear hunt in 33 years (Wolgast et al. 2005). With fewer bears, it is natural to assume that there would be fewer human–bear interactions resulting in fewer complaints. Although some nuisance bears are killed during a regulated hunting season, thereby eliminating further problems, many nuisance bears are relatively invulnerable to hunters because of access and firearm restrictions in and around communities. We believe hunter access will soon be (if it is not already) one of the

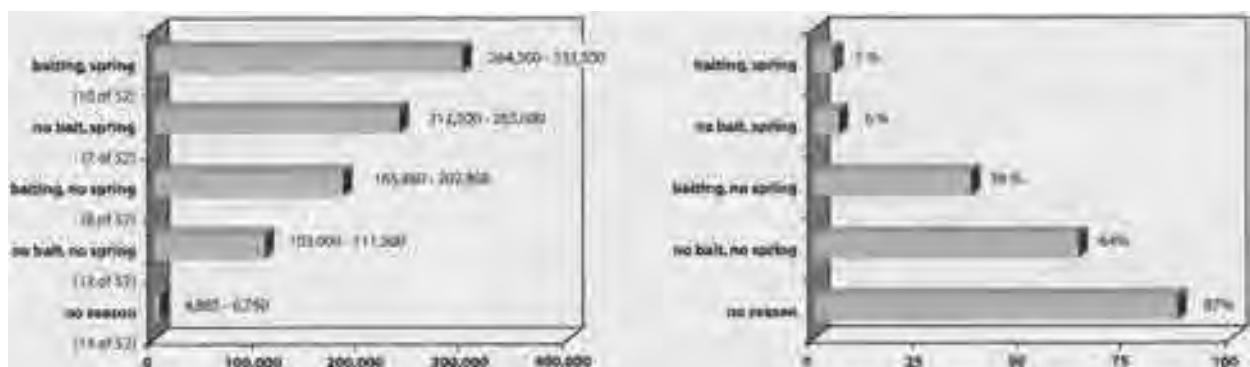


Fig. 2. Range of black bear population estimates and growth in North America within associated management strategies, 2001.

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largest obstacles to resolving the most controversial bear population management situations, as it is for white-tailed deer (*Odocoileus virginianus*) management.

Opponents of bear hunting further condemn the practice on ethical grounds and claim it is unnecessary to manage populations. Animal-rights activists, frustrated in most broad attempts to curtail hunting through legislative, judicial, and agency regulatory routes, have adopted a strategy—often using the ballot initiative where available—of challenging elements of hunting that research has identified as most offensive to or least understood by non-hunters, that is, claiming that hunters only seek a trophy, that it is unsafe, that baiting is unsporting, that the use of dogs is cruel, that spring hunting is unfair, or that shooting mothers orphans their cubs. (Pacelle 1998).

Bear hunting methods

Baiting. It is important to distinguish between using attractants to lure bears in hunting situations and the deliberate or inadvertent luring of bears in nuisance situations. Baiting for the purpose of hunting typically occurs in forested habitat, removed from direct interaction with humans, and bears in these situations tend to be secretive and wary whereas bears that interact with humans in suburban settings can become habituated and food-conditioned as they learn to associate humans and food without negative consequences. Habituated bears may become increasingly brazen to the point of being aggressive when they learn humans can be intimidated, as has been demonstrated with coyotes (*Canis latrans*) and mountain lions (*Felis concolor*) (Timm et al. 2004). Swenson (1999) concluded that if bears are to maintain their wariness of humans, human-derived foods must not be available to them.

Opponents of baiting argue that it epitomizes unfair chase, it causes littering problems, promotes the transmission of disease, conditions bears to become nuisances, and increases bear vulnerability to hunters. Proponents of baiting argue that it enhances the safety of hunters and non-hunters (particularly where elevated stands are used), is appropriate for settings where visibility is limited and spot and stalk hunting is impractical, helps maintain consistency in the number of bears harvested annually, distributes hunting pressure rather than leaving large tracts of difficult (from a hunting perspective) habitats unharvested and

optimal habitat overhunted, can target the male segment of the population, can increase selectivity against females accompanied by cubs, improves the opportunity for a humane kill, can increase harvests where chronic depredation or other human–bear conflict is common, and provides opportunities for hunters to experience and photograph all types of wildlife. All these points must be considered by agencies when developing an effective harvest strategy to meet management objectives.

Animal-rights activists argue that baiting bears is antithetical to hunting, while others oppose baiting on the grounds that they believe the practice preconditions bears to foods associated with humans. Paquet (1991:2) conceded that for the Riding Mountain area of Manitoba there was “no evidence that bears exposed to baits become problems in campgrounds, agricultural areas, or residential developments.” McLaughlin, in a 1996 *Outdoor Life* article, demonstrated that in Maine, where baiting typically accounts for about 75% of the harvest (Vashon and Cross 2005), bears were not conditioned to become nuisances. D. Garshelis (Minnesota Department of Natural Resources, Grand Rapids, Minnesota, USA, personal communication, 2003) has not seen evidence from capture studies in Minnesota to implicate baited bears in nuisance activities; to the contrary, nuisance bears are not the ones that have been captured repeatedly. Both Garshelis and H. Reynolds (Alaska Department of Fish and Game, Anchorage, Alaska, USA, personal communication, 2003) theorized that if baiting and nuisance behavior are linked—that is, baiting spurs bears to become nuisances, but baiting also attracts nuisance-prone bears—then, in a heavily hunted population, baiting may remove more nuisance animals than it creates.

G. Vautour (Ontario outfitter, Massey, Ontario, Canada, personal communication, 2003) speculated that prior to the cancellation of the spring bait hunt in Ontario, 2,000 registered tourist outfitters each put out a minimum of 4,500 kg (10,000 pounds) of bait in addition to what was placed by resident hunters. The removal of >9 million kg (20 million pounds) of food, at a time of the year when it is difficult for bears to find energy-rich foods, forced bears to seek food elsewhere. He speculated that baiting stations in the spring served as intercept feeding sites (where food is placed to lure animals away from other areas) delaying dispersal until natural foods are available. In central Ontario, all

incidents of nuisance behavior by bears that were trapped and collared at bait sites began after hunters suspended baiting activities in spring, supporting the theory that baited bears depended on bait as a spring food (Landriault 1998).

During 1995–98, prior to the 1999 cessation of the spring bait hunt in Ontario, a few resource offices received a total of 2,600 nuisance bear complaints. During 1999–2002, post cancellation, these same offices received 12,426 calls (T. Quinney, Ontario Federation of Anglers and Hunters, Peterborough, Ontario, Canada, personal communication, 2005). For Manitoba, the figures for the same periods were 5,850 (average = 1,463; range = 739–2,295) and 5,838 (average = 1,459, range = 1,102–1,809). For the same periods, the numbers of bears harvested were 26,886 and 18,920 in Ontario, and 6,424 and 6,899 in Manitoba. Responding to mounting pressure to protect its citizens from nuisance bears, Ontario invested \$10 million (Canadian) during the 2 years after introducing a comprehensive nuisance bear management strategy in 2004 to reverse the trend of increasing human–bear conflicts.

We believe that baiting can be used to achieve harvest objectives in and around developed areas, perhaps even using feed mixtures specifically formulated for bears to reduce the association of people and anthropogenic foods. In our opinion, hunting from elevated stands over bait may be the most effective and safest way to hunt bears in developed areas because baiting can be used to attract bears to areas outside restriction zones or onto the land of willing landowners. Hunters are forced to take short distance shots at stationary targets with all shots from the elevated stands being directed into the ground, and bait sites can be marked to alert non-hunters to their presence (McDonald 2003).

Spring hunting. A key question regarding the ability of hunting to manage human–bear conflict is how will the season of hunt (spring versus fall) affect the number of human–bear conflicts if a given number of bears are to be killed by hunters to limit population growth? By reducing the density of bears in the spring, agencies are being proactive in addressing the density and distribution of bears before the peak problem bear season, which in Manitoba is mid-July–early September (H. Hristienko unpublished data). In years when there is an abundance of natural foods in the fall, hunting success can be reduced (Noyce and Garshelis 1997). In Minnesota, which allows baiting, hunting success

ranged from 26% (in 1994) to 43% (in 1995) from 1984 to 1995. In 2002, a year in which the fall food index was deemed high, hunting success was 14% (Garshelis 2005). Additionally, whatever population reduction gains are achieved in a fall-only season will be offset by the assimilation of dispersing yearlings the following summer.

Opponents of spring hunts contend that hundreds of cubs are orphaned (Kerr 1999) and starve when their mothers are killed (Animal Alliance of Canada 1999). All jurisdictions that have spring hunting seasons prohibit the killing of cubs or females accompanied by cubs of the year during those hunts. Manitoba demonstrated that <8% of harvested females (representing 2% of the total annual harvest) showed evidence of placental scars from the year of harvest (indicating that the female had given birth to cubs that year). Although some orphaning does occur, the number is negligible (<2%) compared to cub mortality from natural causes (Hristienko et al. 2004). In Ontario, 40% of cubs orphaned after 24 May survived until hibernation (G. Kolenosky and S. Strathearn, 1987, Survival and movements of orphan and non-orphan black bear cubs in east-central Ontario, Ontario Ministry of Natural Resources, Maple, Ontario, Canada) as did 40% of cubs orphaned after 18 June in Virginia (M. Vaughan, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, USA, unpublished data, 2002).

Spring seasons can have less effect on bear population dynamics than seasons in the fall primarily because the spring harvest is largely composed of males (Jolicoeur 1997; Hristienko et al. 2004; H. Reynolds, personal communication, 2003). For this reason, Utah reinstated a statewide spring bear season in 2006 after a 14-year closure (C. McLaughlin, Utah Division of Wildlife Resources, Salt Lake City, Utah, USA, personal communication, 2006).

In addition to reducing the density and distribution of black bears before the peak of the problem bear season, hunters in a regulated spring bait hunt can take advantage of sparse vegetation that increases the detectability of cubs and can select against nursing females because they tend to be less mobile and avoid areas of disturbance. Further, spring hunts support a rural economy and the tourism industry at a time of the year when few other opportunities are available and offers hunters the opportunity to take bears when their coats are prime and when the animals are leaner and their meat more palatable than in the fall (Hristienko et al. 2004).

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Use of dogs. Early settlers used dogs to find and bring bears to bay, and hunting with dogs made bears more timid (Alexander 1890). Today, several arguments have been put forward to oppose the continued use of trained dogs to hunt black bears. First, it is claimed that the use of dogs provides an unfair advantage for hunters and causes psychological and physical trauma to bears not ultimately killed. Techniques such as the use of radiocollars on dogs and relaying of dogs (i.e., rotating fresh dogs on to the track of a bear already being pursued by dogs) are cited as support for the unsporting claim. Second, dogs in pursuit of a bear do not respect property lines, thus trespass becomes an issue. Third, pursuing hounds may harass non-target wildlife species and sometimes catch and injure bears on the ground, particularly cubs. And finally, the dogs themselves are subject to injury from the chased bear.

Although dogs provide an advantage to the hunters, as evidenced by comparing success rates of hunters using dogs and still hunters, using dogs does not guarantee that a bear will be located, tracked, and ultimately killed. Many variables figure into the ultimate success of a hunt behind dogs, including the age of the track, weather conditions, terrain, and the condition of the dogs. Individual bears behave differently when pursued by dogs. Some are clearly agitated even when treed, but others are able to maintain comfortable distances between themselves and the dogs, periodically stopping to determine if the dogs are closing on them. Some treed bears apparently feel secure, even relaxed, and may even sleep, while dogs are baying at the bottom of the tree (Auger and Black 1995:149). Thus, it is difficult to determine just how much psychological trauma bears endure from being pursued by dogs. Pursuit during hot weather can certainly lead to physical stress on bears and dogs alike; however, most hunting seasons occur when hot weather is atypical. Bear-dog encounters on the ground can result in physical harm, usually to the dogs.

Using radiocollars on dogs allows hunters to locate lost dogs when a chase has ended and to stay in contact with the dogs when they are out of hearing range. This contact can allow hunters to determine if dogs are getting close to roads or other human activity (or vast roadless areas where contact with the dogs may be difficult to maintain) and intercept them if necessary (Elowe 1990). Use of radiocollars also helps avoid trespass or at least to resolve the

issue more directly by allowing the hunter to know where the dogs are and demonstrate to a landowner or enforcement official the ability to retrieve them. Hunting with hounds, like baiting, allows hunters to be selective when deciding whether to kill a bear because typically there is time to assess the sex and relative size of a treed bear. Further, treed bears provide relatively stationary targets allowing for good shot placement.

Non-lethal control. Human-bear conflict can be greatly reduced through non-lethal measures such as bear-proof waste management systems; electric fencing around dumps, bee hives, crops and gardens; modifying placement or configuration of field crops; and using aversive conditioning to train first-time offenders to keep away; these all reduce bear access to food and other attractants. Unfortunately, once a bear becomes habituated to humans, the removal of attractants may not change behavior (McCullough 1982).

When a bear becomes a nuisance, which for many may simply mean its presence, the public often demands action. Reactive programs, such as trap-and-transport of problem bears, do not necessarily resolve the problem because relocated bears take with them the habits they learned, and if the food incentives remain at the original site, other bears will be enticed into the same behavior, especially offspring of habituated family groups. Removing the bear without addressing the attractant (McArthur 1981) perpetuates the cycle. Finding unoccupied areas where bears can be released without being a nuisance is difficult given that the recommended distance a bear needs to be relocated is about 60 km (straight line distance) to achieve an 80% likelihood of it not returning (Alt et al. 1977, Rogers 1986, Shull 1994, Landriault 1998). It is too early to say whether aversive conditioning trains bears to stay away from human food sources. Because methods, definitions, application, evaluation, and definition of success vary, research is now being conducted to assess the availability, effectiveness, and feasibility of non-lethal means to alleviate nuisance situations, and if effective, to develop standards.

Opponents of lethal control argue that fertility control is a viable alternative. Problems with this option for black bears include the lack of approved chemical or biological sterilants for free-ranging bears, and lengthy and costly program implementation because bears would need to be handled or remotely injected to receive treatment. Further,

treated nuisance bears would likely continue to be nuisances, and dispersing bears would probably be unaffected (US Department of Agriculture et al. 2002). The National Park Service (2006) rejected the use of contraception alone to control non-native deer (*Axis axis*, *Dama dama*) in Point Reyes National Seashore, California. Their preference is to use lethal removal with long-acting contraceptives. Even in combination, their population modeling predicted it will take 15 years to achieve target population levels and will require considerable investment. Fraker et al. (2006) concluded that for New Jersey, fertility control would be difficult, expensive, and almost certain to fail.

Human–bear conflict. Black bears have adapted to thrive in landscapes with human activity for a variety of reasons (Ternent et al. 2001). What may once have been prime bear habitat, with seasonally abundant natural foods, may now be replaced with a higher quality and more dependable year-round food supply—garbage, bird feed, fruit trees, gardens, beehives, compost, and pet food. During late summer and autumn, depending on latitude, bears enter hyperphagia, a stage when fat reserves are accumulated for hibernation through increased food intake, from 8,000 kcal/day to 15,000 to 20,000 (Nelson et al. 1983). Because a bear's feeding strategy is to obtain the most calories with the least amount of effort, it seems logical that a bear would readily adapt to finding and consuming anthropogenic foods rather than foraging extensively for lower-reward natural foods, especially when there is little risk involved in acquiring them. To achieve 20,000 kcal a day, a bear would need to consume 36 kg (80 pounds) of fruit or 3 kg (6.6 pounds) of nuts, which equates to 8½ cheese pizzas, or 25 hamburgers, or 3.5 kg (7.7 pounds) of sunflower seeds.

Will (1980) reported that at that time, most states handled <50 complaints/year, citing human carelessness, ignorance, and fear at the root of most problems. Those causes still apply today as do the following 4 concerns he identified with respect to human–bear conflict: it requires significant time and resources from understaffed wildlife units, which takes away resources for other programs and activities, it lessens the stature and value of the black bear, it degrades the credibility of wildlife agencies when, in the public's view, inappropriate actions are taken, and destroying nuisance animals is a contradiction in the conservation of wildlife.

Peine (2001) reported that in most cases it took 10 to 25 years for communities to formulate policies concerning nuisance bears, often being triggered by human tragedy. He specified the unwillingness by people to modify their behavior (i.e., not my problem) and the costs associated with such programs as reasons for the lengthy process.

In the absence of population control measures in and around communities within bear-occupied habitat, negative interactions between humans and bears are expected to rise unless human behavior is changed. To achieve the most effective and long-lasting solution in preventing conflict with bears, residents and visitors will need to accept responsibility for making their properties and communities less inviting to bears, rather than responding to a bear that has already gained access to human-sourced foods or adapted to their availability. By eliminating and securing all scent (such as bird feed) and visual (such as bird feeders) attractants, conflict can be reduced significantly in years of normal natural food, reducing risk to the public (with respect to personal safety and property) and bears and lowering costs to all levels of government for problem bear control. In years when natural foods are scarce, however, significant human–bear conflict should be anticipated. Governments can mitigate these conflicts to some extent by providing counsel and limited partnered-funding opportunities, but the impetus for long-lasting change and durable solutions must originate in the affected communities.

Models for reducing conflict with bears can be found in Canmore, Alberta, and Juneau, Alaska, as well as at several national parks in Canada and the USA. Their successes resulted from investment in animal-resistant waste management systems and enforcement of garbage and anti-feeding ordinances. Civic governments and their residents acknowledged and accepted shared responsibility for the problem and had the will to find and implement the necessary measures to reduce conflict.

Management implications

Population management through conservative hunting seasons and regulations has not kept pace with the reproductive ability of the American black bear. We believe treating the symptoms of human–bear conflict will meet with limited success in

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reducing those conflicts if bear populations are concurrently allowed to increase.

We can no longer explain away problem bear issues as being directly related to the abundance of natural foods (Poulin et al. 2003)—the more natural food, the fewer problems. Though it is safe to say that there will be fewer human–bear conflicts in years of abundant natural food, these bumper crops do not occur frequently—nor do crop failures. Records from Manitoba indicate that during 1995–2006, there were 2 years of abundance, 2 years of poor production, and 8 average years (H. Hristienko unpublished data). If the density of bears is above an average year's carrying capacity, then one would expect the trend in problem occurrences to be above the long-term average as bears travel in search for food or to remain stable to lower if the population is at or below carrying capacity. In Arkansas, Shull (1994) found that reproduction and recruitment better explained fluctuations in levels of human–bear conflict than did variation in food production and availability. For years in which recruitment of 2-year olds is atypically large, this influx could be the result of synchronized reproduction brought on by food failure (McLaughlin et al. 1994, Poulin et al. 2003) or it could be a function of a reduction in the age of first reproduction (from 5 to 4) due to a high food index in the year of reproduction or an increase in average litter size coupled with low mortality. If the former applies, one should expect a reduced cohort following the year of food failure. If not, the latter seems more plausible.

We should also no longer assume that female black bears need to be protected because they have such low reproductive capacity. Garshelis (1994:9) stated “increased mortality of dispersing sub-adult males would not be sufficient to regulate population size (true density-dependence), unless there were also repercussions for females.” By reducing the non-reproducing segment of the female component of a population (females without cubs), recruitment potential would be moderated. In some jurisdictions, harvests comprised of 40% females ($\leq 20\%$ being adults; Poulin et al. 2003) and harvest rates $>20\%$ appear to be sustainable. Managers will need to educate the public, including hunters, about the usefulness of female harvests to control bear populations before the killing of females without cubs in the spring or with cubs in the fall is accepted. As this continues to be true in the case of white-tailed deer management, this will be an ongoing campaign.

Groups opposed to hunting or to the lethal removal of bears often advance their position through emotional appeal and unsubstantiated, sensationalized, or flawed claims (Ugalde 1991). The reporting of such claims in the press and governments' varied responses (or lack of response) to them can lend credence to these claims and do a disservice to the greater public who have consistently identified a desire to be informed with empirical information (Campbell et al. 2001). Managing authorities should investigate all claims of non-lethal population control that are backed by peer-reviewed data and refute unsubstantiated claims.

Wildlife management authorities will continue to determine population targets at a large scale, but communities need to become involved in determining the levels of bear presence and types of conflict they are willing to tolerate. A considerable challenge for government is achieving local agreement and support for a management strategy that attempts to achieve a tolerance target. This is not a simple matter, given the complex variables involved, including often diametrically opposed public opinion (e.g. on non-lethal versus lethal measures, leave them alone versus not in my backyard), costs, safety concerns, and access and firearm restrictions.

A bear population management regime based on public hunting and guided by science should enable a jurisdiction to achieve its objectives of minimizing human–bear conflict while maintaining costs at manageable levels. However, if an informed public deems the significantly higher costs associated with maintaining bear populations at high levels justifiable, is willing to cover those costs from sources other than hunting license revenues, is willing to tolerate increased numbers of encounters in co-existence with bears, and does not burden wildlife agencies with liabilities associated with injuries or damage caused by an abundance of black bears, then those agencies may be required to maintain programs that attempt to manage conflict in the absence of bear population control. In situations where hunters simply are not able to kill enough bears to meet population goals, then capturing and destroying problem bears may be justifiable if adjoining bear populations are already managed near biological carrying capacity.

Human–bear conflict, real or perceived, will occur wherever humans and bears occupy the same space, at any bear density. The management of black bears

in the 21st century will require a 2-fold approach: an integrated management regime that uses public hunting to regulate the density and distribution of bears and removes individual nuisance bears, along with an aggressive education and political program that informs the public about what can be done to deter bears from associating people and dwellings with food, implements bear-proofing measures, and enacts and enforces bear-proof garbage storage and anti-feeding regulations.

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Research Article

Estimates of Abundance and Harvest Rates of Female Black Bears Across a Large Spatial Extent

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ABSTRACT American black bears (*Ursus americanus*) are an iconic wildlife species in the southern Appalachian highlands of the eastern United States and have increased in number and range since the early 1980s. Given an increasing number of human-bear conflicts in the region, many management agencies have liberalized harvest regulations to reduce bear populations to socially acceptable levels. Wildlife managers need reliable population data for assessing the effects of management actions for this high-profile species. Our goal was to use DNA extracted from hair collected at barbed-wire enclosures (i.e., hair traps) to identify individual bears and then use spatially explicit capture-recapture methods to estimate female black bear density, abundance, and harvest rate. We established 888 hair traps across 66,678 km² of the southern Appalachian highlands in Georgia, North Carolina, South Carolina, and Tennessee, USA, in 2017 and 2018, arranged in 174 clusters of 2–9 traps/cluster. We collected 9,113 hair samples from those sites over 6 weeks of sampling, of which 1,954 were successfully genotyped to 462 individual female bears. Our spatially explicit estimator included a percent forest covariate to explain inhomogeneous bear density across the region. Densities ranged up to 0.410 female bears/km² and regional abundance was 5,950 (95% CI = 4,988–7,098) female bears. Based on hunter kill data from 2016 to 2018, mean annual harvest rates for females were 12.7% in Georgia, 17.6% in North Carolina, 17.6% in South Carolina, and 22.8% in Tennessee. Our estimated harvest rates for most states approached or exceeded theoretical maximum sustainable levels, and population trend data (i.e., bait-station indices) indicated decreasing growth rates since about 2009. These data suggest that the increased harvest goals and poor hard mast production over a series of prior years reduced bear population abundance in many states. We were able to obtain reasonable population abundance and density estimates because of spatially explicit capture-recapture methods, cluster sampling, and a large spatial extent. Continued monitoring of bear populations (e.g., annual bait-station surveys and periodic population estimation using spatially explicit methods) by state jurisdictions would help to ensure that population trajectories are consistent with management goals. © 2021 The Wildlife Society.

KEY WORDS abundance, American black bear, density, harvest, southern Appalachian highlands, spatially explicit capture recapture, *Ursus americanus*.

American black bears (*Ursus americanus*) are economically important, play a vital ecological role in sustaining healthy ecosystems, and are an iconic wildlife species in the southern Appalachian highlands of the eastern United States. Although bears were historically abundant in the region, their numbers declined through the 1800s into the mid-1900s because of habitat loss and unregulated hunting. Black bears were considered rare in many parts of the southern Appalachian region until as late as the 1970s, but bear numbers and their range have increased since that time because of protection and habitat recovery. Annual hunter

harvest and human bear conflicts in the mountains of Georgia, North Carolina, South Carolina, and Tennessee, USA, have increased at a steady pace (Fig. 1). Regulated hunting is the primary tool state agencies use to manage bear populations and, given the increasing number of human-bear conflicts in the region, many management agencies have liberalized harvest regulations as a mechanism to reduce bear populations to socially acceptable levels (Hristienko and McDonald 2007, North Carolina Wildlife Resources Commission 2012, Balkcom et al. 2019). Thus, managers need reliable population data for assessing the effects of management actions for black bears.

The Tri-State Bear Study Group, an informal association of university, federal, and state wildlife professionals from Georgia, North Carolina, and Tennessee, was formed in the

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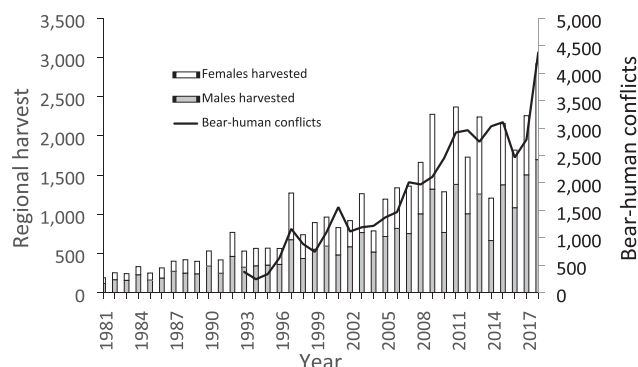


Figure 1. Black bear hunter-kill and reported bear-human conflicts from the 4-state southern Appalachian region (GA, NC, SC, TN, USA), 1981–2018 (Southern Appalachian Black Bear Study Group, unpublished data).

late 1960s in part to develop a regional bear monitoring strategy (Carlock et al. 1983). The group has since grown to include agencies from South Carolina, Virginia, and Kentucky, USA, and is now known as the Southern Appalachian Black Bear Study Group (SABBSG; Tennessee Wildlife Resources Agency 2020a). Various monitoring methods have been employed and coordinated across jurisdictional lines by the group. These methods include bait-station surveys, hunter harvest reporting, and hard mast surveys (Carlock et al. 1983, Brongo et al. 2005, Clark et al. 2005). Bait-station surveys consist of a series of baits established and later checked for evidence of a bear detection (e.g., claw or bite marks), which is used as a measure of relative abundance for monitoring long-term trends across broad areas (Miller et al. 1994, Rice et al. 2001, Clark et al. 2005). Oak (*Quercus* spp.) mast survey data have been collected across the region by state and federal agencies as a measure of annual production of this important bear food (Whitehead 1969, Wentworth et al. 1992, Greenberg and Warburton 2007). Though these techniques provide useful information, all have shortcomings, and none provide reliable estimates of bear population abundance for calculating harvest rates. Thus, better methods for monitoring natural population fluctuations and assessing the effects of management actions across large spatial (i.e., jurisdictional) extents are needed given the stressors on the bear population and the demands by the public that bears are managed according to the best available science.

Individual bears can be identified with DNA from hair samples collected from barbed wire surrounding sampling sites baited with small food rewards or scent attractants (Woods et al. 1999, Mowat and Strobeck 2000, Boersen et al. 2003). Individual capture histories can be constructed from which detection probability and, consequently, population abundance and density can be estimated. Settlage et al. (2008) used hair sampling to estimate black bear population abundance in 2 small study areas that included parts of the southern Appalachian highlands in South Carolina and Tennessee. Based on their trap-site densities in the 2 areas, they estimated that 5,517 hair traps would be needed to estimate population size in a 32,000-km² area in

the southern Appalachian region. Because of the labor and expense involved, Settlage et al. (2008) concluded that a region-wide population estimate would not be feasible.

Spatial heterogeneity in detection probabilities can occur when animals have different access to traps depending on their location in the sampling grid. This form of individual capture heterogeneity can lead to underestimates of population abundance. Methods have since been developed that explicitly account for spatial heterogeneity in capture probabilities (Efford 2004, Borchers and Efford 2008, Royle et al. 2014). These spatially explicit capture-recapture methods incorporate when an animal is captured and where it is captured to estimate detection probability and the location of each animal's activity center. The estimator fits a detection function assuming capture probabilities decline the farther a trap is from the animal's center of activity. These data allow for estimation of the spatial distribution of the animals that were captured and the animals that were not. There is no requirement that all animals have equal or even non-zero detection probabilities, and Efford and Fewster (2013) reported that spatially explicit models were robust to gaps in detector spacing and heterogeneous animal distributions. That finding allows for efficient cluster sampling designs consisting of a series of clusters arranged systematically across a defined study area. Such cluster sampling has since been evaluated and reported to be a reliable method for estimating abundance and density across extensive areas given appropriate trap spacings (Sollmann et al. 2012, Efford and Fewster 2013, Sun et al. 2014, Clark 2019). Furthermore, spatial covariates (e.g., land cover data) can be used to help explain variation in density across large and diverse spatial extents (Royle et al. 2014, Efford 2020). Humm et al. (2017) reported that cluster sampling in Florida, USA, provided reliable estimates of black bear densities in areas ranging from 5,295 km² to 13,025 km². Howe et al. (2013) and Clark (2019) reported that population estimates over even larger spatial extents can result in improved precision and reliability compared with estimates for smaller areas.

Our objective was to estimate population abundance and density of female black bears in the southern Appalachian highlands of Georgia, North Carolina, South Carolina, and Tennessee and, based on that information, use hunter-kill data to estimate hunter harvest rates by state jurisdiction. Our focus was on estimating numbers of females because of ease of estimation and cost savings and because female bears are most critical to long-term population growth and sustainability.

STUDY AREA

Our study area was composed of privately and publicly owned land in the southern Appalachian highlands of Georgia, North Carolina, South Carolina, and Tennessee, including Great Smoky Mountains National Park (GSMNP) and Chattahoochee, Cherokee, Nantahala, Pisgah, and Sumter national forests. Terrain in the region is mountainous, ranging up to 2,037 m in elevation at Mount Mitchell in North Carolina, and rugged, characterized by a mosaic of steep

slopes and ridges. The southern Appalachian highlands are composed of the Blue Ridge, Ridge and Valley, and Piedmont physiographic regions and the geology consists of folded and thrust-faulted marine sedimentary and volcanic rock. Major forest types included montane alluvial, early successional, cove, hemlock (*Tsuga canadensis*), montane oak-hickory (*Carya* spp.), xeric ridge, and high-elevation hardwood. Oaks were the predominant tree species with hickory, ash (*Fraxinus* spp.), and yellow poplar (*Liriodendron tulipifera*) being other common species. Fraser fir (*Abies fraseri*) and red spruce (*Picea rubens*) occurred at the highest elevations (National Park Service 2018) where rainfall averaged 215 cm/year. Seasons in the region were spring (21 Mar–19 Jun), summer (20 Jun–22 Sep), autumn (23 Sep–20 Dec), and winter (21 Dec–20 Mar). The flora and fauna were diverse owing to highly variable microclimates associated with varying elevation, slope, and aspect. In GSMNP alone, >1,600 flowering and 4,000 non-flowering plant species and >70 unique plant community associations were supported (National Park Service 2018). Whereas hunting was prohibited within GSMNP, black bear hunting was allowed during fall and winter in the surrounding national forests, state wildlife management areas, and private lands in each of the 4 states included in our study region.

METHODS

Study Design

We asked bear managers in Georgia, North Carolina, South Carolina, and Tennessee to submit maps of where they were interested in estimating bear abundance and what they considered to be primary and secondary range in each respective state. The intent of this request was to design a study whereby sampling intensity would be greatest in areas where bear densities were highest but with the additional objective of providing some information on areas where bear numbers may have been lower.

To reduce costs, our focus was on estimating female bear densities. Female detection probabilities are often higher than males (Humm et al. 2017) and female demographic parameters are major determinants of population trajectory (Beston 2011). Consequently, harvest and growth models for bears are often exclusively based on female demographics (Laufenberg et al. 2016). Moreover, trap spacings are dependent on home range sizes and can be optimized for 1 sex if movement dynamics differ by sex, as they do for bears (Clark 2019). Our approach was to first perform a sex test on the hair samples, then only conduct full genotyping on the female samples.

We based our sampling protocols on Clark (2019), who conducted simulations to evaluate various cluster sampling configurations and number of sampling occasions on DNA mark-recapture data for female black bears. Although a relatively wide range of detector configurations can provide reliable estimates, Clark (2019) reported that a 3-detector \times 3-detector configuration with 2,000 m between detectors, 16,000 m between cluster centers, and 6 weeks of sampling (i.e., occasions) performed well (i.e., low relative bias and

relative standard error and high confidence interval coverage) for estimating female black bear abundances and densities characteristic of the southern Appalachians. We then applied this sampling configuration to the primary bear ranges (i.e., zones) for each state (Fig. 2). We did the same for the secondary ranges except that we increased the spacing between clusters from 16,000 m to 24,000 m, thereby reducing the overall cluster (and trap) density in the secondary zone.

Spatially explicit capture-recapture models estimate the detection probability at an animal's activity center (g_0) and a scaling parameter (σ) that relates to home range. These parameters are estimated based on captures and recaptures of individual animals at different traps. We used a base density of 0.15 bears/km² in the primary zone and 0.05 bears/km² in the secondary zone, g_0 of 0.15, and σ of 1,700 m for the simulations as outlined by Clark (2019). We then simulated female bear populations in the 2 zones based on these parameters, created a trapping grid as described above, constructed capture histories, and estimated population size. The relative bias of the estimate for density (D) was -0.007 ± 0.005 (SE) and the relative standard error was $0.062 \pm <0.001$. After initiating field work, it became evident that establishing 9 sites per cluster would not be feasible under our funding and personnel constraints. Therefore, we conducted simulations based on a reduced design with 5 instead of 9 traps per cluster. The 5-trap cluster also produced estimates with low relative bias for D (0.016 ± 0.011) and relative standard error (0.102 ± 0.001), so most clusters were composed of hair traps constructed at any 5 sites from the original 9-site configuration (Fig. 2).

Field Methods

We obtained permits from the National Park Service, United States Forest Service, and numerous state parks to construct hair traps on public lands. For private lands, we first identified landowners associated with each site and requested permission via postcard, telephone, or in person. If a landowner could not be contacted or if access was not permitted, we attempted to locate another landowner within 500 m of the original site location. If access permission could not be obtained at a given site, we chose another location from the original 9-trap cluster if available.

Each hair trap consisted of an enclosure composed of 2 strands of barbed wire located 35–40 cm and 65–70 cm above the ground and stretched around 3–5 trees. We sampled Georgia, South Carolina, and the primary zone in Tennessee during 2017 and North Carolina during 2018. Tennessee Wildlife Resources Agency personnel sampled the secondary zone in Tennessee in 2018 based on our protocols, and we included those data in our analysis. We began hair trap construction in mid-May. In mid-June, we placed bait (i.e., 2–3 doughnuts) in a biodegradable bag and hung it from a line spanning the barbed-wire enclosure. We applied candy flavoring (Mother Murphy's, Greensboro, NC, USA) to a strip of cloth tied to the line as a scent attractant. We checked and rebaited the sites weekly for 6 weeks. At time of checking,

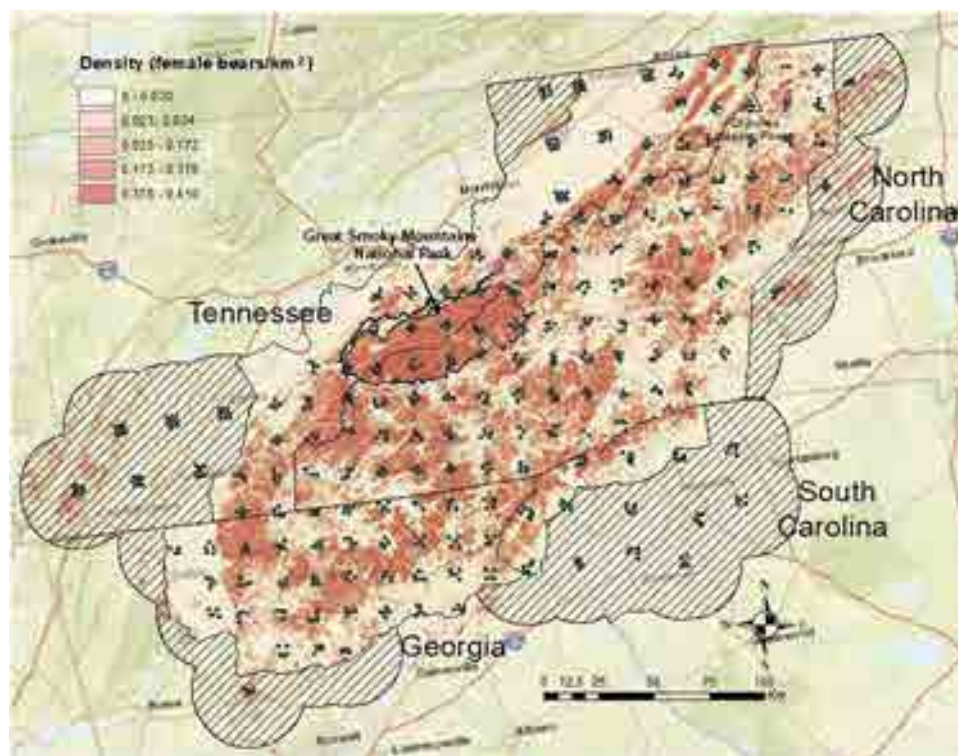


Figure 2. Density estimates for female black bears excluding cubs in the 4-state southern Appalachian region (GA, NC, SC, TN, USA), 2017–2018. Primary and secondary zones are shown for each state (secondary zones are hatched) and hair traps are depicted as green dots.

we removed hair samples with hemostats, placed them in coin envelopes, and stored them at room temperature with desiccant prior to analysis. We sterilized barbs and hemostats with a flame after each collection event to avoid contamination of future hair samples. We did not move hair traps between occasions and we removed them after the last collection event.

We obtained more hair samples than were economically feasible to genotype, so we developed a subsampling protocol to maximize the probability of detecting individual bears while reducing the probability of genotyping duplicate samples at the same site and week. Although Augustine et al. (2014) identified problems arising from subsampling in conjunction with a behavioral response to traps, subsequent analyses indicated that subsampling bias was not significant with spatially explicit estimation methods when a consistent percentage of the hair samples are subsampled from week to week (B. C. Augustine, University of Kentucky, unpublished data). Therefore, we adopted a variable subsampling strategy based on passes, whereby 1 sample selected from each site-week combination consisted of 1 pass. We made a first pass through all of the site-week combinations, choosing 1 sample at random from each site-week that met our quality control threshold of 1 guard hair or 5 underfur hairs. After this first pass of subsampling, we pre-screened those samples to identify males, which we did not analyze further. We then made a second pass through each of the site-week combinations. We took hair samples from subsequent passes from a different side of each trap if possible to try to minimize the chances of repeatedly

sampling the same individual from the same site-week. We repeated this process until we obtained the desired number of female hair samples, which was loosely based on the expected number of captures from our simulations and budget. The greater the proportion of males in the pooled sample based on the sex marker, the fewer the number of female samples that we could afford to genotype. This subsampling protocol would have allowed us to genotype additional samples if necessary.

Wildlife Genetics International (WGI; Nelson, British Columbia, Canada) genotyped hair samples. Following standard protocols (Woods et al. 1999, Paetkau 2003, Roon et al. 2005), technicians extracted and analyzed DNA based on 8 microsatellite markers (G1A, G1D, G10H, G10J, G10L, G10M, MU50, MU59) and a sex marker (ZFX/ZFY). Genotyping consisted of a first pass, cleanup, and error-check as detailed by Paetkau and Strobeck (1994) and Paetkau (2003). Technicians from WGI first purified the DNA using QIAGEN DNeasy Blood and Tissue kits under the tissue protocol. Technicians discarded samples that had low confidence scores at >3 markers on the first run of amplification. Samples that had incomplete genotypes after the first pass, but that had not been culled (i.e., those with high-confidence data for 4–7 markers), went through ≥ 1 round of reanalysis to resolve the problematic markers. The error-check consisted of an evaluation of pairs of genotypes that were similar and could have arisen through genotyping error (Paetkau 2003). Technicians re-analyzed samples with 1 or 2 pairs of mismatching markers (1MM and 2MM, respectively) and corrected the errors.

Errors produce genotypes that match at all but 1 or more rarely all but 2 markers, so the error-check protocol essentially prevented the identification of false individuals (Kendall et al. 2009).

Statistical Analysis

Once WGI genotyped the hair samples and identified females, we created individual capture histories for spatially explicit capture-recapture modeling using the R (R Core Team 2020) software package *secr* (version 4.2.2; Efford 2020). We estimated density separately for the primary versus the secondary sampling areas (i.e., we coded them as sessions in *secr*) because the trap configurations differed (16,000 m vs. 24,000 m between cluster centers, respectively). Although we sampled the North Carolina sites and some of the secondary sites in Tennessee a year later (2018) than in the other states (2017), we pooled all primary and secondary zone data across years. Although it was possible to capture female bears in different clusters, this was rare and we pooled the data if there were no captures of individual bears in >1 trap cluster in different years or zones.

For estimating what we presumed was spatially inhomogeneous density, we first defined developed land as any of the following categories based on the 30-m 2016 National Land Cover Dataset (NLCD; Yang et al. 2018): barren land, developed open space, developed low-intensity, developed medium-intensity, and developed high-intensity. Our presumption was that bear densities would be lower in developed areas. We used the R-based software package *raster* (version 3.0-12; Hijmans 2020) to reclassify those classes into a developed category. We then performed a focal mean calculation for each 30-m pixel within a square 1-km \times 1-km moving window to produce a percent developed layer. We also performed a Euclidean distance calculation on this layer in ArcMap 10.6 (Esri, Redlands, CA, USA) to create a distance to developed land layer. We divided this layer by its maximum value to rescale the layer to 0–1 to facilitate conversion of the maximum likelihood estimator in *secr*. We employed a similar procedure to create a distance to high-intensity urban development layer except that we only used the developed high intensity classification. Using a croplands data layer (U.S. Department of Agriculture 2020), we reclassified grassland-pasture and fallow-idle cropland to create an open cover layer. We then used a moving window as above to create a percent open land layer as another way to characterize human modifications to the landscape.

Black bears are associated with forest cover types so we created a percent deciduous forest layer based on a reclassification of deciduous and mixed forest NLCD classes, again with a moving window as described above. We similarly calculated the percent evergreen reclassification. We created a percent forest covariate by combining all of the deciduous, evergreen, and mixed forest cover classes. We created a percent shrub data layer from the NLCD shrubland-scrub category. We created a percent canopy cover layer from the NLCD canopy cover

dataset (Coulston et al. 2013, Multi-Resolution Land Characteristics Consortium 2020).

Bears are sometimes associated with wetlands and other riparian areas, so we used the United States Geological Survey (USGS) Hydrologic Dataset (USGS 2020a) to create percent water by performing a focal operation within a 1-km \times 1-km moving window. Black bears are commonly found in mountainous areas, so we created an elevation layer from the USGS elevation dataset (USGS 2020b). We rescaled this map layer to 0–1 by dividing each pixel by the maximum value. We also performed a focal analysis within a 1-km \times 1-km moving window to create a mean elevation layer, which was similarly rescaled. We created mean slope from the elevation data layer. Because GSMNP was considered the primary historical source of bears for our study region, we created a raster representing the Euclidean distance from a centroid in the center of the park and scaled as above. Our presumption was that bear density would decline with distance from the park; we arbitrarily chose the park center for this distance calculation. Finally, we created a raster composed of state boundaries and GSMNP to represent different management zones. Our hypothesis was that bear density might vary by jurisdiction because of different management objectives and intensities. Finally, we created a discretized mask based on a 1,000-m grid size and a 24,000-m buffer around trap sites. We assigned pixel values from each of the map layers to each grid point on the mask, and used those points as covariates for density estimation.

We used the model building strategy outlined by Zhang (2016) whereby univariate models were fit followed by multi-variable models with interactions and other effects. We first performed a correlation analysis and eliminated 1 of any pair of land use or land cover variables with correlation coefficients >0.6. We then used maximum likelihood estimators to fit a half-normal detection function in *secr*. We used the lowest Akaike's Information Criterion corrected for small sample sizes (AIC_c ; Burnham and Anderson 1998) for model selection. We considered models to be equally supported if the difference in AIC_c between the model in question and the top model was <2.0 (Burnham and Anderson 1998). We evaluated effects based on 95% confidence intervals of the of the covariate slope (i.e., β values); slopes that included 0 were indicative of no effect.

Once we identified the supported covariates on density (D), we evaluated whether g_0 or σ were affected by a behavioral response to specific trap sites (bk) and whether g_0 or σ were better described by a 2-factor finite mixture model of individual capture heterogeneity (h_2 ; Pledger 2000). Once we obtained density estimates, we estimated abundance (N) by summing the density estimates for all mask points for the various jurisdictions (i.e., if 100 mask points each have an estimated density of 0.1 bears/km² and points are 1,000 m apart, then the abundance estimate would be $100 \times 0.1 = 10$ bears). To estimate bear abundances in areas subjected to hunting, we modified the original primary zones within which we summed the density pixels to better

reflect state bear hunting regulations. We estimated standard errors and 95% confidence intervals for N using the delta method as described by Efford and Fewster (2013) with the R package emdbook (Bolker et al. 2020).

To estimate female harvest rates for the 4 state jurisdictions, we used annual female harvest data averaged across a 3-year period that included the years of our survey (2016–2018) and divided them by the adult female population size available for harvest in that jurisdiction. Bear harvests varied from year to year depending on hard mast and other factors, so we used the average to help account for that variation. All estimates were presumed exclusive of cubs based on an analysis by Laufenberg et al. (2016) with similar hair trap dimensions. The taking of cubs by hunters was prohibited in all 4 states.

RESULTS

We established 179 hair traps in Georgia, 78 in South Carolina, and 160 in the primary zone in Tennessee in 2017 and 364 in North Carolina and 107 in the secondary zone in Tennessee in 2018; these 888 hair traps were arranged in 174 clusters of 2–9 traps/cluster (Fig. 2). We did not obtain permission for all 5 sites in some clusters and up to 9 sites were established in secondary zone clusters. We collected 9,113 putative bear hair samples from those sites and submitted them to WGI for DNA analysis. Of the samples submitted, 598 samples (6.6%) did not appear to be black bear hair, 1,979 (21.7%) lacked suitable genetic material for analysis, 2,132 (23.4%) were excluded by subselection rules, 1,659 samples (18.2%) were identified as male based on a sex prescreen, 784 (8.6%) samples failed to amplify, 4 samples (<0.1%) contained DNA from >1 bear, and 3 (<0.1%) were unusable because of handling error. The remainder (1,954 hair samples or 21.4%) were successfully genotyped to 462 individual females. Genotyping success was high (88%), and observed heterozygosity (H_o) was similar across the 3 states where sample sizes were adequate (GA = 0.73, NC = 0.74, and TN = 0.73). Marker power was high, as only 2 2-mismatched

pairs were detected among the successfully genotyped bears (D. Paetkau, WGI, personal communication).

During the 6 sampling occasions in session 1 (primary zone), 665 hair traps produced 806 genotyped samples (exclusive of within-site-week duplicates) of 442 different individual female bears (Table 1). In session 2 (secondary zone), 223 hair traps produced 33 genotyped samples of 20 individual females. Only 1 individual bear was detected in >1 trap cluster, but it occurred within the same year and zone and, therefore, did not violate our assumptions for pooling.

Based on the correlation analysis, we eliminated percent developed, percent deciduous, percent canopy cover, mean slope, percent open land, elevation, and distance to high-intensity urban development from further consideration. Only 1 model was supported based on AIC_c scores (Table 2). That model included a session (primary vs. secondary zones) and an additive percent forest covariate on D and site-specific capture responses and 2 finite heterogeneity mixtures on both g_0 and σ (Table 3).

Mean female density was 0.094 bears/km² in the 66,678-km² 4-state study region and ranged up to 0.410 female bears/km², mostly centered on GSMNP (Fig. 2). Abundance (N) was 5,950 female bears in the study region (Table 4).

To estimate abundance in northern Georgia, we slightly modified our primary zone to better coincide with the primary bear range depicted in the 2019 state management plan (Balkcom et al. 2019) and calculated density estimates based on the fitted primary zone model. Mean female densities in Georgia were 0.121 bears/km² in the 9,346-km² primary zone and 0.011 bears/km² in the 4,366-km² secondary zone. The number of females in the primary and secondary zones totaled 1,181 (Table 4). Based on the 2016–2018 hunter kill data (\bar{x} = 150.0 females/year; Georgia Department of Natural Resources 2020), which included both primary and secondary zones, the mean annual harvest rate for females was 12.7% for northern Georgia, assuming abundance was constant over the 3-year period (Table 4).

Table 1. Capture histories of female black bears at hair trap sites in the southern Appalachian region, USA, in primary (session 1) and secondary bear zones (session 2), 2017–2018.

	Occasion (week)							Total
	1	2	3	4	5	6	7 ^a	
Session 1								
n (number of individuals detected)	72	100	136	137	148	172	41	806
u (number of individuals unmarked)	72	82	84	68	59	59	18	442
f (number of individuals captured by occasion)	252	91	51	26	17	5	0	442
$M_{(t+1)}$ (number marked and released)	72	154	238	306	365	424	442	442
Detections of bears	65	81	115	113	129	132	34	669
Detectors deployed	416	658	663	661	664	664	223	3,949
Session 2								
n (number of individuals detected)	3	2	5	8	6	9	0	33
u (number of individuals unmarked)	3	2	3	5	3	4	0	20
f (number of individuals captured by occasion)	11	5	4	0	0	0	0	20
$M_{(t+1)}$ (number marked and released)	3	5	8	13	16	20	20	20
Detections of bears	3	2	5	9	7	9	0	35
Detectors deployed	218	223	223	223	223	223	5	1,338

^a We checked all sites for 6 weeks, but some sites were established and checked 1 week later than the others.

Table 2. Models used to fit spatially explicit capture-recapture models to capture histories of female black bears at hair trap sites in the southern Appalachian region, USA, in primary (session 1) and secondary bear zones (session 2), 2017–2018, and model selection based on corrected Akaike's Information Criterion (AIC_c). Density is D , base detection probability is g_0 , and a home-range scaling parameter is σ .

Model ^a	Number of parameters	Log likelihood	AIC_c	ΔAIC_c	AIC_c weight
$D \sim \text{session} + \% \text{ forest}, g_0 \sim \text{bk} + \text{h2}, \sigma \sim \text{bk} + \text{h2}$	10	−2,379.63	4,779.74	0.00	1
$D \sim \text{session} + \% \text{ forest}, g_0 \sim \text{bk} + \text{h2}, \sigma \sim \text{h2}$	9	−2,391.20	4,800.63	20.89	0
$D \sim \text{session} + \% \text{ forest}, g_0 \sim \text{bk} + \text{h2}, \sigma \sim \text{bk}$	9	−2,404.47	4,827.34	47.60	0
$D \sim \text{session} + \% \text{ forest}, g_0 \sim \text{bk}, \sigma \sim \text{bk}$	7	−2,410.81	4,835.89	56.13	0
$D \sim \text{session} + \% \text{ forest}, g_0 \sim \text{bk}, \sigma \sim 1$	6	−2,684.76	5,383.77	86.58	0
$D \sim \text{session} + \% \text{ forest}, g_0 \sim 1, \sigma \sim 1$	5	−2,687.53	5,385.19	605.45	0
$D \sim \text{session} + \% \text{ shrub}, g_0 \sim 1, \sigma \sim 1$	5	−2,756.02	5,522.18	742.44	0
$D \sim \text{session} + \text{mean elevation}, g_0 \sim 1, \sigma \sim 1$	5	−2,771.88	5,553.90	774.16	0
$D \sim \text{session} + \% \text{ water}, g_0 \sim 1, \sigma \sim 1$	5	−2,797.94	5,606.01	826.26	0
$D \sim \text{session} + \text{distance to development}, g_0 \sim 1, \sigma \sim 1$	5	−2,798.09	5,606.30	826.56	0
$D \sim \text{session} + \% \text{ evergreen}, g_0 \sim 1, \sigma \sim 1$	5	−2,810.60	5,631.32	851.58	0
$D \sim \text{session} + \text{distance to GSMNP}, g_0 \sim 1, \sigma \sim 1$	5	−2,815.29	5,640.71	860.97	0

^a bk = site-specific behavioral effect, h2 = 2-factor finite mixture for individual detection heterogeneity, GSMNP = Great Smoky Mountains National Park.

Mean estimated female density in North Carolina was 0.141 bears/km² in the 20,404-km² primary zone and 0.026 bears/km² in the 4,299-km² secondary zone (Table 4). The estimated number of females in both primary and secondary zones in North Carolina, including GSMNP, was 2,983 (Table 4). Hunters reported an average kill of 453.3 females/year in combined primary and secondary estimation areas (2016–2018; North Carolina Wildlife Resources Commission 2020). Excluding bears in the North Carolina portion of GSMNP, which were not subjected to hunting, estimated female abundance in the primary and secondary zone was 2,582 (95% CI = 1,916–3,478), resulting in a mean annual harvest rate of 17.6% (Table 4).

To estimate abundance in South Carolina, we created a primary zone to better coincide with State Game Zone 1 and calculated density estimates based on estimates from the primary zone model parameters. Mean female density in South Carolina was 0.118 bears/km² in the 2,137-km² primary zone and 0.002 bears/km² in the 7,092-km² secondary zone (Table 4). The estimated number of adult females in the primary zone in South Carolina was 252 and in the secondary zone was 11, totaling 263 for all of western South Carolina (Table 4). Hunters reported an average of 44.3 females/year from 2016 to 2018 (SABBSG, unpublished data). Based on our estimated female abundance in the primary zone, the mean annual harvest rate was 17.6% (Table 4).

To estimate abundance in Tennessee, we slightly modified our primary zone to better coincide with State Hunt Zones 1, 2, and 3 (Tennessee Wildlife Resources Agency 2020b) and calculated density estimates from within that primary zone. Mean female density in Tennessee was 0.119 bears/km² in the 11,726-km² primary zone and 0.017 bears/km² in the 7,312-km² secondary zone. The estimated number of females in the primary and secondary zones in Tennessee, including GSMNP, was 1,522 (Table 4). Hunters in Tennessee reported an average harvest of 242.7 females/year in our evaluation area from 2016 to 2018 (SABBSG, unpublished data). Excluding bears in GSMNP, which were not exposed to hunting, our female abundance estimate was

1,063 (95% CI = 782–1,447), resulting in an average female harvest rate of 22.8% (Table 4).

DISCUSSION

Harvest is usually the primary mortality factor in hunted black bear populations, but harvest rates are rarely estimated across extensive areas because of the difficulty of obtaining reliable population abundance estimates. Perhaps the most intensive effort to do so was in Pennsylvania, USA, where hundreds of black bears were captured and tagged annually, and those tags recovered from hunters. Diefenbach et al. (2004) reported that during 1983–2001, the annual female harvest rate averaged 16.5% based on a sample of 2,658 captured bears. Tri et al. (2017) conducted an analysis of harvest rates of bears in urban-wildland settings in New Jersey, Pennsylvania, and West Virginia, USA, and documented annual harvest rates for bears of both sexes ranging from 0 to 26.2%. Based on a survey of resource managers across North America, Hristienko and McDonald (2007) concluded that black bear harvest rates >20% appeared to be

Table 3. Beta parameters and 95% confidence intervals (lower [LCL] and upper [UCL] confidence limit) for the top model used to fit spatially explicit capture-recapture models to capture histories of female black bears at hair trap sites in the southern Appalachian region, USA, 2017–2018, in primary (session 1) and secondary bear zones (session 2).

Variable ^a	β	SE	LCL	UCL
Intercept	−27.592	3.942	−35.318	−19.865
Session	−0.707	0.232	−1.161	−0.252
% forest	22.095	3.979	14.297	29.893
g_0	−1.543	0.250	−2.032	−1.053
g_{0_bk}	1.803	0.267	1.280	2.325
g_{0_h2}	−2.749	0.184	−3.109	−2.388
σ	6.790	0.092	6.609	6.971
σ_bk	5.676	43.766	−80.105	91.456
σ_h2	1.300	0.125	1.054	1.545
pmix_h2	0.212	0.346	−0.466	0.890

^a g_0 = base detection probability, bk = site-specific behavioral response, h2 = 2-factor finite mixture model for individual detection heterogeneity, σ = home range scaling parameter, pmix_h2 = 2-factor finite mixture proportion.

Table 4. Abundance (N) and density (D , bears/km²) estimates for the state and regional female black bear population (excluding cubs) in the southern Appalachian region, USA, in primary and secondary bear zones, statewide, and in the region, 2017–2018. Estimated adult female harvest rate is the reported 3-year average hunter kill for females (2016–2018) divided by the female population estimate in the area subjected to hunting.

	N	95% CI (N)	D	95% CI (D)	Harvest rate (%)	95% CI (harvest rate)
Georgia total	1,181	878–1,589	0.086	0.064–0.116	12.7	9.4–17.1
Georgia primary	1,134	834–1,543	0.121	0.084–0.159		
Georgia secondary	47	28–80	0.011	0.006–0.018		
North Carolina total	2,983	2,219–4,012	0.121	0.090–0.162	17.6	13.0–24.0
North Carolina primary	2,872	2,113–3,903	0.141	0.104–0.191		
North Carolina secondary	112	67–187	0.026	0.016–0.044		
South Carolina total	263	195–355	0.029	0.021–0.038	17.6	12.9–23.9
South Carolina primary	252	185–344	0.118	0.087–0.161		
South Carolina secondary	11	6–23	0.002	0.001–0.003		
Tennessee total	1,522	1,148–2,018	0.080	0.060–0.106	22.8	16.8–31.1
Tennessee primary	1,395	1,029–1,891	0.119	0.088–0.161		
Tennessee secondary	127	76–213	0.017	0.010–0.029		
Region total	5,950	4,988–7,098	0.094	0.071–0.124		

sustainable for bear populations in the eastern United States. Bunnell and Tait (1981) estimated the maximum mortality rate that could be sustained by black bear populations of both sexes, depending on natality and recruitment rates. Maximum mortality ranged from about 10–24%, with estimates of about 23% for bears with an age of primiparity of 3 and an average litter size of 2, which is generally consistent with bear demographics in the southern Appalachian highlands (Balkcom et al. 2019). Bunnell and Tait's (1981) sustainable mortality rate estimates, however, included all forms of mortality.

Our female harvest rate estimates ranged from 12.7% in northern Georgia to 22.8% in eastern Tennessee, though 95% confidence intervals overlapped among all states (Table 4). Based on bait-station survey data, bear abundance in the 4 states that we sampled generally showed a steady increase from 1983 to about 2009, then began to decline (SABBSG, unpublished data; Fig. 3). Although food supply and weather can affect bait-station surveys (Brongo et al. 2005, Clark et al. 2005), the index can be informative at broad spatial and temporal scales. We assumed constant N from 2016 to 2018, but bear population abundance may well have been declining

during and previous to those years, assuming the bait-station indices reflected true population densities. Regardless, those moderate harvest rates in Georgia would not seem to be adequate to have produced the population decline as suggested by the bait-station data. That inconsistency could, of course, be explained by a positive bias in our abundance estimates or low reporting rates by hunters. Bait-station indices for all 4 states in the region began to decline following a series of low regional hard mast indices from 2006 to 2009 (SABBSG, unpublished data; Fig. 3). Prolonged periods of mast scarcity can result in black bear reproductive failures and increased mortality rates (Pelton and van Manen 1996, Clark 2004, Clark et al. 2005). Higher than normal natural and harvest mortality and low recruitment rates for females as a result of poor mast availability could have triggered a regional population decline, perhaps exacerbated and prolonged by harvest; however, this explanation is speculative.

Although bait-station indices began to decline around 2009 (Fig. 3), conflict complaints and harvest numbers have continued to increase (Fig. 1). We suggest care in interpreting those numbers as being indicative of population trend. Reported conflicts can vary because of food, weather, human behavior, agency reporting protocols, and human population densities. Numbers of bears killed by hunters are also affected by food availability and weather but can be further compromised by incomplete reporting. Also, the relationship between harvest and hunter effort may change with animal abundance, with hunter effort increasing as game populations decrease (Bowyer et al. 1999, Schmidt et al. 2005).

The mean density in GSMNP was 0.349 female bears/km² (95% CI = 0.257–0.475) and the estimate of female bear abundance in the 2,103-km² park was 734 (95% CI = 540–997). That density estimate was 2.7 times higher than primary zone estimates outside the park (0.130 bears/km²) and likely reflected high quality habitat in GSMNP and protection from hunting. Braunstein et al. (2020) reported that radio-collared female bears routinely left park boundaries and ear-tagged bears from the park

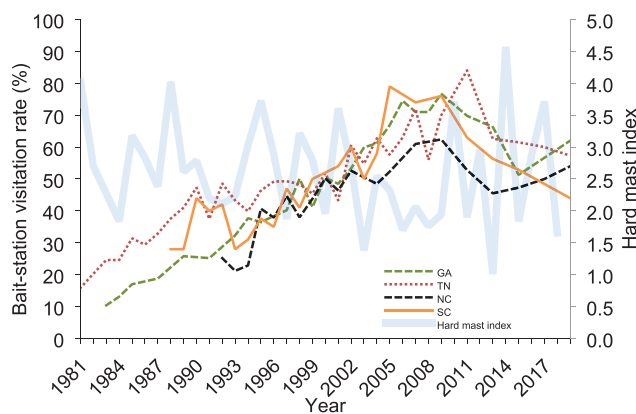


Figure 3. Regional hard mast survey data and bait-station survey data for the 4-state southern Appalachian region (GA, NC, SC, TN, USA), 1981–2018 (Southern Appalachian Black Bear Study Group, unpublished data).

were routinely recovered in the harvest, which likely served as a reservoir and source of immigrants for harvest by hunters, particularly in Tennessee. The National Park made up a large portion of bear range in Tennessee and including all bears in GSMNP as available for harvest reduced the estimated harvest rate from 22.8% (95% CI = 16.8–31.1) to 15.9% (95% CI = 12.0–21.1). The true harvest rate likely lies somewhere between those 2 estimates.

Although we evaluated several land cover and land use covariates as they related to female density, only percent forest was supported (Table 2). We nevertheless report positive relationships between D and mean elevation ($\beta = 2.8$, 95% CI = 2.2–3.3) and distance to development ($\beta = 1.3$, 95% CI = 0.9–1.8), and negative relationships with percent shrub ($\beta = -66.6$, 95% CI = -71.7 to -61.5) and percent evergreen forest ($\beta = -1.9$, 95% CI = -3.3 to -0.5). Models with a behavioral response at specific traps (bk) on g_0 and σ were well supported based on AIC_c as were models with individual detection heterogeneity expressed as 2 finite mixtures (h2; Table 2). Harvest rates for females varied across the region and, although we included a model with state as a covariate for management differences across state boundaries, this model had several categorical variables and maximum likelihood estimation did not converge on a solution. Despite its simplicity, the percent forest covariate seemed to do a good job of reflecting female bear densities in the region. Densities were much lower in the secondary zone and GSMNP had the highest bear densities as expected.

About 11,496 traps would have been needed for our 66,678-km² study area based on non-spatially explicit capture-recapture methods evaluated by Settlage et al. (2008). In contrast, we were able to obtain reasonable population abundance and density estimates with only 888 hair traps (7.7% of the estimated non-spatial trap-site density) with spatially explicit capture-recapture methods, cluster sampling, and a large spatial extent (Howe et al. 2013, Clark 2019). Our large study area also facilitated pooling of data across jurisdictional boundaries to better estimate model parameters (e.g., g_0 and σ) and enabled costs to be shared by several state wildlife agencies, which illustrates the benefit of interagency collaboration.

Integrating spatially explicit capture-recapture methods with other data collected in the region on bears could lead to better understanding of relationships between environmental fluctuations and management actions on bear demography. Such ancillary data could be used to help inform spatially explicit population estimators during years when these more costly and labor-intensive methods cannot be conducted (Chandler and Clark 2014). Cluster sampling coupled with spatially explicit mark-recapture methods is a powerful strategy for estimation of population parameters for a variety of wildlife species that are managed across large spatial extents. Cluster sampling for spatially explicit population estimation could be adapted for other species from which hair (Morehouse and Boyce 2016), scat (Bozarth et al. 2015, Morin et al. 2018), muscle biopsies (Beausoleil et al. 2016), and camera data (Royle et al. 2011, Borchers et al. 2014) could be collected.

MANAGEMENT IMPLICATIONS

Harvest rates approached or exceeded a theoretical maximum in some jurisdictions and population trend data indicated population declines in most jurisdictions in recent years. Although this response to recently liberalized harvest regulations was not unexpected, continued monitoring of bear populations (e.g., annual bait-station surveys and periodic population estimation with spatially explicit mark-recapture methods) would help to ensure that population trajectories continue to be consistent with management goals. Likewise, continued monitoring of hard mast production would help managers evaluate the effects of mast failures on bear population trajectories as more years of data are collected. The SABBSSG proved to be an excellent mechanism for coordination of these monitoring activities.

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Effects of male targeted harvest regime on sexual segregation in mountain lion



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ABSTRACT

Male targeted harvest regimes of carnivores are now widely accepted to result in increased sexually selected infanticide (SSI). Male targeted harvest regimes of males should therefore result in increased sexually segregated habitat use in infanticidal carnivores. We tested the effects of low and high levels of male hunting mortality and associated SSI on sexually segregated habitat use in mountain lions. The “no effect of hunting” hypothesis predicts that no sexual segregation would occur or that all female mountain lions would segregate from males because of sexual dimorphism. The “hunting effect” hypothesis predicts that females with kittens would segregate from younger immigrant males in the heavily hunted population during summer when kittens are vulnerable to SSI. We rejected the “no effect” hypothesis and accepted the “hunting effect” hypothesis for mountain lions. Females with kittens avoided immigrant males in the heavily hunted population during summer—others did not. This sexual segregation corresponded with females with kittens selecting for food-poor, high elevations in the heavily hunted population but not in the lightly hunted population. Avoidance of males and selection for high elevations resulted in prey switching by females with kittens from abundant primary prey in lower elevations to rare, sensitive and threatened secondary prey at higher elevations. It appears that remedial sport hunting of mountain lions to reduce predation on declining prey actually caused sexual segregation and increased predation on declining prey. We suggest that excess mortality of male carnivores could result in unanticipated cascade effects including sexual segregation and prey switching to declining prey.

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1. Introduction

Sport hunting in a wide variety of male carnivores can induce sexually selected infanticide (SSI) by causing rapid turnover of breeding males (see Wielgus and Bunnell, 1994a, 2000; Wielgus et al., 2001, for North American grizzly bears *Ursus arctos*; Swenson et al., 1997; Swenson, 2003, for European brown bears *U. arctos*; Packer et al., 2009, 2011, for African lions *Panthera leo*; and Balme et al., 2012a, 2012b, for African leopards *Panthera pardus*). In our animal model (mountain lions, *Puma concolor*), high male mortality (35%) resulted in a shift in the sex/age structure towards numerous, younger, potentially infanticidal, immigrant males (Robinson et al., 2008). Lower male mortality (15%) resulted in less numerous, but older resident males (Cooley et al., 2009a). The higher male mortality corresponded with higher mortality rates of kittens (69% vs. 42%, Cooley et al., 2009b) and higher rates of plausible infanticide (27% vs. 0%, Wielgus et al., 2013).

Females should respond behaviorally to SSI by separating from and avoiding potentially infanticidal, immigrant males. For example, in a heavily hunted North American grizzly bear population (30% older male

mortality, Wielgus and Bunnell, 1994a), females with cubs segregated into high elevation, xeric, food-poor environments where the numerous younger immigrant males were rare (Wielgus and Bunnell, 1994b). In a nearby lightly hunted population (19% younger male mortality, Wielgus et al., 1994) females with cubs did not segregate from older resident males in food-rich environments (Wielgus and Bunnell, 1995). Those behavioral differences (sexual segregation) corresponded with reproductive strategies where the elasticity of cub survival was greater than the elasticity of litter size which maximized fitness (Wielgus and Bunnell, 2000, Wielgus et al., 2001). Steyaert et al. (2013) also found that European female brown bears with cubs in a heavily hunted population segregated into different habitats than males during the potentially infanticidal breeding season. However, those papers demonstrated sexually segregated differences in habitat use and selection for *U. arctos*, not avoidance of males per se. It is still possible, though highly unlikely, that those sexual differences in habitat use could have been due to intrinsic differences in habitat selection between the sexes (habitat segregation: Clutton-Brock et al., 1982, Villaret and Bon, 1995, Main and Coblentz, 1996, Conradt, 1999, Ruckstuhl and Neuhaus, 2005) not actual avoidance of males because of SSI (social segregation: Swenson, 2003, Rode et al., 2006).

In this paper, we compare sexually segregated spatial distribution in a lightly and heavily hunted population of another species (mountain

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lions) to test for generality to other carnivores. We also directly test the social segregation hypothesis (females with cubs avoid immigrant males in a heavily hunted population but do not avoid resident males in a lightly hunted population) by examining differences in spatial distribution between reproductive classes. We use the same two study areas (northeastern Washington and central Washington) and same two heavily and lightly hunted mountain lion populations as extensively reported in Cooley et al. (2008), Robinson et al. (2008), Cooley et al. (2009a), Cooley et al. (2009b), White et al. (2011), and Wielgus et al. (2013)—to test if hunting has an effect on sexual segregation.

If sexual segregation were driven by intrinsic sexual differences in body size and energetics (hunting has no effect)—the habitat segregation hypothesis makes four basic predictions based on reproductive class, area, season, and their combined effects. 1) Reproductive classes: the higher energy demands of females with kittens should be more similar to larger, sexually dimorphic males than that for lone females (Ruckstuhl and Neuhaus, 2002), therefore sexual segregation should be less pronounced for females with kittens. 2) Areas: males in the lightly hunted area selected for larger prey (elk *Cervus elaphus* vs. mule deer *Odocoileus hemionus*) than females (White et al., 2011), but elk were not available in the heavily hunted area (Cooley et al., 2008, Wielgus et al., 2013)—therefore sexual segregation should be more pronounced in the lightly hunted area where sexually dimorphic use of prey was already apparent. Furthermore, home range size, male to male home range overlap, and female to female home range overlap were greater in the heavily hunted area (Maletzke, 2010)—so spatial sexual segregation should be less pronounced there because of greater shared area among conspecifics. 3) Seasons: spatial expansion of home range size occurred during summer and male to male and female to female home range overlaps increased with increasing home range size (Maletzke, 2010)—so spatial sexual segregation which is driven by landscape factors, rather than risk avoidance, should be less pronounced during summer because of greater shared area among conspecifics (Terborgh et al., 1999). 4) The additive effects of reproductive class, area, and season: sexual segregation should be most pronounced for solitary females in the lightly hunted area during winter and should be least pronounced for females with kittens in the heavily hunted area during summer.

If segregation was driven by social avoidance of males by females because of the threat of SSI (hunting has an effect) the reproductive class, area, and season predictions are exactly the opposite. 1) Reproductive classes: sexual segregation from males for females with kittens should be higher than for solitary females. 2) Areas: Sexual segregation should be more pronounced in the heavily hunted area because of the abundance of younger potentially infanticidal males. 3) Seasons: Goodrich et al. (2008) found that tiger (*Panthera tigris*) cubs were most vulnerable to infanticide during the first 6 months of life. Almost all mountain lion births occurred during the summer and all six cases of plausible infanticide within the heavily hunted area appeared to occur during the summer months (Cooley et al., 2009b)—so sexual segregation should be more pronounced during the summer. 4) Additive effects: sexual segregation should be most pronounced for females with kittens in the heavily hunted area during summer and should be least pronounced for solitary females in the lightly hunted area during winter.

2. Materials and methods

2.1. Study areas

The two areas selected for use in this study reflect different intensities of human hunting mortality on mountain lions (Fig. 1). The heavily hunted study area (HH) in northeastern Washington covered 1476 km². Hound hunting and boot hunting (incidental harvest of mountain lions while hunting deer or elk) were encouraged in the area to alleviate human–mountain lion conflicts (Lambert et al., 2006) and to relieve predation on declining mule deer (Robinson et al., 2002, 2008; Cooley et al., 2008). There was no established quota on harvest of male

mountain lions and bag limits were limited to one cougar per hunter per year. It is comprised of Northern Rocky Mountain Forest–Steppe–Coniferous Forest–Alpine Meadow (Bailey, 1995) and includes Washington Game Management unit 105. Elevations ranged from <400 m along the riverbanks, to >1400 m in montane forest. Precipitation ranges between 51 cm and 102 cm annually, falling mostly in the form of snow (Bailey, 1995). Tree and plant communities include ponderosa pine (*Pinus ponderosa*) on the lower elevation south and west facing slopes; western red cedar (*Thuja plicata*) in moist, lower elevation valleys; Douglas-fir (*Pseudotsuga menziesii*) interspersed throughout much of the mid elevations; and western larch (*Larix occidentalis*); subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*) at higher elevations. Land use included recreation (mostly hunting), timber harvest, and cattle ranching. Carnivore species included mountain lions, black bears (*Ursus americanus*), bobcats (*Felis rufus*) and coyotes (*Canis latrans*). White-tailed deer (*Odocoileus virginianus*) and mule deer were the most common ungulates in the study area (Cooley et al., 2008). Elk, moose (*Alces alces*), and mountain goats (*Oreamnos americanus*) were very rare.

The lightly hunted study area (LH) encompasses the western half of Kittitas County in central Washington and covers 1652 km². There was no established quota on harvest of male mountain lions and bag limits were limited to one cougar per hunter per year. Hound hunting of mountain lion was prohibited during the period of the study although, “boot hunting” was allowed. It is classified as Northern Cascade Mixed Forest (Bailey, 1995) and includes Washington Game Management Units 335 (Teaaway) and 336 (Taneum). Ponderosa pine and Douglas fir communities were intermixed with agricultural lands in the lower elevations (550 m). Sub-alpine fir, Engelmann spruce, Pacific silver fir (*Abies amabilis*) and western hemlock (*Tsuga heterophylla*) dominated the mid and upper elevations (1550 m). The majority of precipitation falls during winter as snow; the average winter snowfall is 160 cm (Cooley et al., 2009a). Elk and mule deer are the most numerous ungulates. White-tailed deer are absent or extremely rare in the area. Other common carnivores include black bear, bobcat and coyote.

2.2. Demographic comparisons of heavily hunted (HH) and lightly hunted (LH) areas

The heavily hunted (HH) area had an overall hunting mortality rate of 0.24 and a male hunting mortality rate of 0.35. The survival-fecundity growth rate was 0.78, with a net immigration rate (mostly males) of 0.13—resulting in an overall observed growth rate of 0.91. Density was stable (at equilibrium) over 5 years at 3.46 mountain lions/100 km². The mean age of males was 24 months (Cooley et al., 2009b). The mean home range size of females was 240 km² and males was 752 km² (Maletzke, 2010). Six of 11 kitten deaths reported in Cooley et al. (2009b) were believed to have been caused by male mountain lions via infanticide.

The lightly hunted area (LH) had an overall hunting mortality rate of 0.11 and male hunting mortality rate of 0.16. The survival-fecundity growth rate was 1.10 with a net emigration rate of 0.12 (mostly males) resulting in an annual observed growth rate of 0.98. Density was stable over the period of the study at 3.62 mountain lions/100 km². The mean age of males was 41 months (Cooley et al., 2009b). The mean home range size of females was 199 km² and males was 348 km². Zero of five kitten deaths were reported in Cooley et al. (2009b) as infanticides although some may have occurred and not been detected.

2.3. Capturing and handling

All animals were handled in accordance with Washington State University Animal Care Permit #3133 and Animal Welfare Assurance Committee Permit A3485-01. Mountain lion captures were conducted during winters 2002–2008. The study areas were searched for tracks and hounds were released to tree mountain lions (Hornocker, 1970).

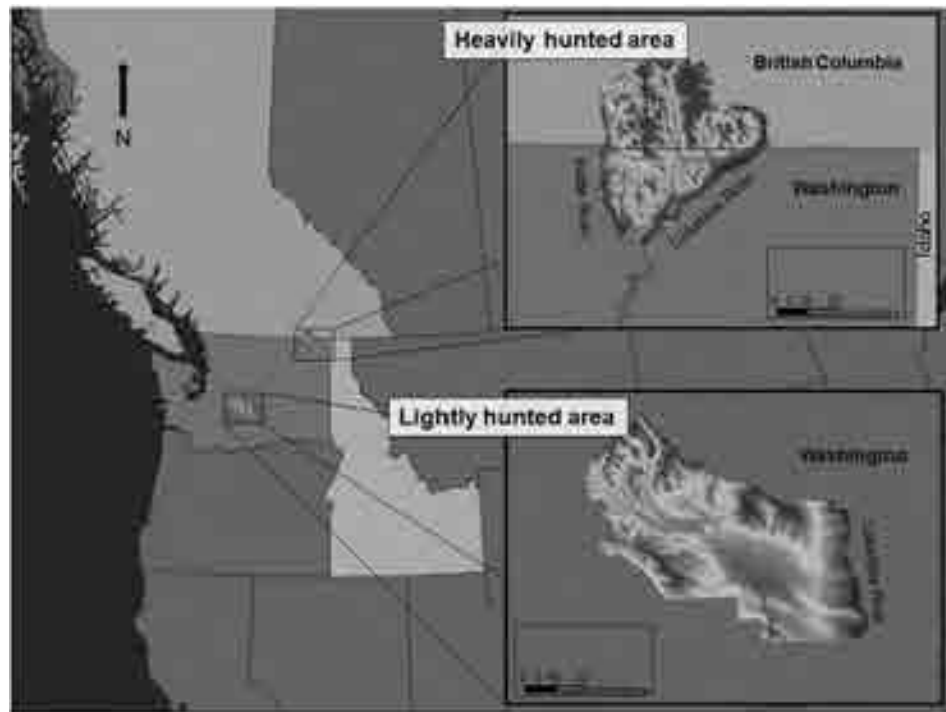


Fig. 1. Heavily hunted and lightly hunted study areas in Washington and British Columbia.

A dosage of 0.4 ml per 10 kg of body mass of ketamine hydrochloride (200 mg/ml) and xylazine hydrochloride (20 mg/ml) was injected into the hindquarter of treed mountain lions via a projectile dart (Ross and Jalkotzy, 1992). Mountain lions were fitted with Lotek GPS4400S collars (Lotek Wireless, Newmarket, Ontario, Canada), examined for sex, age, and condition, and released. Collars were programmed to attempt a location between four and six times per day. Animals were recaptured once per year (when possible) to assess condition and refit the collars with new batteries. For details see Cooley et al. (2009a) and Robinson et al. (2008).

2.4. Reproductive classes and seasons

Individual mountain lions were assigned to one of three reproductive classes: females with kittens (FK); solitary females (F) or independent males (M). Independent females were classified as “females with kittens” after kittens were discovered in the den. Females remained in that class as long as their kittens were alive accompanying the mother. Females with kittens reverted to “solitary females” if kittens died or dispersed. Many females transitioned between both classes during the course of the study. Independent males were those sexually mature animals that no longer accompanied their mothers. Winter was between November 1 and April 30 and summer was May 1 through October 31—to coincide with periods of snowfall and kitten vulnerability (Cooley et al., 2009b). More than 90% of kittens were born during the summer (Cooley et al., 2009b).

2.5. Sexual segregation

We first studied the three-dimensional home range overlap between the sexes and then further compared the selection of elevation between the sexes.

2.6. Utilization distribution overlap index

We first calculated 95% kernel density estimates using Hawth's Analysis Tools for ArcGIS (Beyer, 2004) to estimate summer and winter

home ranges for individuals in all reproductive classes. We then calculated seasonal utilization distribution overlap indices (UDOI-Fieberg and Kochanny, 2005) for adjacent male and female mountain lions showing at least 1% overlap of their home ranges during the study, using a script written for the R environment for statistical programming (R Development Core Team, 2009). 3-d utilization distribution overlap differs from 2-d home range overlap by including a temporal component to calculate the probability that two individuals used the same space (Fieberg and Kochanny, 2005). Index values range from 0.0 (no overlap) to 2.0 (complete overlap). All references in this study to UDOI are between females with kittens and males, and solitary females and males. We calculated the mean UDOI value for each female by summing the UDOI values of each overlapping male and dividing by the number of overlapping males (Maletzke, 2010). We tested for differences in mean UDOI values for reproductive class, area, season, and their interactions using factorial analysis of variance (ANOVA) and Tukey's Honestly Significant Test. We compared the additive effects of reproductive class, area, and season by constructing 95% confidence intervals around the mean UDOI for individuals within each class, area, and season combination.

2.7. Use versus availability of elevation

If segregation occurs at a finer (within home range) scale than the UDOI is able to detect, it may still be influenced by social or habitat factors *within* the home range (Neu et al., 1974). If such differences are occurring *within* home ranges, comparing UDOI values may fail to capture these fine scale differences if the variation occurs *within* the home range scale rather than at a landscape scale. Therefore, we also compared the use/availability of elevation (same as Wielgus and Bunnell, 1994b) by mountain lions in the heavily hunted population to that of the lightly hunted population to determine if segregation by elevation was occurring at the finer, within home range scale.

We compared the use of available elevation by FK, F and M within study areas and within seasons using Type II and Type III parametric ANOVA study designs (Thomas and Taylor, 1990). We also tested for differences in the distribution of used and available elevation using

non-parametric Kolmogorov–Smirnov tests. First, we calculated the availability of elevation for each individual using the mean of all 30 m × 30 m pixels contained within the 95% kernel density estimator home ranges calculated for use in the UDOI analysis. We then calculated use of elevation for each individual using the mean of all GPS point location coordinates for that individual. To determine if individuals were using elevation differently than was available to them (Type III; Thomas and Taylor, 1990, 2006), we used paired t-tests (SYSTAT) to test for differences in the mean elevation of used, versus available points of elevation for each individual.

Next, to determine if mean use was different than mean availability for each reproductive class, we calculated the means for all individuals within each reproductive class by study area and season and tested for differences in mean use and mean availability for reproductive classes (Type II; Thomas and Taylor, 1990) within each area and season using paired t-tests. To determine if the differences in use and availability within each reproductive class were different between reproductive classes, we used analysis of variance (Type II; Thomas and Taylor, 1990).

2.8. Kolmogorov–Smirnov tests

Last, because animal locations may be bimodal distributed with respect to elevation, we compared the actual distribution of points across the elevation gradient in the kernel home range with the available elevation. An individual may use elevation much higher, as well as much lower than the mean but have very little use near the mean (and therefore the mean may not accurately reflect the use of elevation within the home range). We calculated the mean difference in use versus availability for each reproductive class, by study area and season, and we tested for differences using the Kolmogorov–Smirnov test (SYSTAT). This was a non-parametric analog to our Type II ANOVA test.

3. Results

3.1. Utilization distribution overlap index

We captured, radio-monitored, and analyzed spatial data from 42 mountain lions in the two study areas: 22 total lions (13 males and 9 females) in the lightly hunted area and 20 total lions (7 males and 13 females) in the heavily hunted area. Each lion had 760 ± 418 (95% CI) GPS telemetry acquisitions per year.

UDOI differed among the main effects of reproductive class, area, and season in that order, but their interactions were not significant (Table 1). FK (UDOI = 0.25) overlapped less with males than F (UDOI = 0.47). The heavily hunted area (UDOI = 0.25) had less overlap with males than the lightly hunted area (UDOI = 0.46) and summer (UDOI = 0.26) had less overlap than winter (UDOI = 0.45).

The additive effects showed that the lowest UDOI with males was for FK in heavily hunted area during SUMMER (0.08) and the highest UDOI (0.66) was for F in lightly hunted area during WINTER (Fig. 2).

Table 1

Analysis of variance results for effect of reproductive class, area and season on Utilization Distribution Overlap Indices of mountain lions 2005–2008.

Source	Type III SS	Df	Mean squares	F-ratio	P
Reproductive class	0.482	1	0.482	8.952	0.005
Area	0.432	1	0.432	8.012	0.008
Season	0.385	1	0.385	7.141	0.011
Season × Area	0.006	1	0.006	0.103	0.750
Reproductive class × Area	0.024	1	0.024	0.454	0.505
Reproductive class × Season	0.026	1	0.026	0.474	0.496
Reproductive class × Season × Area	0.019	1	0.019	0.345	0.561
Error	1.885	35			

Bold indicates a significant P value.

3.2. Use versus availability of elevation

In the lightly hunted area no reproductive classes used elevation differently from availability during summer, nor were any reproductive classes different from each other (Table 2). During winter, all reproductive classes used elevations lower than were available but no reproductive classes were different than any other.

In the heavily hunted area during summer, females with kittens selected for elevations + 31.15 m higher than available, solitary females used elevation at availability, and males selected for elevations – 38.76 m lower than availability (Table 2). The overall difference in use versus availability of elevations between females with kittens and males was 69.91 m. During winter, only males selected for lower elevation than availability (– 29.13 m) and there were no differences between reproductive classes (Table 2).

Results from the Kolmogorov–Smirnov tests showed similar but more conservative results. The only difference in use vs. availability using the Kolmogorov–Smirnov test was between females with kittens and males in the heavily hunted area during summer. (Table 3).

4. Discussion

Our results show that trophy hunting of male carnivores exacerbates sexual segregation in mountain lions because of SSI, as it does in North American grizzly bears (Wielgus and Bunnell, 1995) and appears to do in European brown bears (Steyaert et al., 2013). Our results do not support the “no effect of hunting” or habitat segregation hypothesis of sexual segregation in mountain lions because: 1) Sexual segregation (differences in UDOI and differences in selection of elevation) was less pronounced for solitary females with dissimilar energetic requirements than males and more pronounced for females with offspring with similar energetic requirements. 2) Sexual segregation was less pronounced in the lightly hunted area where sexually dimorphic prey use was already observed and was more pronounced in the heavily hunted area where intra-sexual spatial overlap and shared space was already greater. 3) Sexual segregation was less pronounced during winter and was more pronounced during the summer when intra-sexual spatial overlap and shared space was already higher. The increased overlap between reproductive classes during winter is similar to results from a mountain lion population in Wyoming where associations appeared to be driven by snow depth and prey distribution (Elbroch et al., 2014).

Our results support the “hunting effect” social segregation hypothesis of sexual segregation in mountain lions because females with offspring avoided males (lower UDOI) and selected for higher elevations than males, especially in the heavily hunted area (with more infanticidal immigrant males), and during the summer when kittens are more vulnerable to infanticide. Differences in UDOI were not apparent in either study area during winter, suggesting avoidance of males may be due to the higher vulnerability of offspring to infanticide when kittens are younger. Most kittens were born during summer months; as a result, the mean age of kittens was lower during summer than during winter. During winter their larger size and cumulative effect of learned behaviors may increase their chances of survival when encountering males. Goodrich et al. (2008) reported similar behavior in tigers where most incidents of infanticide occurred when tiger kittens were less than 6 months old. The same occurred for infanticide in European brown bears with younger cubs of the year (<1 year old) bearing the brunt (Swenson et al., 1997, 2001a, 2001b) and females with young cubs segregating from males (Steyaert et al., 2013). Sexual segregation in North American grizzly bears was also greatest during the summer for females with cubs of the year (Wielgus et al., 1994; Wielgus and Bunnell, 1995) and for black bears with cubs of the year (Collins et al., 2002).

The mean UDOI values for each reproductive class by season by area show a clear pattern supporting the main effects. First, females with kittens appear to have lower UDOI values than solitary females. Second,

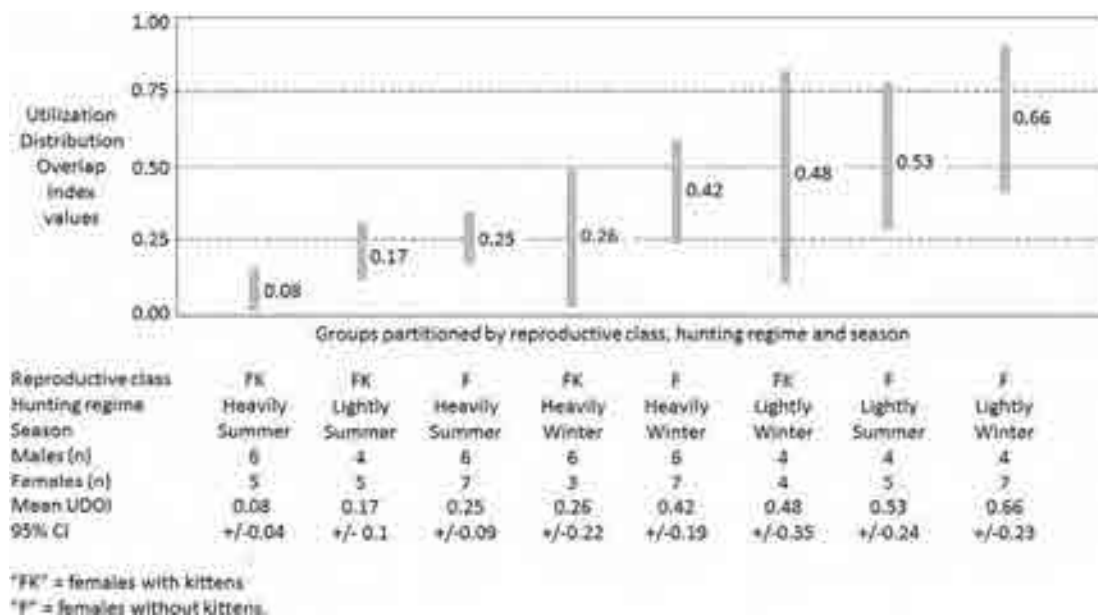


Fig. 2. 95% CI of mean UDOI values of mountain lions in northeastern and South Central Cascades partitioned into groups by reproductive class, hunting regime and season. A value of 0.0 indicates no overlap and a value of 2.0 indicates complete overlap.

the heavily hunted area has lower UDOI than the lightly hunted and finally, summer showed lower UDOI values than winter. The additive effects showed that the lowest overlap was between females with kittens in the heavily hunted area during summer, and the greatest overlap was by females in the lightly hunted area during winter.

Differences in how females with kittens used elevation within their home ranges relative to males appeared very pronounced in the heavily hunted area; and no differences between these classes were evident in the lightly hunted area. In the heavily hunted area, females with kittens used elevation on average 31.15 m higher than was available to them; males used elevations 38.76 m lower than was available to them; solitary females used nearly exactly what was available (−3.19 m). The net difference in use of elevation versus availability between females with kittens and males during the summer in the heavily hunted was 69.91 m. The biological effect of 69.91 m can be compared to results from Husseman et al. (2003). They modeled differences in kill site attributes between wolves (*Canis lupus*) and mountain lions and found a mean difference in kill elevations between the species of 82 m (1688 m and 1608 m respectively). The difference in elevation observed

here for females with cubs and males is similar to that observed for two different species of predator.

These results are consistent with the observed differences in prey use by different reproductive classes in the heavily hunted area during summer. Females with kittens selected for low density, declining secondary prey (mule deer) at higher elevations during summer, but males and solitary females selected for high density, primary prey (white-tailed deer) at low elevations throughout the year (Keehner et al., unpublished results). Such prey switching from abundant to rare prey (all else being equal) runs counter to all standard energetic models of rational predator/prey dynamics (Case, 2000, Sinclair et al., 2006).

These results and the results of Robinson et al. (2008), Cooley et al. (2009a, 2009b), and Maletzke (2010), indicate that spatial segregation between reproductive classes of mountain lion is occurring in the heavily hunted study area and may be the result of heavy male harvest of mountain lions. Furthermore, this segregation appears to be influencing predator selection for low density, declining, mule deer (Robinson et al., 2002; Cooley et al., 2008; Keehner et al., unpublished results). For yet another example, declines in the last remaining threatened Selkirk Mountain caribou (*Rangifer tarandus*) population in the lower US (Wittmer et al., 2005) also appears due to social segregation and prey switching by female mountain lions. In that case, very heavy hunting of males (66%, Lambert et al., 2006) corresponds with female use of high elevation caribou range and male use of low elevation white-tailed deer range (Wielgus, unpublished results). It appears that hunting of mountain lions to reduce predation on sensitive mule deer and

Table 2

Differences in use versus availability of elevation within (paired t-test) and between (ANOVA) reproductive class(es) in lightly hunted and heavily hunted populations of mountain lions in Washington 2002–2008.

Season	Class	Used	Available	U-A	P	P (between classes)
<i>Lightly hunted</i>						
Summer	FK	966.69	976.23	−9.54	0.18	0.87
	F	934.55	937.77	−3.22	0.31	
	M	1058.78	1068.20	−9.42	0.22	
Winter	FK	805.82	829.49	−23.67	<0.01	0.36
	F	830.99	855.56	−24.56	<0.01	
	M	871.22	909.79	−38.56	<0.01	
<i>Heavily hunted</i>						
Summer	FK	1078.57	1047.42	31.15	0.01	0.04
	F	994.29	997.47	−3.19	0.43	
	M	975.22	1013.98	−38.76	0.11	
Winter	FK	836.85	836.90	−0.05	0.50	0.53
	F	845.95	858.64	−12.69	0.18	
	M	802.86	831.98	−29.13	0.09	

Bold indicates a significant difference in use versus availability of elevation.

Table 3

Results of Kolmogorov–Smirnov of differences in use versus availability of elevation between reproductive classes of mountain lion in lightly hunted and heavily hunted populations of mountain lions in Washington 2002–2008.

		<i>Lightly hunted</i>				<i>Heavily hunted</i>		
		Class	FK	F		FK	F	M
Summer	FK	1	–	–	FK	1	–	–
	F	0.844	1	–	F	0.222	1	–
	M	0.958	0.735	1	M	0.016	0.236	1
Winter	FK	1	–	–	FK	1	–	–
	F	0.844	1	–	F	0.859	1	–
	M	0.707	0.971	1	M	0.188	0.313	1

threatened mountain caribou may have actually precipitated and caused the mule deer and caribou declines.

5. Conclusion

So far, the unanticipated cascade effects of male trophy hunting in mountain lions includes: 1) female mountain lion population decline (Lambert et al., 2006, Robinson et al., 2008, Cooley et al., 2009b, Wielgus et al., 2013), 2) increased sexual segregation (this paper), and 3) prey switching to declining secondary prey (Keehner et al., unpublished results, Wielgus, unpublished results). Similarly, Davidson et al., 2011 found socio-spatial behavior in African lions (*P. leo*) was negatively affected by trophy hunting in Africa. Johansson et al., 2015 found that retaliatory killing of snow leopards (*Panthera uncia*) may disproportionately increase male snow leopard mortality as male snow leopards are more likely to prey upon domestic livestock than females or young males. Historically, carnivore management has seemingly concluded that the removal of males from the population is simply compensatory in nature. Recent studies have demonstrated very clearly, that the numerical response of carnivore populations is not the only consideration managers should take into account when setting hunting seasons, methods, bag-limits or quotas. Socio-spatial behaviors, including the effects of segregation also affect valuable prey species. We encourage others to conduct similar studies in other potentially infanticidal carnivores such as grizzly bears, brown bears, black bears, leopards, jaguars, and tigers to see if adult male mortality has similar negative effects worldwide.

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Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface

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ABSTRACT

Human development and climate change are two stressors that threaten numerous wildlife populations, and their combined effects are likely to be most pronounced along the human development-wildland interface where changes in both natural and anthropogenic conditions interact to affect wildlife. To better understand the compounding influence of these stressors, we investigated the effects of a climate-induced natural food shortage on the dynamics of a black bear population in the vicinity of Durango, Colorado. We integrated 4 years of DNA-based capture-mark-recapture data with GPS-based telemetry data to evaluate the combined effects of human development and the food shortage on the abundance, population growth rate, and spatial distribution of female black bears. We documented a 57% decline in female bear abundance immediately following the natural food shortage coinciding with an increase in human-caused bear mortality (e.g., vehicle collisions, harvest and lethal removals) primarily in developed areas. We also detected a change in the spatial distribution of female bears with fewer bears occurring near human development in years immediately following the food shortage, likely as a consequence of high mortality near human infrastructure during the food shortage. Given expected future increases in human development and climate-induced food shortages, we expect that bear dynamics may be increasingly influenced by human-caused mortality, which will be difficult to detect with current management practices. To ensure long-term sustainability of bear populations, we recommend that wildlife agencies invest in monitoring programs that can accurately track bear populations, incorporate non-harvest human-caused mortality into management models, and work to reduce human-caused mortality, particularly in years with natural food shortages.

1. Introduction

Human development and climate change are two important stressors threatening global biodiversity (Bellard et al., 2012; Newbold et al., 2015). Expanding human development and infrastructure affect wildlife by eliminating habitat (Theobald, 2010), fragmenting and degrading existing habitat (Riitters et al., 2009), and increasing human disturbance (Trombulak and Frissell, 2000; Hansen et al., 2005), impacts which have been shown to displace wildlife (Vogel, 1989; Sawyer et al., 2006), affect movement behavior (Hurst and Porter, 2008; Cushman and Lewis, 2010), reduce demographic rates (Hansen et al., 2005), and contribute to population declines (Sorensen et al., 2008). Climate change affects wildlife by shifting long-term averages of climatic variables (e.g., warmer overall temperatures, earlier growing

season) and increasing the frequency and intensity of extreme climatic events (e.g., droughts, floods; Stocker et al., 2013), which all can have substantial effects on animal behavior (Wong and Candolin, 2015), physiology (Vázquez et al., 2015), distributions (Chen et al., 2011), and population dynamics (Koenig and Liebhold, 2016).

Recent research efforts have increasingly focused on understanding the cumulative and interactive effects of multiple stressors on wildlife populations as investigators have recognized the diverse pressures influencing animals and the potential for detrimental additive or synergistic effects (Brook et al., 2008; Mantyka-Pringle et al., 2012; Côté et al., 2016). Such interactions are likely to be particularly pronounced along the human development-wildland interface where multiple stressors can converge and have compounding impacts on wildlife populations. Animals living along the development-wildland interface

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must contend with climate change-induced stressors in the natural environment such as shifts in vegetative phenology (Post and Forchhammer, 2008; Monteith et al., 2011), altered weather patterns (Rodenhouse et al., 2009; Skagen and Adams, 2012), and increased frequency of extreme climatic events (Altwegg et al., 2006; Boersma and Rebstock, 2014), while also coping with development-induced habitat loss and fragmentation, and increased exposure to disease, pollution, and human-caused mortality (McCleery et al., 2014). For example, climate-induced declines in sea-ice have reduced foraging opportunities for some polar bears (*Ursus maritimus*), and have forced them to reside on land during summer months. While this shift to land has been associated with reduced body condition of bears, it has also been accompanied by increases in conflicts with people (Stirling and Derocher, 2012), which can result in higher rates of human-caused mortality.

The compounding effects of multiple stressors along the human development-wildland interface are particularly concerning for the American black bear (*Ursus americanus*). Black bear behavior and demography are strongly tied to climate-induced variation in natural vegetative foods (Reynolds-Hogland et al., 2007; Baruch-Mordo et al., 2014; Johnson et al., 2015), and extreme weather events can cause seasonal food shortages which have been associated with reduced reproduction (Rogers, 1987a; Elowe and Dodge, 1989) and cub survival (Rogers, 1987a; Obbard and Howe, 2008). However, such events can also elevate levels of human-bear conflicts and human-caused mortalities (Zack et al., 2003; Baruch-Mordo et al., 2014) as bears increase their use of areas of human development in search of alternative food resources (Johnson et al., 2015). Because bear populations occurring along the human development-wildland interface are subject to the combined effects of climate-induced food shortages and increased human-caused mortality (e.g., vehicle collisions, lethal management removals, and illegal kills), their populations may be particularly susceptible to decline (Lewis et al., 2014). Improving our understanding of how multiple stressors drive black bear population dynamics is critical for developing future management policies that will ensure the sustainability of bear populations as changes in climate and land use continue.

We investigated the combined effects of human development and a climate-induced natural food failure on a black bear population located near the city of Durango in southwestern Colorado. In 2012, our study area experienced a late-spring hard freeze (Peterson, 2013; Rice et al., 2014) which caused a widespread natural food shortage for black bears in the region. Johnson et al. (2015) found that, under those conditions, black bears increased their use of human development to obtain anthropogenic resources for subsidy, a behavioral shift that had unknown consequences on the bear population. Our objective was to evaluate the effects of human development and the food shortage on the population of bears in our study area based on the hypothesis that combination of those stressors would result in a substantial population decline. We integrated spatial capture-recapture data and GPS collar data to quantify the abundance, density, and population growth rate of bears before and after the food shortage along the development-wildland interface. In addition, we used our integrated spatial capture-recapture models to investigate the influence of human development on the distribution of bears on the landscape (2nd order selection; Johnson, 1980) before and after the food failure. Our analysis provides important insight about the combined effects of multiple stressors facing black bear populations along the development-wildland interface, with key implications for bear management and conservation.

2. Study area

Our study area (Fig. 1) was located in southwestern Colorado and contained the city of Durango, Colorado (37.2753°N, 107.8801°W). Durango (~18,000 residents; <https://www.census.gov/quickfacts/>) is surrounded by mountainous terrain ranging in elevation from 1930 to

3600 m, and is generally characterized as having mild winters and warm summers that experience monsoon rains. Vegetation in the region is dominated by ponderosa pine (*Pinus ponderosa*), aspen (*Populus tremuloides*), pinyon pine (*Pinus edulis*), juniper (*Juniperus* spp.), mountain shrubs (*Prunus virginiana*, *Amelanchier alnifolia*, etc.) and agriculture. Agriculture in the region is primarily irrigated pasture for grazing livestock, which provides negligible food resources or cover habitat for black bears. Durango is largely surrounded by public land managed by the San Juan National Forest, Bureau of Land Management (BLM), Colorado Parks and Wildlife (CPW), La Plata County and the City of Durango.

3. Methods

3.1. General approach

To estimate population parameters for bears before and after the food shortage, we combined DNA-based spatial capture-recapture (SCR) data with GPS-telemetry based resource selection data into a single integrated spatial capture-recapture (ISCR) analysis. We limited our analysis to female black bears because we had reliable DNA and telemetry data for this segment of the population and because female demography is the key to understanding changes in the population dynamics of bears (Freedman et al., 2003; Beston, 2011). We assumed our estimates of demographic parameters applied only to the population of bears ≥ 1 year old because bears < 1 year old are unlikely to be detected by the sampling methods we used (Drewry et al., 2013; Laufenberg et al., 2016). Our approach was organized into a 2-stage analysis. In the first stage, we used GPS data and resource selection function (RSF) models to identify important 3rd-order resource selection covariates (within the home-range; Johnson, 1980) that were then used in the second stage. In the second stage, we integrated GPS and SCR data into a single model that allowed us to estimate abundance, density, detection probabilities, 3rd-order resource selection coefficients for habitat covariates identified in the first analysis, coefficients relating habitat covariates to the distribution of bears across the landscape (2nd-order selection; Johnson, 1980), and relative variable importance measures for 2nd-order habitat covariates. We obtained productivity data on important black bear foods collected during our study to characterize the natural food shortage caused by the late-spring freeze in 2012. We also obtained records of observed bear mortalities collected by CPW within our study area to use as an index of annual human-caused mortality during before and after the food shortage.

3.2. Data sources

3.2.1. Non-invasive DNA data

We used non-invasive hair sampling methods to obtain unique, multilocus genotypes for individual bears, determine individual identities, and record capture histories for capture-mark-recapture analysis (Woods et al., 1999). Each year from 2011 to 2014 we constructed an array of baited, barbed-wire enclosures (hereafter referred to as hair snares) from which we collected hair samples over multiple survey occasions. Hair snare locations were based on a regular 6×6 grid pattern with the grid-cell size set at 4×4 km. Each cell contained 1 hair snare consisting of a single strand of 4-point barbed wire stretched around and attached to ≥ 3 trees at 50 cm above ground and enclosing an area 6–10 m in diameter. We baited each hair snare with liquid scent applied to burlap hung in a tree approximately 3 m above ground and to an imitation “cache” of woody debris constructed at the center of the wire enclosure. Scent bait consisted of decomposing fish liquids, various commercial bear scents, and decomposing road-killed deer liquids. Following construction, hair snares were baited and subsequently checked every 7 days for 6 consecutive weeks each year from approximately the second week of June through the last week of July. Prior to initial baiting and after subsequent sample collections, we heat-

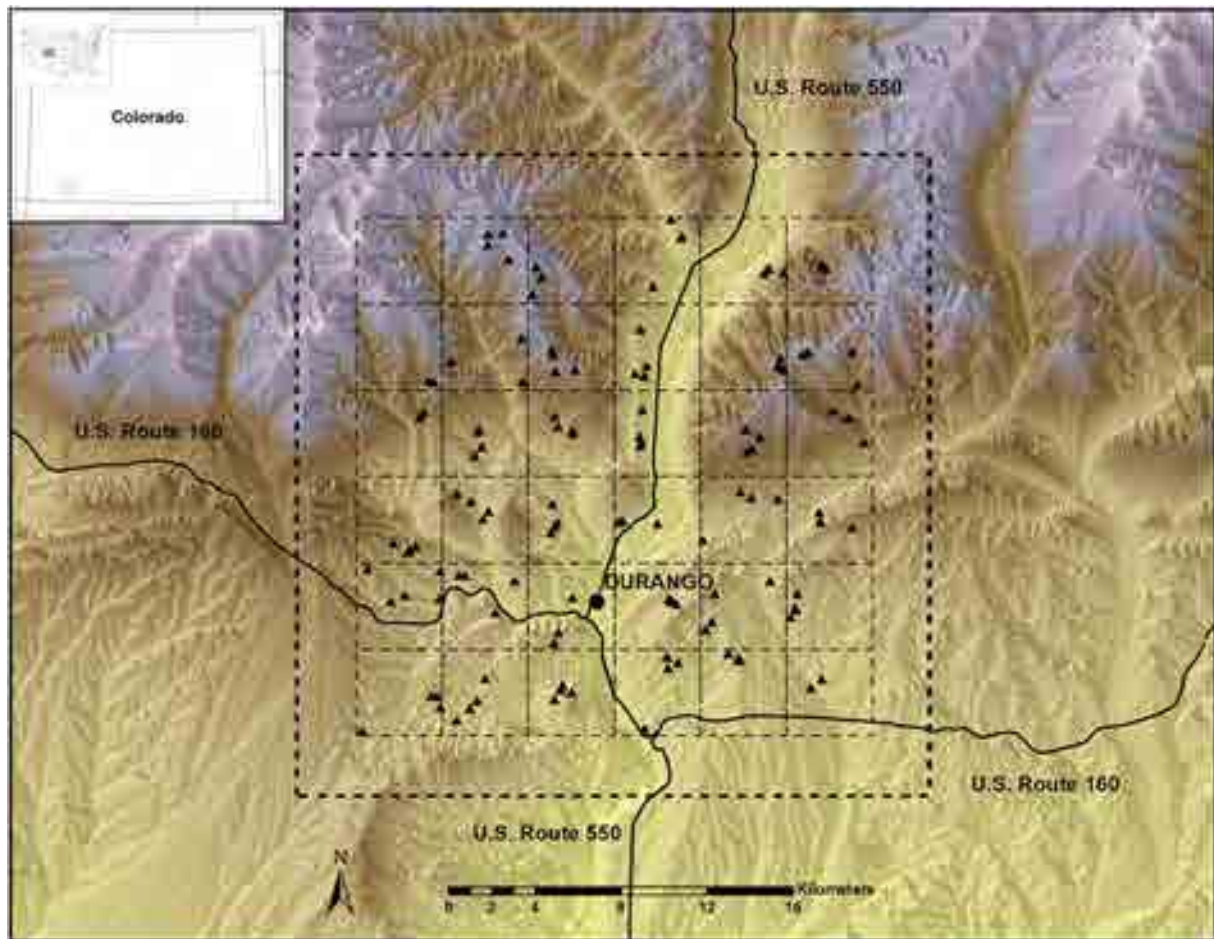


Fig. 1. Map of the study area showing the noninvasive sampling grid (thin dashed lines), hair snare locations (filled triangles) from 2011 to 2014, and state-space extent (thick dashed lines) in southwestern Colorado, USA near the city of Durango (filled circle). Major highways represented by solid lines. A single hair snare was operated per cell each year and the location of most snares changed across years resulting in multiple symbols per cell.

sterilized the barbed wire with a handheld lighter to prevent sample contamination between collection periods.

We submitted all samples to Wildlife Genetics International, Inc. (WGI; Nelson, BC, Canada) for DNA extraction and microsatellite genotyping following standard protocols (Woods et al., 1999; Paetkau, 2003; Roon et al., 2005). We selected 8 microsatellite markers (G10J, G10L, G10B, G1D, G10H, G10M, G10U, and MU59) that, when combined with a sex marker, provided sufficient power to reliably differentiate unique genotypes and identify individual black bears (Paetkau, 2003).

3.2.2. GPS-collar data

We captured black bears between May and September 2011–2014 within approximately 10 km of Durango using cage traps and Aldrich foot snares (Jonkel, 1993) following protocols described in Colorado Parks and Wildlife Animal Care and Use Protocol #01-2011. Adult female bears estimated to be ≥ 3 years old were immobilized and fitted with Vectronics Globstar collars (Vectronic Aerospace GmbH, Berlin). The collars were programmed to collect hourly GPS locations and were maintained during annual winter den visits so that individuals were continuously monitored until death or the collar malfunctioned. We only used GPS locations collected during the same period that hair-snare operations occurred to ensure that our SCR and GPS data sets were temporally matched for our joint analysis.

3.2.3. Mortality data

We used reports of bear mortalities opportunistically collected by

CPW from 2007 to 2014 to calculate annual counts of cause-specific mortalities that occurred within our study area. We classified mortalities into 3 cause-specific categories (vehicle, harvest, and lethal management removal) and 1 “other” category (e.g., electrocution, natural, unknown). We lacked the data to correct counts for imperfect detection and, thus, consider them a relative index of different sources of mortality rather than measures of true mortality rates.

3.2.4. Natural food data

We used productivity indices of 5 hard and soft mast-producing species (Gambel oak [*Quercus gambelii*], chokecherry [*Prunus virginiana*], crabapple [*Malus* spp.], serviceberry [*Amelanchier alnifolia*], and pinyon pine [*Pinus edulis*]) important to black bears in our study area to characterize annual natural food conditions. Indices were derived from bi-weekly surveys conducted along 15 transects each year during the months of August and September (for details see Johnson et al., 2017). For each transect, the possible range of values for each species was 0 to 100 with 0 indicating no mast detected, and 100 indicating that all plants observed had abundant mast. Based on the maximum score for each mast species on each transect across the sampling period, we calculated the annual median value of mast available for each species.

3.3. Data analysis

3.3.1. RSF variable selection

We developed an RSF model of space use that was later embedded into our ISCR model to effectively scale detection probability as a

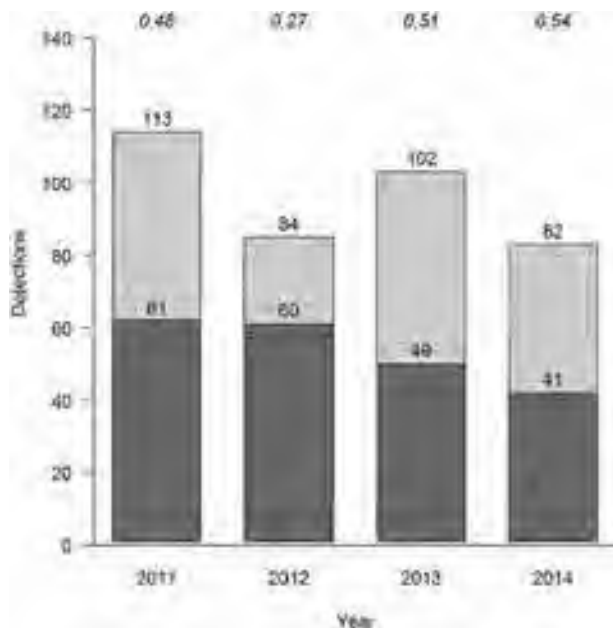


Fig. 2. Summary of DNA-based capture-mark-recapture data for female American black bears collected in southwestern Colorado, USA from 2011 to 2014. Annual number of unique bears identified are represented by dark gray columns and total number of annual detections are represented by light gray columns. Italicized values are annual proportions of unique females detected more than once.

function of distance between a hair snare and animal activity centers *and* as a function of 3rd-order resource selection. We used a standard RSF model based on a multinomial formulation of a spatial point process model for discretized space (i.e., raster data) and extended to account for resource availability as a function of distance from animal activity centers (Johnson et al., 2008; Forester et al., 2009; Royle et al., 2013). This formulation conditions on the total number of telemetry locations for each bear which is a fixed component of study design based on a known frequency for collecting locations. We assumed that missing GPS locations were randomly distributed and chose not to explicitly model them given our average fix success rate across collared female bears was high ($\bar{x} = 0.92$). Formally, our model of space use for an individual was defined as:

$$\pi(\mathbf{x} | \mathbf{s}) = \frac{\exp(-\alpha_1 d(\mathbf{x}, \mathbf{s})^2 + \alpha \mathbf{z}(\mathbf{x}))}{\sum_{\mathbf{x}} \exp(-\alpha_1 d(\mathbf{x}, \mathbf{s})^2 + \alpha \mathbf{z}(\mathbf{x}))},$$

where $\pi(\mathbf{x} | \mathbf{s})$ is the probability of an animal using a raster pixel located at center coordinates \mathbf{x} given that animal's activity center located at coordinates \mathbf{s} , $\alpha_1 = 1/(2\sigma^2)$ describes the rate of decrease in probability of use as a function of distance in terms of a scale parameter σ , $d(\mathbf{x}, \mathbf{s})^2$ is the squared distance between a raster pixel and activity center, and α is a vector of regression coefficients that describes the effects that covariate values $\mathbf{z}(\mathbf{x})$ have on the probability of use.

We fit all possible additive combinations of 14 candidate RSF covariates (i.e., percent agriculture, aspen, conifer, meadow, oak shrub, pinyon-juniper association, riparian, shrub, and subalpine, elevation, slope, terrain ruggedness, and distance to drainage; for more detailed descriptions of resource selection covariates see Supplementary material 'Spatial Covariate Descriptions') to year-specific GPS data sets. We included a quadratic term for elevation in any model that contained elevation as a main effect, as bears are known to select for intermediate elevations within the study area (Johnson et al., 2015). The final model set contained 16,383 covariate models and was balanced with respect to each covariate occurring in an equal number of models. We used a maximum likelihood approach in R (v3.2.1, R Core Team, 2015) based on code adapted from Royle et al. (2013) to fit RSF models and obtain

estimates of model coefficients and variable importance. We ranked models using Akaike's Information Criterion corrected for small sample sizes (AICc; Burnham and Anderson, 2002) and calculated model weights to estimate variable importance. For each covariate, we summed AICc model weights for all models in which the covariate of interest occurred and retained only those covariates that had cumulative weights ≥ 0.5 for subsequent analyses (Barbieri and Berger, 2004).

3.3.2. Integrated spatial capture-recapture analysis

We used SCR models extended by Royle et al. (2013) to account for the effects that heterogeneous space use has on the detection process (i.e., allowing non-circular home ranges) by explicitly modeling 3rd-order resource selection. A common approach to modeling the spatial distribution of animals in SCR models is to use a homogeneous Poisson point process model that assumes constant population density across the landscape. However, we were interested in how the distribution of female black bears across the landscape was related to habitat covariates, particularly human development, and whether those relationships changed in response to the food shortage. Therefore, we used an inhomogeneous Poisson (IP) point process model to relate habitat characteristics to black bear density (2nd-order selection). Because our habitat covariates for density were derived in discretized space (i.e., raster format), we formulated our IP model using a multinomial distribution conditional on total population size (N) for the entire state space to describe pixel-specific abundance (N_m) as a function of covariates (Royle et al., 2013). Pixel-specific abundance was linearly related to habitat covariates through the use of a log-link function and estimated regression coefficients (β). We modeled bear density as a function of human development (DEVELOPMENT), elevation (ELEVATION), forest cover (FOREST), and stream density (STREAMS), which are similar to covariates important to predicting black bear densities in other studies (Evans et al., 2017; Sun et al., 2017; for more detailed descriptions of density covariates see Supplementary material 'Spatial Covariate Descriptions'). We fit all possible additive combinations of the 4 candidate density covariates and a constant density model (CONSTANT) to each year of data. We included a quadratic term for ELEVATION in any model that contained that covariate as a main effect. The final model set contained 16 density models and was balanced with respect to each covariate occurring in an equal number of models.

The detection model governs the observation process that produces SCR data, and includes a spatial component that scales detection probabilities as a function of space use conditional on the location of an animal's activity center. Under this formulation, space use and, thus, detection probability is modeled as a function of distance between a hair snare and an animal activity center controlled by a spatial scale parameter (σ) and as a function of resource selection coefficients (α). Following Royle et al. (2013), we assumed our SCR data was a random subset of use locations (e.g., GPS) "thinned" by the sampling effectiveness of the hair snare. We calculated year-specific detection probabilities, but assumed that the detection probability did not vary across occasions within a year (e.g., time effects) or was influenced by a behavioral response to bait because we used liquid lures designed to stimulate interest yet offer no food reward that would increase the likelihood of a bear revisiting a specific site. We also did not consider modeling additional sources of individual heterogeneity in detection probability because individual-level covariates were not available for bears only detected by hair snares and relatively small sample sizes precluded the use of latent heterogeneity models (e.g., finite mixtures, logit-normal).

To integrate our GPS data into our SCR analysis, we combined the likelihoods for the SCR model and the RSF model into a single analysis. Formally, we specified our ISCR model as a joint likelihood for the 2 data sets (i.e., SCR and GPS) assuming complete independence between data sets (Royle et al., 2013). Because both likelihoods contain the same model parameters governing space use (i.e., σ , α), information on resource selection and home range scale is shared between the two data

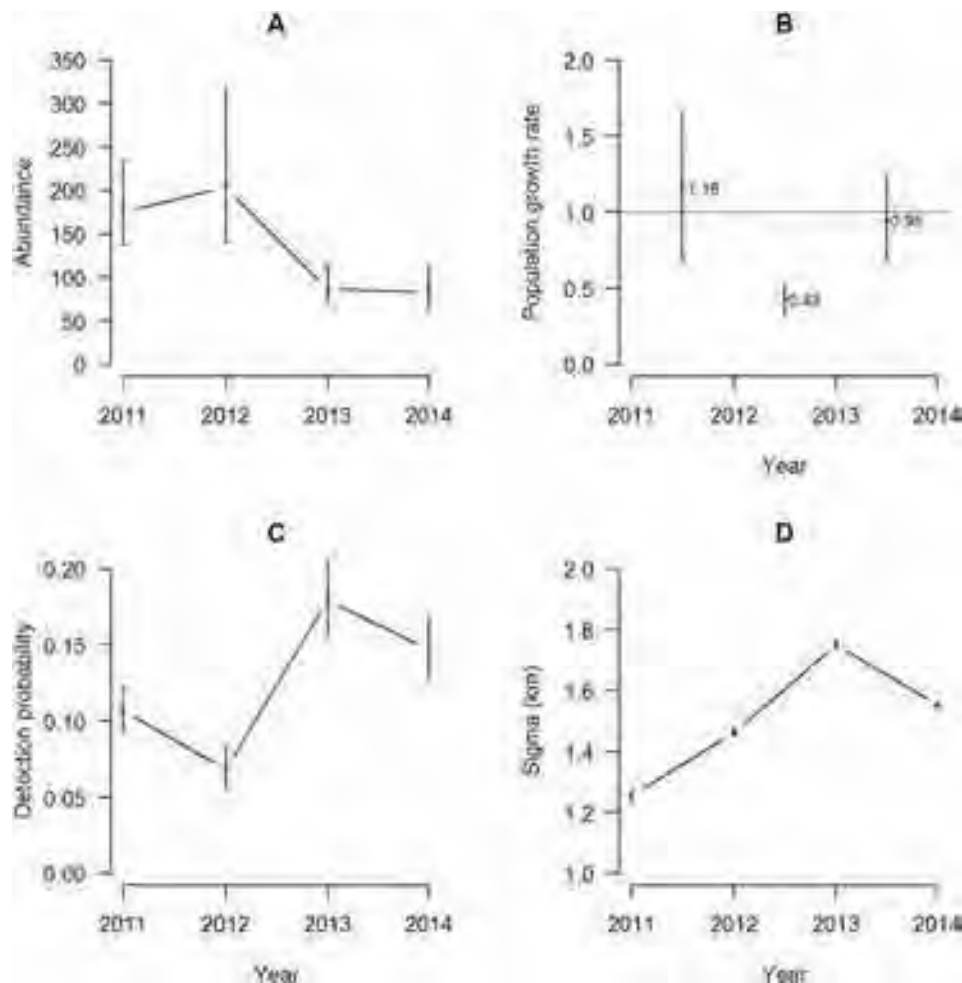


Fig. 3. Annual model-averaged parameter estimates from integrated spatial capture-recapture analyses using capture-recapture and GPS-telemetry data for female American black bears in southwestern Colorado from 2011 to 2014. Annual parameter estimates are abundance (panel A), realized population growth rate (panel B), population-level detection probability (panel C), and spatial scale of movement (panel D).

sets, allowing them to jointly estimate model parameters with improved precision. Understanding spatial patterns of resource selection, in turn, improved inferences about spatial heterogeneity in detection probabilities which then improved inferences for the point process governing estimates of abundance and spatial variation in density. Furthermore, integrating telemetry can greatly improve estimation of σ , a key detection model parameter in SCR models. As Royle et al. (2013) found, telemetry data is particularly useful for estimating σ when SCR data is sparse, which we anticipated was the case for our SCR data set.

We used a maximum likelihood approach in R based on code from Royle et al. (2013) to fit our ISCR models to each year of SCR-GPS data. We defined our state space by buffering our array of hair snares by 3 km which corresponded to a distance equivalent to $2 \times \sigma$; a distance that ensured the extent of our state space included the activity centers of all bears with access to the hair snare array (Fig. 1). The final state space had an area of 841 km² which we also used to define the extent of our habitat covariate rasters for modeling space use and density. We ranked models using AICc and calculated model weights for model averaging. By fitting our model set to each year of data independently, we were able to obtain year-specific model-averaged estimates of abundance and density. We derived realized population growth rates (λ) from our estimates of abundance and calculated associated sampling variances using the delta method (Powell, 2007). We derived year-specific model-averaged estimates of population-level detection probability (p) which we defined as the probability of a bear being detected at ≥ 1 hair snare in a given week. We used parametric bootstrapping to calculate

sampling variances for p . Additionally, we obtained year-specific estimates of relative importance for habitat covariates in our density analysis and produced model-averaged expected-density surfaces that provided inference on how bear distribution changed within the study area over time.

4. Results

We collected 2556 hair samples between 2011 and 2014. A total of 873 were excluded due to insufficient material ($n = 840$) or being hair from other species ($n = 33$). Of the remaining 1683 samples, 423 failed to produce reliable genotypes and 2 were classified as samples containing hair from ≥ 1 bear. The final data set contained 1258 successfully genotyped samples corresponding to a genotyping success rate of 74.7%. We identified a total of 138 unique female bears across all years with year-specific counts of unique females ranging from 41 to 61 (Fig. 2). We considered all genotyped samples for an individual collected at a given trap during a given sampling occasion to represent a single detection event. Pooling samples in this fashion resulted in year-specific SCR data sets containing counts of weekly detection events (y_{ij}) indexed by individual (i) and trap (j). The total number of detections for all years was 381 with annual totals of detections ranging from 84 to 113 and annual proportion of females detected more than once ranging from 0.27 in 2012 to 0.54 in 2014 (Fig. 2). The annual average number of sampling occasions during which females were detected ranged from 1.4 (SD = 0.7) in 2012 to 2.0 (SD = 1.3) in 2013 (Supplementary

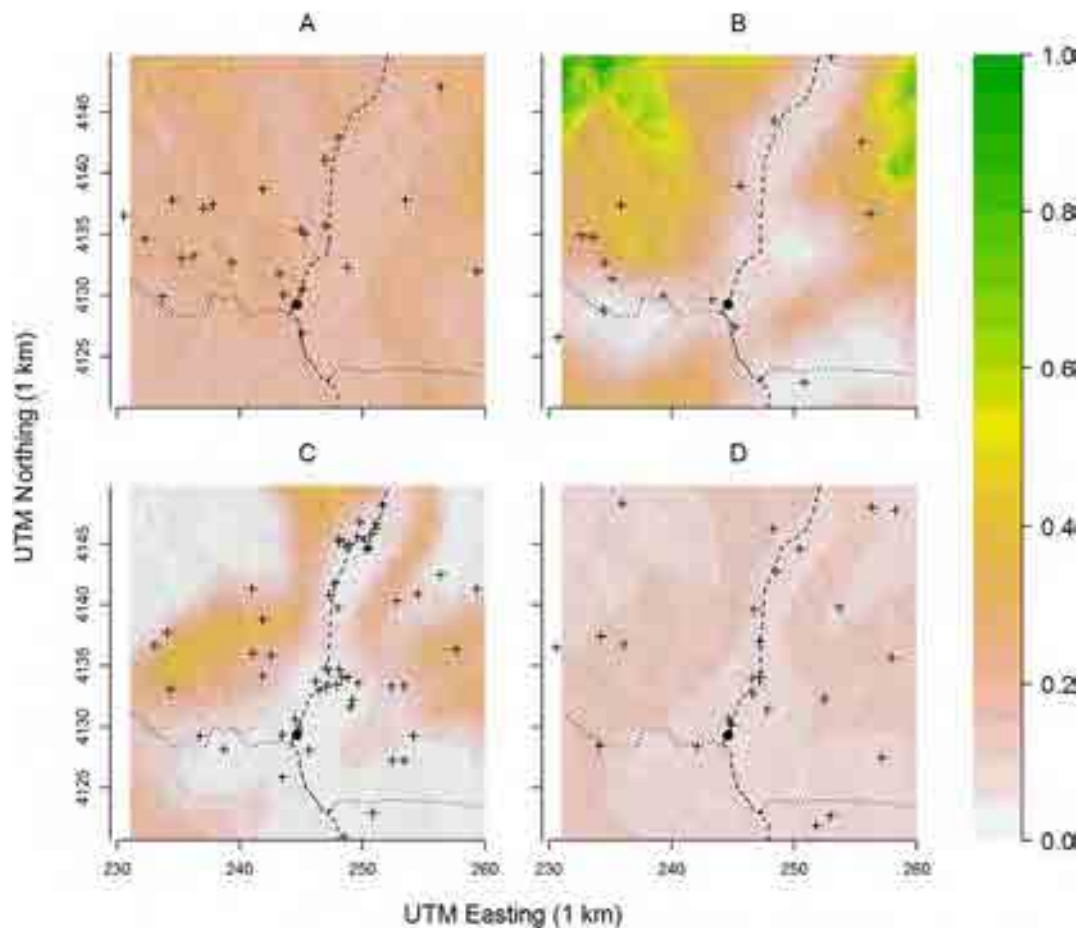


Fig. 4. Annual model-averaged predicted density (female bears/km²) surfaces for integrated spatial capture-recapture analyses using DNA-based capture-recapture and GPS-telemetry data for female American black bears in southwestern Colorado from 2011 to 2014. Panels A–D correspond to years 2011–2014 and the city of Durango, Colorado is represented by the filled circle. Locations of reported mortalities that occurred during the 12 months prior to each year of hair sample collection (e.g., 9 June 2012 to 9 June 2013 for panel C) represented by + symbols. U.S. Route 550 and U.S. Route 160 represented by dashed and dotted lines, respectively.

material Table S1) and the annual average number of hair snares at which females were detected was 1.10 (SD = 0.3–0.4) in 2011, 2012, and 2014 and was 1.22 (SD = 0.55) in 2013 (Supplementary material Table S1).

We collected a total of 80,081 successful GPS locations from 45 unique female bears during annual hair-snare periods conducted from 2011 to 2014: 7451 locations in 2011 (10 bears), 23,476 in 2012 (27 bears), 22,423 in 2013 (23 bears), and 26,734 in 2014 (27 bears). The annual mean number of locations per female bear ranged from 745.1 (SD = 202.3) in 2011 to 990.1 (SD = 166.4) in 2014.

The number of RSF covariates identified as important (i.e., cumulative AICc weights > 0.50) in our first analysis stage and retained for the ISCR analysis varied across years from 13 to 15. Of the 15 possible covariates tested, distance-to-drainage was dropped in 2011, shrub and subalpine variables were dropped in 2012, and oak shrub and subalpine were dropped in 2013.

We estimated female abundance to be 175.6 (SE = 24.7) in 2011, 203.2 (SE = 43.0) in 2012, 86.7 (SE = 10.4) in 2013, and 82.4 (SE = 12.1) in 2014 (Fig. 3A, Supplementary material Table S2), exhibiting a marked population decline between 2012 and 2013 when the natural food shortage occurred. This corresponded to a rate of population change (λ) of 0.43 (SE = 0.05; Fig. 3B), which was significantly different (i.e., non-overlapping CIs) than λ estimates before and after the food shortage. Density estimates for the 841-km² state space followed the same temporal patterns as abundance and ranged from a high of 0.24 (SE = 0.05) female bears/km² in 2012 to a low of 0.10 (SE = 0.01) female bears/km² in 2014 (Supplementary material Table

S2). Year-specific model-averaged estimates of detection probability (p) ranged from 0.07 (SE = 0.01) in 2012 to 0.18 (SE = 0.01) in 2013 (Fig. 3C, Supplementary material Table S2). Annual model-averaged estimates of the spatial scale of movement parameter (σ) ranged from 1.25 km (SE = 0.01) in 2011 to 1.75 km (SE = 0.01) in 2014 (Fig. 3D, Supplementary material Table S2).

Model selection uncertainty was high with no single model attaining an AICc weight > 0.50 in any year (Supplementary material Tables S3–S6). Constant density models were most supported in 2011 and 2014, whereas more complex models with multiple covariates were most supported in 2012 and 2013 suggesting greater heterogeneity in the spatial distribution of female bears in those years (Fig. 4). Using a cumulative weight threshold of 0.5 to classify a covariate as an important predictor of density, DEVELOPMENT and STREAMS were important in 2012 (Fig. 5) when bear density was lower in areas of denser human development and higher in areas with greater stream densities (Fig. 4), and DEVELOPMENT and ELEVATION were important in 2013 (Fig. 5) when density was also lower in developed areas and higher in mid-elevation areas (Fig. 4). In general, during all years, bear density was lower in developed areas than undeveloped areas; however, this pattern was particularly notable in 2013 when developed areas were nearly devoid of female bears (Fig. 5).

Between 2007 and 2014, we obtained 206 bear mortality records opportunistically collected within our study area. Annual total counts ranged from 11 in 2009 to 54 in 2012, the latter being a 3-fold increase over the 5-year average prior to the food shortage in 2012 (\bar{x} = 20.0 [SD = 7.2]; Fig. 6). In 2012, mortalities caused by vehicle collisions

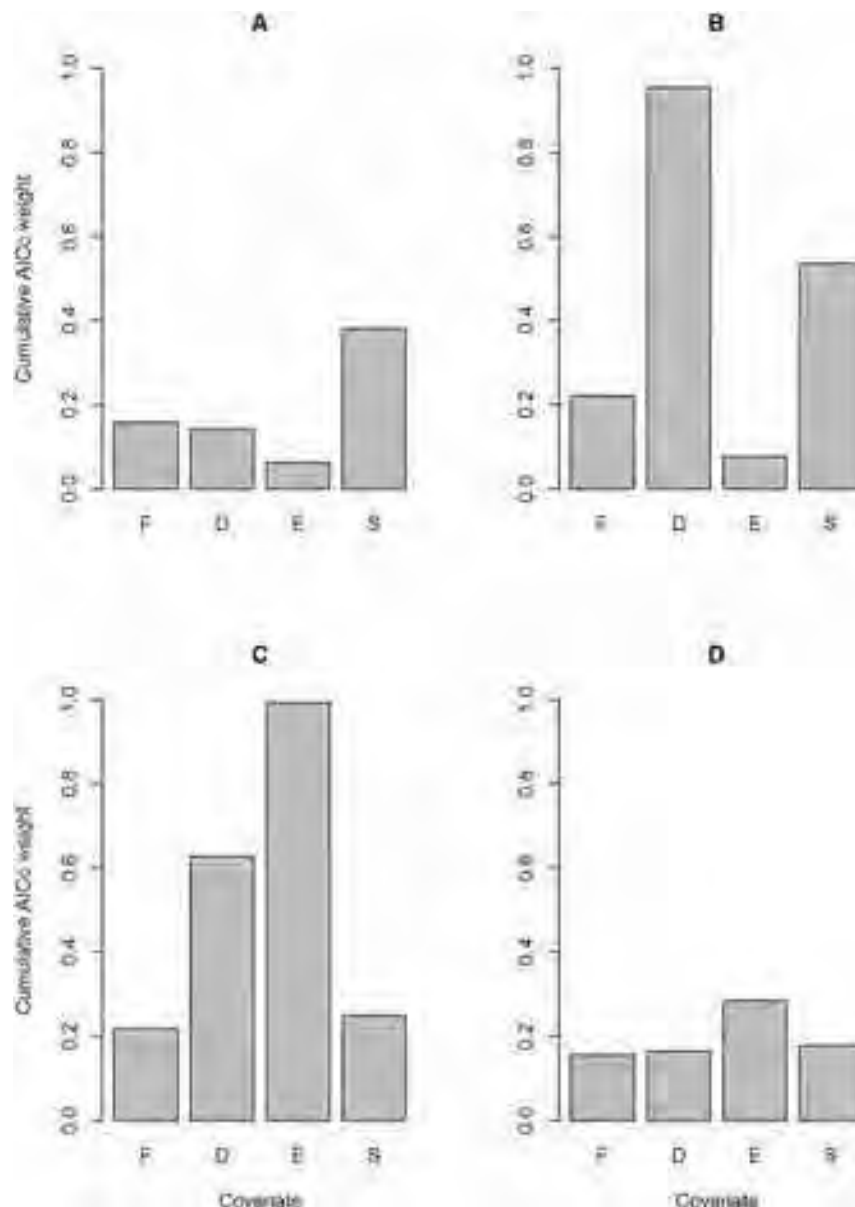


Fig. 5. Importance measures of covariates based on cumulative AICc model weights for integrated spatial capture-recapture analyses using capture-recapture and GPS-telemetry data for female American black bears in southwestern Colorado from 2011 to 2014. Panels A–D correspond to years 2011–2014 and letters F, D, E, and S correspond to FOREST, DEVELOPMENT, ELEVATION, and STREAMS covariates.

increased over 4-fold from the 5-year average of 3.4 (SD = 3.4) to 16 and 2 other human-caused sources, hunter harvest and lethal conflict removals, approximately doubled (Fig. 6).

Indices of natural foods available to bears were highly variable among years within species with species-specific CV values ranging from 0.8 to 1.4 (Fig. 7). Of the 5 mast species included in the natural food index surveys, 4 completely failed (i.e., index value = 0) to produce mast in 2012 (Fig. 7). Although no species completely failed in 2013 after the primary food shortage, productivity for 4 species remained below the mean value observed during the study indicating a possible residual climatic effect on bear foods from the previous year (Fig. 7).

5. Discussion

Our results provide evidence that human development can compound the effects of a climate-induced food shortage to significantly reduce a black bear population. Previous studies have found that food

shortages are often associated with reduced recruitment in black bears (Rogers, 1987a; Elowe and Dodge, 1989; Obbard and Howe, 2008), but to our knowledge, this is the first time that such a shortage has been associated with a major decline in a contiguous black bear population; notably the most severe decline that has been documented over a 1-year period. Hellgren et al. (2005) documented a similar decline, but their study focused on a small bear population ($N = 23$) existing in marginal habitat. In the absence of human development, natural food shortages have been found to have limited effects on bear populations. Under such conditions, recruitment is suppressed, which has little relative influence on bear population growth, whereas adult survival is unaffected (Beck, 1991; Kasbohm et al., 1996; Clark et al., 2005), the vital rate most important in driving bear population dynamics (Freedman et al., 2003; Beston, 2011). However, bears living near human development become much more susceptible to human-caused mortality (Hostetler et al., 2009; Baruch-Mordo et al., 2014; Obbard et al., 2014) as they shift their behaviors to forage on anthropogenic foods during natural food shortages. Indeed, the ultimate cause of the increase in

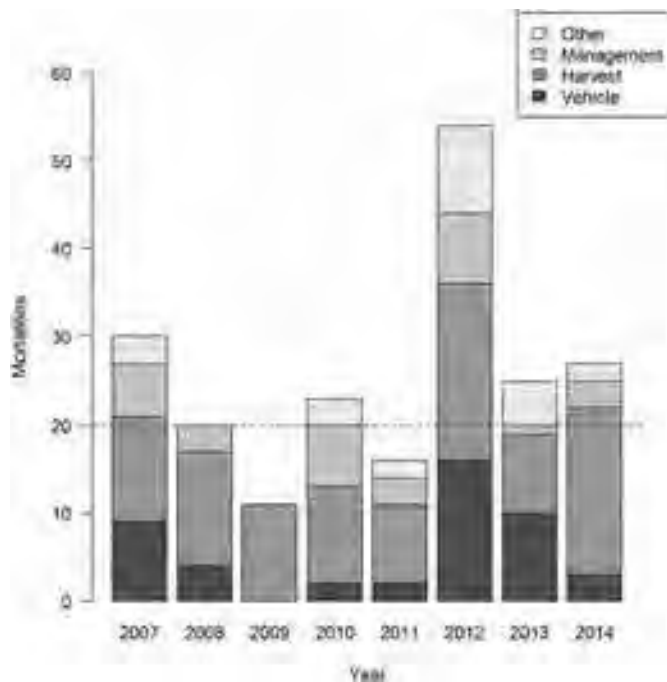


Fig. 6. Annual reported counts of 3 primary sources of human-caused mortality and all other sources combined (e.g., electrocution, natural, unknown) for male and female American black bears within the 841-km² study area in south-western Colorado from 2007 to 2014. Horizontal dashed line represents the 5-year average of total counts preceding a natural food shortage in 2012.

mortalities and population decline was the food shortage of 2012, which intensified proximate factors (e.g., human-bear interactions) that led to a much greater level of human-caused mortality within our study area compared with the previous 5 years. In particular, mortalities caused by vehicle collisions considerably increased. A similar pattern was recently observed in the vicinity of Aspen, Colorado, where sub-adult and adult survival declined ($\geq 26\%$) during poor natural forage years, largely as a consequence of bear-use of development and human-induced mortality (Baruch-Mordo et al., 2014).

The food shortage during the summer–fall period of 2012 primarily was the result of a late-spring frost event that severely reduced berry and nut production (Peterson, 2013; Rice et al., 2014). Late-spring frosts are known to cause mast crop failures (Neilson and Wullstein, 1980; Sharp and Sprague, 1967) and have been implicated in summer and fall food shortages in other bear populations (Beck, 1991; Obbard and Howe, 2008; Honda, 2013) indicating this phenomenon is not unique to our study system. Climate models predict, however, that these kinds of extreme weather events will likely become more common in the future (Karl et al., 2009), which may be problematic for bears; particularly as human development continues to expand across western landscapes. Lewis et al. (2014) used stochastic population simulation to evaluate the effects of increasing frequency of poor natural food years and various management-related removal scenarios on black bear populations. They found that a bear population could be sustained in scenarios with greater frequency of food failures if management removals were minimal, but would decline rapidly under scenarios where removals were high. However, the simulated demographic rates used by Lewis et al. (2014) to reflect poor food years corresponded to an asymptotic population growth rate of 0.77, a value far above the growth rate we estimated immediately following the food shortage in our study system ($\lambda = 0.43$). Although future food shortages may not be as severe as that which we observed in southwestern Colorado, we suggest that the effects of rare catastrophic events (e.g., population decline by $\geq 50\%$) be incorporated into long-term population assessments. This is especially important in the management of bears and

other k-selected large carnivores, which are demographically constrained in their ability to recover from population declines induced by episodes of high human-caused mortality.

Given our modeling approach, we could not explicitly separate individual contributions of in situ mortality and emigration to the observed population decline, but suspect that the decline was primarily caused by increased mortality. Emigration for female bears is rare, as they exhibit high natal site fidelity (Beeman and Pelton, 1976; Rogers, 1987b; Jones et al., 2015), a pattern supported by our telemetry data, as only 2 of 22 GPS-collared females emigrated from the study area in response to the food shortage of 2012. Alternatively, bears may temporarily shift or expand their home ranges or undertake long-range movements in response to food shortages (Pelton, 1989; Kasbohm et al., 1998; Hellgren et al., 2005; Baruch-Mordo et al., 2014). Such changes in space-use patterns may increase use of developed areas by bears, thereby increasing exposure to human-related sources of mortality (Noyce and Garshelis, 1997; Ryan et al., 2004; Ryan et al., 2007; Obbard et al., 2014). The high concentration of mortalities we observed in developed areas in 2012 indicates such a shift in space use likely occurred in response to the food shortage. Taken collectively, the relatively low number of collared females that emigrated, the increased level of human-caused mortalities reported during the food shortage (Fig. 6), and the concentration of those mortalities in developed areas (Fig. 4) further supports our conclusion that the population decline was primarily driven by human-caused mortality rather than emigration.

We also could not disentangle in situ reproduction and immigration processes with our SCR data set. However, we believe the effects of the food shortage on reproduction can be deduced from our estimates of population growth rate between 2013 and 2014 by making a similar assumption about immigration as for emigration in that high natal site fidelity of female bears also limits immigration. Reproductive failures commonly occur in bear populations immediately following mass food shortages due to poor body condition of parous females (Eiler et al., 1989; Bridges et al., 2011). Because black bear cubs (< 1 year old) typically were too small to be detected by our hair sampling methods (Laufenberg et al., 2016), evidence of contributions from in situ recruitment processes would lag (Clark et al., 2005) and not be detected until the following year. Based on the expectation of a 1-year lag in observing a recruitment failure in our data, the net effect would be a population growth rate slightly below 1.0 for the second year following a food shortage (assuming adult survival returned to pre-food shortage levels). Our growth rate estimate from 2013 to 2014 was 0.95 (SE = 0.14) which supports the conclusion that in situ reproduction was also affected by the food shortage.

In addition to detecting a major overall population decline following the food shortage, we detected temporal changes in spatial distribution of female bears across the study area. In particular, we found that fewer female bears occurred in or near developed areas relative to undeveloped areas after the food shortage compared with density patterns prior to the food shortage (Fig. 4). We surmise that the observed changes were primarily driven by the spatial distribution and intensity of human-caused mortalities associated with roads and urban areas in those years (Fig. 4). Our inference was supported by greater estimated importance of the DEVELOPMENT covariate, a variable with a strong negative relationship with density, in 2013 following the failure. We also found that densities of female bears declined in areas of marginal habitat (e.g., high-elevation alpine) far from human development, which we presume was due to some bears leaving those areas to access food in or near areas of human development. Despite some benefits for bears of anthropogenic foods in developed environments (e.g., increased reproduction, larger body size, reduced home range; Beckmann and Berger, 2003; Beckmann and Lackey, 2008) the costs of elevated human-caused mortality can result in human development-wildland interfaces that operate as ecological traps (Nielsen et al., 2004; Beckmann and Lackey, 2008; Hostetler et al., 2009; Baruch-Mordo et al., 2014). Given the sharp decline in bear abundance estimated for

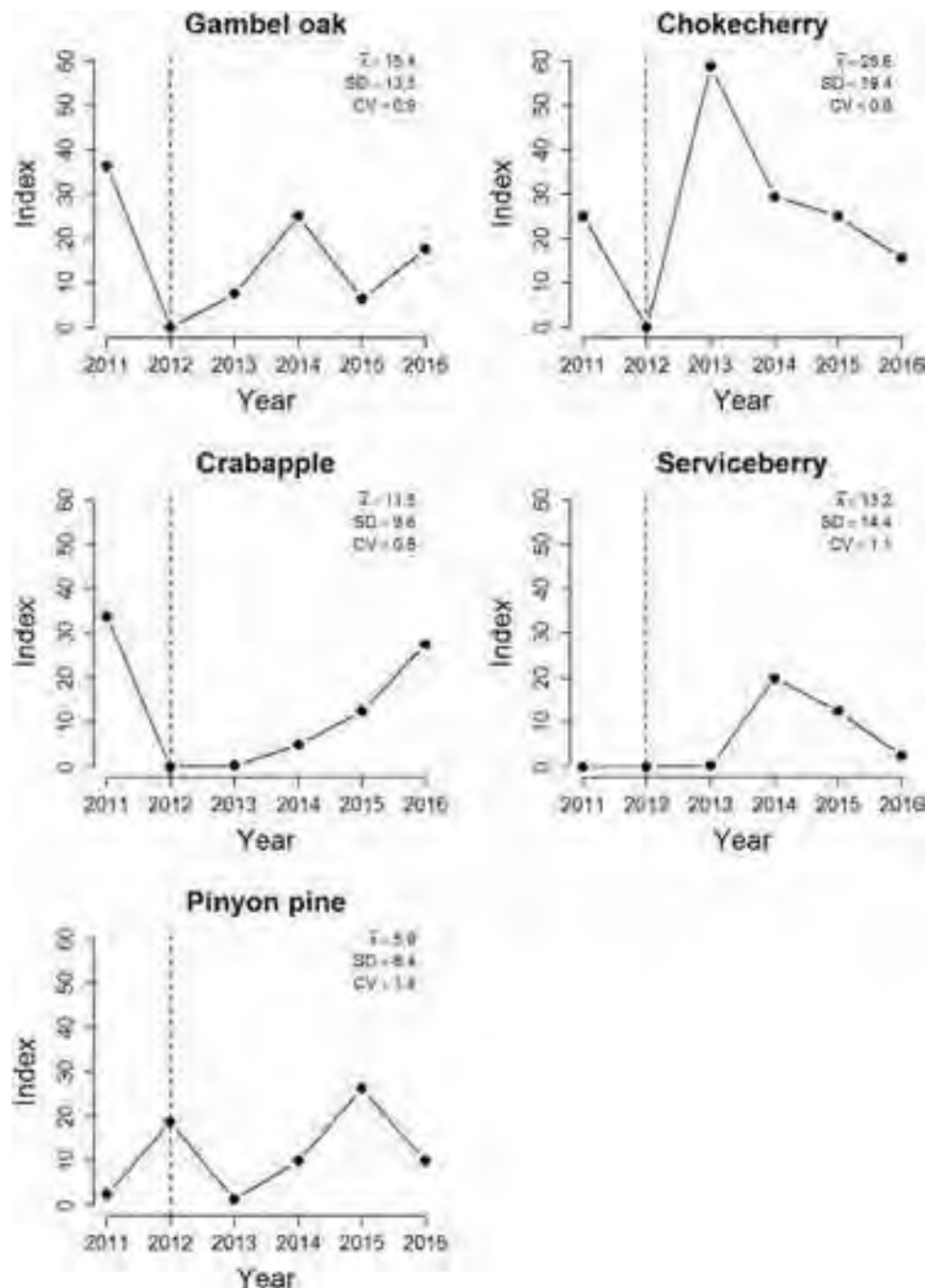


Fig. 7. Median abundance indices of 5 plants that provide hard and soft mast foods for American black bears in southwestern Colorado, USA from 2011 to 2016. The vertical dashed line indicates 2012, when there was a shortage of naturally occurring foods for black bears.

areas surrounding Durango, the overall increase in human-caused mortality following the food shortage, and the high density of those mortalities that occurred in and around development, our data would certainly support the notion that human development can serve as a population sink (Knight et al., 1988; Mattson et al., 1992; Ryan et al., 2007). This particularly is the case in poor natural food years when bears move greater distances in search for food, are attracted to town for access to anthropogenic foods, and suffer high mortality rates as a consequence (Baruch-Mordo et al., 2014). Furthermore, warmer temperatures and use of anthropogenic foods by bears have been linked to increased length of the active season which may result in even greater increases in human-caused mortality associated with developed areas thereby further exacerbating the compounding effects of predicted changes in human development and climate (Johnson et al., 2017).

Given expected increases in human development across the western U.S. (Leu et al., 2008), black bear population dynamics are likely to be increasingly influenced by non-harvest human-caused sources of mortality (e.g., vehicle collisions, lethal removals). Indeed, the annual number of non-harvest mortalities have been steadily increasing in Colorado over the past couple decades (Colorado Parks and Wildlife, 2015) as the state has seen corresponding increases in residential development, particularly in exurban and rural areas. If the frequency and severity of climate-related extreme weather events across the U.S. increases as predicted (Karl et al., 2009), the compounding effects of increasing human development and climate-induced natural food shortages may become an important determinant of long-term viability for a greater number of bear populations (Lewis et al., 2014). This shift has important implications for management agencies that typically rely

on harvest data to manage bear populations with limited information about bear population size or trend (Garshelis and Hristienko, 2006). The severe population decline detected in our study would have gone unnoticed from harvest data that are commonly collected and used to manage bears in Colorado, and was only detected due to monitoring efforts associated with an intense research project. Our results indicate management agencies may need to invest more resources into monitoring bear population trends, while accounting for non-harvest mortality rates in population models. For example, the novel integrated spatial capture-recapture approach we used could be optimized in terms of relative sampling effort for the both data types (i.e., capture-recapture and telemetry) to develop a cost-effective long-term monitoring solution.

Our results raise important questions about how management agencies can mitigate the compounding impacts of human development and natural food failures on bear populations in the future. In our system, vehicle collisions were a primary source of mortality, but effective mitigation strategies for this mortality source are unclear. In the southeastern United States, researchers have recommended the construction of highway underpasses (McCown et al., 2008; van Manen et al., 2012) but those systems differ in that bears are more continuously exposed to areas of high human density. In our system, bears are primarily drawn to development during periods of poor natural food availability. Therefore, a better strategy may be to reduce anthropogenic attractants and, thus, reduce the incentives for bears to forage within development (Baruch-Mordo et al., 2013; Johnson et al., 2018). As non-harvest human-caused mortality increases, management agencies may also need to reduce harvest and other lethal management actions to increase survival and ensure the long-term sustainability of bear populations.

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Appendix A. Supplementary materials

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Effects of Hunting on a Puma Population in Colorado

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ABSTRACT We investigated effects of regulated hunting on a puma (*Puma concolor*) population on the Uncompahgre Plateau (UPSA) in southwestern Colorado, USA. We examined the hypothesis that an annual harvest rate averaging 15% of the estimated number of independent individuals using the study area would result in a stable or increasing abundance of independent pumas. We predicted hunting mortality would be compensated by 1) a reduction in other causes of mortality, thus overall survival would stay the same or increase; 2) increased reproduction rates; or 3) increased recruitment of young animals. The study occurred over 10 years (2004–2014) and was designed with a reference period (years 1–5; i.e., RY1–RY5) without puma hunting and a treatment period (years 6–10; i.e., TY1–TY5) with hunting. We captured and marked pumas on the UPSA and monitored them year-round to examine their demographics, reproduction, and movements. We estimated abundance of independent animals using the UPSA each winter during the Colorado hunting season from reference year 2 (RY2) to treatment year 5 (TY5) using the Lincoln-Petersen method. In addition, we surveyed hunters to investigate how their behavior influenced harvest and the population. We captured and marked 110 and 116 unique pumas in the reference and treatment periods, respectively, during 440 total capture events. Those animals produced known-fate data for 75 adults, 75 subadults, and 118 cubs, which we used to estimate sex- and life stage-specific survival rates. In the reference period, independent pumas more than doubled in abundance and exhibited high survival. Natural mortality was the major cause of death to independent individuals, followed by other human causes (e.g., vehicle strikes, depredation control). In the treatment period, hunters killed 35 independent pumas and captured and released 30 others on the UPSA. Abundance of independent pumas using the UPSA declined 35% after 4 years of hunting with harvest rates averaging 15% annually. Harvest rates at the population scale, including marked independent pumas with home ranges exclusively on the UPSA, overlapping the UPSA, and on adjacent management units were higher, averaging 22% annually in the same 4 years leading to the population decline. Adult females comprised 21% of the total harvest. The top-ranked model explaining variation in adult survival (\hat{S}) indicated a period effect interacting with sex. Annual adult male survival was higher in the reference period ($\hat{S} = 0.96$, 95% CI = 0.75–0.99) than in the treatment period ($\hat{S} = 0.40$, 95% CI = 0.22–0.57). Annual adult female survival was 0.86 (95% CI = 0.72–0.94) in the reference period and 0.74 (95% CI = 0.63–0.82) in the treatment period. The top subadult model showed that female subadult survival was constant across the reference and treatment periods ($\hat{S} = 0.68$, 95% CI = 0.43–0.84), whereas survival of subadult males exhibited the same trend as that of adult males: higher in the reference period ($\hat{S} = 0.92$, 95% CI = 0.57–0.99) and lower in the treatment period ($\hat{S} = 0.43$, 95% CI = 0.25–0.60). Cub survival was best explained by fates of mothers when cubs were dependent ($\hat{S}_{\text{mother alive}} = 0.51$, 95% CI = 0.35–0.66; $\hat{S}_{\text{mother died}} = 0.14$, 95% CI = 0.03–0.34). The age distribution for independent pumas skewed younger in the treatment period. Adult males were most affected by harvest; their abundance declined by 59% after 3 hunting seasons and we did not detect any males >6 years old after 2 hunting seasons. Pumas born on the UPSA that survived to subadult stage exhibited both philopatry and dispersal. Local recruitment and immigration contributed to positive growth in the reference period, but recruitment did not compensate for the losses of adult males and partially compensated for losses of adult females in the treatment period. Average birth intervals were similar in the reference and treatment periods (reference period = 18.3 months, 95% CI = 15.5–21.1; treatment period = 19.4 months, 95% CI = 16.2–22.6), but litter sizes (reference period = 2.8, 95% CI = 2.4–3.1; treatment period = 2.4, 95% CI = 2.0–2.8) and parturition rates (reference period = 0.63, 95% CI = 0.49–0.75; treatment period = 0.48, 95% CI = 0.37–0.59) declined slightly in the treatment period. Successful hunters used dogs, selected primarily males, and harvested pumas in 1–2 days (median). We found that an annual harvest rate at the population scale averaging 22% of the independent pumas over 4 years and with >20% adult females in the total harvest greatly reduced abundance. At this scale, annual mortality rates of independent animals from hunting averaged 6.3 times greater than from all other human causes and 4.6 times greater than from all natural causes during the population decline. Hunting deaths were largely additive and reproduction and recruitment did not compensate for this mortality source. Hunters generally selected male pumas, resulting in a decline in their survival and abundance, and the age structure of the population. We recommend that regulated hunting in a

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Efectos de la Cacería en una Población de Pumas en Colorado

RESUMEN Investigamos los efectos de la cacería regulada en la población de pumas (*Puma concolor*) de la Uncompahgre Plateau (UPSA) en el suroeste de Colorado, USA. Exploramos la hipótesis de que una cosecha anual con una tasa promedio del 15% del número estimado de pumas independientes que están usando el área de estudio resultaría en una abundancia estable o un incremento de pumas independientes. Nuestra predicción de que la mortalidad por cacería sería compensada por: 1) una reducción en otras causas de mortalidad, por lo tanto, la supervivencia se mantendría igual o incrementaría; 2) un incremento en la tasa reproductiva; o 3) un incremento en el reclutamiento de pumas jóvenes. Este estudio se llevó a cabo a lo largo de 10 años (2004–2014) y fue diseñado con un periodo de referencia (años 1 al 5; RY1–RY5) sin cacería de pumas y un periodo de tratamiento (años 6–10; i.e., TY1–TY5) con cacería de pumas. Capturamos y marcamos pumas en la UPSA y se llevó a cabo el monitoreo a lo largo de todo el año para examinar la demografía, reproducción y movimientos de los pumas. Estimamos la abundancia de pumas independientes que usaban la UPSA cada invierno durante la estación de cacería de pumas en Colorado usando el año 2 (RY2) como referencia al año de tratamiento 5 (TY5) usando el método de Lincoln-Petersen. Adicionalmente, llevamos a cabo prospecciones con cazadores para investigar como el comportamiento de los cazadores influía la cosecha y la población de pumas. Capturamos y marcamos un total de 110 y 116 pumas únicos dentro del periodos de referencia y de tratamiento, respectivamente, a lo largo de un total de 440 eventos de captura. Esos pumas produjeron datos de mortalidad con información conocida para 75 adultos, 75 sub-adultos y 118 cachorros, con los cuales se estimaron tasas de supervivencia específicas por sexo y etapas de vida. En el periodo de referencia la abundancia de pumas independientes se incrementó a más del doble y exhibieron una supervivencia alta. La mortalidad natural fue la mayor causa de muerte en pumas independientes, seguida de causas producidas por seres humanos (e.g. atropellamientos, control de depredadores). En el periodo de tratamiento, los cazadores mataron 35 pumas independientes, adicionalmente capturaron y dejaron en libertad a 30 pumas en la UPSA. La abundancia de pumas independientes se redujo en un 35% después de 4 años de cacería con tasas de aprovechamiento con un promedio anual de 15% en la UPSA. Las tasas de aprovechamiento a la escala de población incluyendo pumas independientes marcados con ámbitos hogareños exclusivos dentro de la UPSA, con sobreposición en la UPSA y en unidades adyacentes de manejo fueron mayores, en promedio 22% anualmente durante los mismos 4 años que llevaron a la población al declive. Las hembras adultas comprendieron 21% de la cosecha total. El mejor modelo que explicaba la variación en la supervivencia (\hat{S}) de los adultos indicaba un efecto del periodo interactuando con el sexo. La supervivencia anual de los machos fue más alta durante el periodo de referencia ($\hat{S} = 0.96$, 95% CI = 0.75–0.99) que durante el periodo de tratamiento ($\hat{S} = 0.40$, 95% CI = 0.22–0.57). La supervivencia anual de las hembras fue 0.86 (95% CI = 0.72–0.94) en el periodo de referencia y 0.74 (95% CI = 0.63–0.82) durante el tratamiento. El mejor modelo de supervivencia en hembras sub-adultas, mostro que la supervivencia fue constante a través de los periodos de referencia y tratamiento ($\hat{S} = 0.68$, 95% CI = 0.43–0.84), donde la supervivencia de los machos sub-adultos exhibió el mismo patrón de supervivencia de los machos adultos: más alta en el periodo de referencia ($\hat{S} = 0.92$, 95% CI = 0.57–0.99) y menor en el periodo de tratamiento ($\hat{S} = 0.43$, 95% CI = 0.25–0.60). La supervivencia de los cachorros se explica mejor por el destino de sus madres, cuando estos son dependientes ($\hat{S}_{\text{madres vivas}} = 0.51$, 95% CI = 0.35–0.66; $\hat{S}_{\text{madres muertas}} = 0.14$, 95% CI = 0.03–0.34). La distribución por edades de los pumas independientes estuvo sesgada a animales jóvenes durante el periodo de tratamiento. Los machos adultos fueron los más afectados por el aprovechamiento, su abundancia se redujo en un 59% después de 3 temporadas de cacería, y una ausencia de machos >6 años de edad después de 2 temporadas de cacería. Los pumas nacidos en la UPSA que sobrevivieron a la etapa sub-adulta exhibieron características filopátricas y de dispersión. El reclutamiento local y la inmigración contribuyeron al crecimiento positivo en el periodo de referencia. Sin embargo, el reclutamiento no compenso por la pérdida de machos adultos y parcialmente compenso por la pérdida de hembras durante el periodo de tratamiento. El intervalo promedio entre nacimientos fue similar entre los periodos de referencia y tratamiento (periodo de referencia = 18.3 meses, 95% CI = 15.5–21.1; periodo de tratamiento = 19.4 meses, 95% CI = 16.2–22.6), mientras que el tamaño de camada (periodos de referencia = 2.8, 95% CI = 2.4–3.1; periodo de tratamiento = 2.4, 95% CI = 2.0–2.8) y las tasas de parición (periodo de referencia = 0.63, 95% CI = 0.49–0.75; periodo de tratamiento = 0.48, 95% CI = 0.37–0.59) declinaron ligeramente durante el periodo de tratamiento. Cazadores exitosos de pumas usaron perros, seleccionaron fundamentalmente machos y cosecharon pumas en 1–2 días (mediana). Encontramos a la escala de población una tasa de aprovechamiento anual de 22% del número de pumas independientes en un periodo de 4 años y donde >20% de

hembras adultas en la cosecha total redujeron en cantidad la abundancia de pumas. A esta escala, las tasas anuales de mortalidad de los pumas independientes por cacería fueron en promedio 6.3 veces mayores que todas las otras causas producidas por seres humanos, y 4.6 veces mayores que todas las causas de mortalidad natural durante la reducción en la población. La mortalidad por cacería era aditiva y la reproducción y el reclutamiento no compensaron a la mortalidad por cacería. Encontramos que los cazadores de pumas seleccionaron pumas machos, resultando en una reducción de la supervivencia, abundancia de machos y la estructura de edades dentro de la población. Recomendamos que la cacería regulada con base en una estructura poblacional de fuente-sumidero puede ser utilizada para conservar a las poblaciones de pumas, proporcionando oportunidades para la cacería sustentable de pumas y redirigir el conflicto entre pumas y seres humanos.

Effets de la Chasse sur une Population de Puma au Colorado

RÉSUMÉ Nous avons examiné les effets d'une chasse régulée sur une population de puma (*Puma concolor*) dans le plateau de l'Uncompahgre (UPSA) dans le sud-ouest du Colorado. Nous avons examiné l'hypothèse qu'un taux annuel de récolte de 15% du nombre estimé de pumas indépendants utilisant l'aire d'étude maintiendrait l'abondance ou accroîtrait l'abondance de pumas. Nous avons prédit que la mortalité par la chasse serait compensée par: 1) une réduction des autres causes de mortalité, entraînant une augmentation ou stabilisation de la survie; 2) une augmentation du taux de reproduction; ou 3) une augmentation du recrutement de jeunes individus. L'étude a été conduite durant, et a été construite autour d'une période de référence (années 1 à 5) sans chasse aux pumas et une période de traitement (années 6 à 10) avec une chasse aux pumas. Nous avons capturé et marqué des pumas dans l'aire d'étude (UPSA) et les avons suivis toute l'année pour récolter des données concernant leur démographie, reproduction et mouvement. L'abondance de pumas indépendants a été estimée dans l'USPA à chaque hiver durant la saison de chasse aux pumas au Colorado de l'année de référence 2 (RY2) à l'année de traitement 5 (TY5) en utilisant la méthode de Lincoln-Petersen. De plus, nous avons sondé les chasseurs afin d'apprendre comment leur comportement influençait la récolte et la population de puma. Durant les périodes de référence et traitement, 110 et 116 pumas ont respectivement été capturés et marqués, durant 440 évènements de capture. Ces pumas ont produit des données dont le sort est connu pour 75 adultes, 75 subadultes, et 118 juvéniles qui ont été utilisés afin de modéliser le taux de survie de chaque sexe et groupe d'âge. Durant la période de référence, l'abondance des pumas indépendants a plus que doublé en abondance et montré un haut taux de survie. La mortalité naturelle était la cause principale de décès, suivie par les mortalités reliées à l'humain. Durant la période de traitement, les chasseurs ont tué 35 pumas indépendants et capturé puis relâché 30 pumas. L'abondance de pumas indépendants a décliné de 35% après 4 années de chasse avec des taux de récolte moyennant 15% dans l'UPSA. Les taux de récoltes à l'échelle de la population incluant des individus dont le domaine vital était à l'intérieur de l'USPA, chevauchant l'USPA, ou en périphérie de l'USPA étaient plus élevés et approchaient 22% durant les quatre années précédant le déclin de la population. Les femelles adultes représentaient 21% de la récolte total. Le meilleur modèle expliquant la variation dans la survie (\hat{S}) des adultes incluait un effet de la période en interaction avec le sexe. Le taux de survie des mâles adultes était plus élevé durant la période de référence ($\hat{S} = 0.96$, 95% CI = 0.75–0.99) que durant la période de traitement ($\hat{S} = 0.40$, 95% CI = 0.22–0.57). Le taux de survie des femelles adultes était de 0.86 (95% CI = 0.72–0.94) durant la période de référence et de 0.74 (95% CI = 0.63–0.82) durant la période de traitement. Le meilleur modèle du taux de survie des femelles subadultes a démontré que la survie était constante entre les deux périodes de traitement ($\hat{S} = 0.68$, 95% CI = 0.43–0.84) alors que le taux de survie des mâles subadultes a montré la même tendance que les mâles adultes: plus élevé durant la période de référence ($\hat{S} = 0.92$, 95% CI = 0.57–0.99) que durant la période de traitement ($\hat{S} = 0.43$, 95% CI = 0.25–0.60). Le taux de survie des petits était le mieux expliqué par le sort de la mère alors que les petits étaient dépendants ($\hat{S}_{\text{mère en vie}} = 0.51$, 95% CI = 0.35–0.66; $\hat{S}_{\text{mère en vie}} = 0.14$, 95% CI = 0.03–0.34). La structure des âges des pumas indépendants a décliné durant la période de traitement. Les mâles adultes étaient les plus affectés par la récolte, leur abondance a décliné de 59% après trois saisons de chasse et aucun individu de plus de 6 ans n'était présent après deux saisons de chasse. Les pumas nés dans l'UPSA qui ont survécu au stage subadulte ont exhibé de la philopatrie et de la dispersion. Le recrutement local et l'immigration ont contribué au taux de croissance durant la période de référence. Le recrutement n'a pas compensé pour la perte de mâles adultes et a compensé partiellement pour la perte de femelles adultes durant la période de traitement. L'intervalle moyen des naissances est demeuré similaire (période de référence = 18.3 mo., 95% CI = 15.5–21.1; période de traitement = 19.4 mo., 95% CI = 16.2–22.6), alors que la taille des portées (période de référence = 2.8, 95% CI = 2.4–3.1; période de traitement = 2.4, 95% CI = 2.0–2.8) et le taux de parturition (période de

référence = 0.63, 95% CI = 0.49–0.75; période de traitement = 0.48, 95% CI = 0.37–0.59) ont diminué légèrement durant la période de traitement. Les chasseurs de pumas qui ont eu du succès ont utilisé des chiens, ils sélectionnaient principalement les mâles et ont récolté des pumas à l'intérieur de 1–2 jours (médiane). Nous avons trouvé qu'un taux de récolte moyen avoisinant 22% du nombre estimé de pumas indépendants sur quatre ans et avec >20% de femelles adultes dans la récolte réduisait grandement l'abondance de puma. À cette échelle, le taux de mortalité annuel provenant de la chasse était en moyenne 6.3 fois plus grand que le taux provenant de tous les autres causes de mortalité humaine et 4.6 fois plus grand que le taux de mortalité de source naturelle durant la période de déclin de la population. La mortalité par la chasse était largement additive et la reproduction et le recrutement n'ont pas compensé pour cette source de mortalité. Nous avons trouvé que les chasseurs montraient une sélection pour les pumas mâles, entraînant alors une réduction de la survie et de l'abondance des mâles et impactant la structure des âges de la population. Nous recommandons qu'une chasse régulée dans une structure source-puit peut être utilisée afin d'aider la conservation des pumas, procurer des opportunités de chasse durable, et adresser les conflits pumas-humains.

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INTRODUCTION

Large carnivores in North America are managed and conserved based on public interests and institutional policies and actions (Young and Goldman 1946, Kellert et al. 1996, Pavlik 2000, Gill 2010, Clark et al. 2014b). Species in this group include the jaguar (*Panthera onca*), wolf (*Canis lupus*), black bear (*Ursus americanus*), grizzly or brown bear (*U. arctos*), polar bear (*U. maritimus*), and puma (*Puma concolor*). These carnivores are killed by humans for a variety of reasons: to mitigate potentially dangerous encounters with people, to reduce predation on livestock and other wild animals deemed to have higher value, for subsistence or as commodities, for recreational gratification, and to obtain trophies for display (Amstrup et al. 1986, Pelton 2000, Clark et al. 2014b). Unrestricted hunting of carnivores and state-sanctioned predator control programs up to the mid-1900s caused range-wide population declines and regional

extirpations of the puma (Young and Goldman 1946, Cahalane 1964), jaguar (Brown and López González 2001), wolf (Young and Goldman 1944, Mech 1970, Brown 1984), black bear (Pelton 2000, Scheick and McCowan 2014), and grizzly bear (Mattson and Merrill 2002). As people recognized the rarity of these animals and society modernized, attitudes toward nature shifted from traditional domination and utilitarian views to more ecological, aesthetic, and compassionate ones that fostered tolerance and stewardship of large carnivores (Kellert and Berry 1987, Teel and Manfredo 2009, Gill 2010, Peek et al. 2012, Manfredo et al. 2018). These changes resulted in laws and policies to conserve sustainable populations of large carnivores while also managing them to satisfy other public benefits including human safety, protection of private property, and recreational hunting of the carnivores and their prey.

Large carnivores in the United States that are protected under the Endangered Species Act (ESA) have included the wolf,

grizzly bear, jaguar, eastern cougar (*P. concolor cougar*), and Florida panther (*P. concolor coryi*; Department of the Interior 1973). Recent genomic taxonomy designates all pumas in North America as *P. concolor cougar* (Culver et al. 2000); therefore, the eastern cougar was removed from the list in 2018 (U.S. Fish and Wildlife Service 2018). Despite its lack of genetic subspecies status, the Florida panther has retained its ESA listing and is the only known breeding puma population in the eastern United States. Conservation activities under the ESA were effective in increasing the abundance and distribution of the Florida panther (Lotz 2017), wolf (Musiani and Paquet 2004), and grizzly bear (Schwartz and Gunther 2006, Kendall et al. 2009) in portions of their range. As populations of these carnivores meet established recovery goals and criteria for removal from the ESA list, management authority is granted back to the states encompassing the distribution of the species (e.g., the wolf in Montana; Montana Fish, Wildlife and Parks 2018). Likewise, state legislatures enacted laws conserving other large carnivores that were deemed more viable, including the puma in western North America and the black bear, and identified these carnivores as harvestable species with game status and attendant restrictions on hunting. State wildlife management agencies were entrusted with enforcing the laws and developing management programs for these species at the behest of public beneficiaries and policy-makers (Pelton 2000, Anderson et al. 2010, Organ et al. 2012).

State management programs for carnivores enable wildlife managers to pursue a variety of objectives in the public interest, including conservation, hunting opportunity, human safety, reducing predation on wild ungulates, and mitigating damage to private property, including livestock. Moreover, big game hunting opportunities generate revenue from the sale of hunting licenses and taxes on hunting equipment, which help finance law enforcement, habitat improvements, monitoring, and research. Together, public involvement, associated revenue, and professional management are key components of a process known as The North American Model of Wildlife Conservation (Organ et al. 2012).

Pumas gained the legal status of game animal in all of the western and Pacific states of the contiguous United States and the Canadian provinces of British Columbia and Alberta from 1965–1973. The states of North Dakota and South Dakota followed in 1991 and 2003, respectively (Nowak 1976, Anderson et al. 2010). In California, the status of the puma was changed again to specially protected mammal in 1990, which prohibited recreational hunting (Updike 2005). In jurisdictions allowing hunting, state and provincial governments defined puma hunting seasons, and methods and amount of harvest. Restrictions on hunting apparently enabled populations to rebound from low numbers in the 1960s when, for example, 7 western states (CA, CO, ID, NM, OR, UT, and WA) each reported puma abundances in the hundreds (Cahalane 1964). By the early 2000s, those same states each reported puma abundances ranging from 2,000–6,000 (Becker et al. 2003, Whittaker 2005). As puma populations increased, however, harvest also increased and may have contributed to populations stabilizing or declining in some western states, warranting attention from wildlife managers (Dawn 2002, Lambert et al. 2006,

Nadeau 2008, Anderson et al. 2010, Montana Fish, Wildlife and Parks 2019).

The ecological role of pumas is integral to wildlife management and conservation. Pumas affect the abundances, distributions, and behaviors of ungulate prey through predation (Hornocker 1970, Logan and Sweanor 2001, Laundré 2010) and compete with other carnivores (Kunkel et al. 1999, Ruth and Murphy 2010, Ruth et al. 2019). Remains of puma-killed animals also provision food for scavenging vertebrates and invertebrates (Elbroch and Wittmer 2012, Barry et al. 2018). These attributes, along with the puma's characteristically large home ranges and long-distance dispersal movements, identify it as a potential focal species for conservation planning (Beier 2010).

Public attitudes concerning recreational hunting of pumas vary (Teel et al. 2002, Casey et al. 2005, Gigliotti 2005) and can restrict management options. Some public and legal challenges to hunting led to citizen ballot initiatives that prohibited hunting in California in 1990 and the use of dogs to hunt pumas in Oregon and Washington in 1994 and 1996, respectively (Mattson and Clark 2010, Negri and Quigley 2010). Consequently, in efforts to address multiple interests, managers develop management objectives to ensure that puma populations hunted for recreation are sustainable, and to reduce their abundance where needed to mitigate conflicts with people and predation on species of concern (Colorado Parks and Wildlife 2004). For managers to successfully attain such objectives, the effects of hunting on pumas must be understood.

Theoretically, puma populations are naturally limited by available food and regulated by density-dependent competition (Pierce et al. 2000, Logan and Sweanor 2001, Laundré et al. 2007, Logan 2019, Ruth et al. 2019). Hunting mortality may perturb these natural processes. A puma population segment (i.e., adults and subadults) that is below its ecological carrying capacity (i.e., the natural limit of a population set by resources in the environment; Fryxell et al. 2014) and growing can sustain a certain level of hunting without declining if that mortality is compensated (Williams et al. 2001). Compensation may result from reduced mortality rates from other factors (e.g., natural mortality), increased reproduction (e.g., larger litters, shorter birth intervals), or increased recruitment of young pumas born *in situ* or as immigrants. Any of these might occur if the removal of some animals through hunting improves conditions for surviving animals. If hunting mortality is compensatory, the population is expected to increase or remain stable. If these mechanisms do not adequately compensate for hunting mortality, however, then puma harvest produces additive mortality to the extent that the population stops growing or declines over time. When this happens, hunting mortality limits population growth.

Information regarding the effects of hunting on puma populations is sparse. Researchers in Nevada claimed a sustainable puma harvest up to 30% but did not provide any data (Ashman et al. 1983). Another source used to support up to a 21% sustainable puma harvest rate came with a caveat from the original authors that there were 3 interceding years with no harvest so the annual sustainable harvest rate was unknown (Ross and Jalkotzy 1992).

The first experimental removal of pumas occurred in Utah in 1987–1989 with a 1-time removal of 6 individuals (3 adults: 1 male and 2 female; 3 yearlings: 2 male and 1 female) in 1 winter (Feb–Mar), representing an estimated 27% of harvest-age (>1 yr old) animals in the population, which included 6 dependent kittens (Lindzey et al. 1992). One year after removal, the abundance of adult pumas was almost fully recovered, except for possibly 1 male. The harvestable population, however, was still 27% below the pre-removal number because of a deficit of animals in the population >1 year old. The researchers also observed 2 other adult puma deaths in the same year, which added to the total mortality. Thus, they concluded that a second year of similar removal could have further delayed population recovery.

Researchers studying pumas in New Mexico from 1985–1995 used the rate of population growth independent of hunting to estimate harvest rates that might result in sustainable populations (Logan and Sweanor 2001). The adult portions of 2 protected puma populations increased by average annual rates as high as 17–28% over 3 4-year periods after initial declines caused by culling. Logan and Sweanor (2001) found that population growth was apparently density dependent because average annual growth rates began to decline from 17% to 5% over 2 consecutive 4-year periods. The average annual observed rate of increase was 11%. The authors suggested that sustainable hunting mortality of the population should not exceed 11% of the adult pumas per year. Conversely, if the objective was population reduction, hunting mortality should exceed 11% of adults per year.

Consequently, when Colorado Parks and Wildlife (CPW) managers developed state-wide puma hunting management plans in 2004, they had to rely on sparse information and their professional judgment (CPW 2004). Managers assumed that to manage for a stable or increasing population, mortality rates of independent pumas (i.e., adults [usually >2 yr old] and subadults [immature animals independent from mothers, usually 1–2 yr old]) should be limited within the range of 8–15% of the expected abundance of independent animals. To reduce the population, managers assumed that mortality rates should be $\geq 16\%$ (Apker 2005). Prior to our research, none of these hunting management assumptions had been tested for biological validity. To address this need, we examined effects of hunting on a population in Colorado. Because of logistical and funding constraints, we were unable to replicate this large-scale study on more than 1 geographic area. Our study took place over 10 years (2004–2014) with 2 5-year periods: a reference period (years 1–5, hereafter RY1–RY5) and a treatment period (years 6–10, hereafter TY1–TY5). In the reference period, puma hunting was prohibited; this provided baseline estimates for population variables without hunting. The treatment period occurred on the same study area and included regulated hunting to provide information on effects of hunting on the population.

To best assist CPW managers, we posited that the upper mortality limit expected to result in a stable or increasing population was the most important variable to establish. Thus, our goal was to investigate harvest rates that maintained a stable or increasing abundance of independent pumas. Accordingly, we predicted hunting mortality would be compensated by 1) a

reduction in other causes of mortality, thus overall survival would stay the same or increase; 2) increased reproduction rates; or 3) increased recruitment of young pumas. Alternatively, we predicted that hunting mortality would be additive, and the population would decline. If mortality was additive, we expected to observe 1) no reduction in other causes of mortality, thus overall survival would decline; 2) no enhanced reproduction; and 3) no enhanced recruitment to fully compensate for hunting mortality. In addition, we investigated whether the behavior of hunters influenced harvest structure, and thus any emerging changes to puma population sex and age structure, by surveying hunters to gather information on their hunting methods and preferences.

STUDY AREA

The study area was the southern half of the Uncompahgre Plateau (in Mesa, Montrose, Ouray, and San Miguel counties of Colorado; Fig. 1), a montane highland oriented southeast to northwest and incised with canyons in the Colorado Plateaus Physiographic Province (Sinnock 1978). The Uncompahgre Plateau Study Area (hereafter UPSA) was 2,996 km² and was managed similarly to a Game Management Unit (GMU) except that puma hunting was manipulated for our research design. The UPSA would rank as the eighth largest by area of 185 GMUs in Colorado (range = 71–4,460 km², \bar{x} = 1,457 km²). The UPSA included about 477 km² of agricultural and residential development on the east and west flanks, and about 2,519 km² of wildland.

Vegetation on the UPSA transitioned from foothills covered in piñon-juniper (piñon pine [*Pinus edulis*] and juniper [*Juniperus* spp.]) woodlands starting at about 1,700 m in elevation to

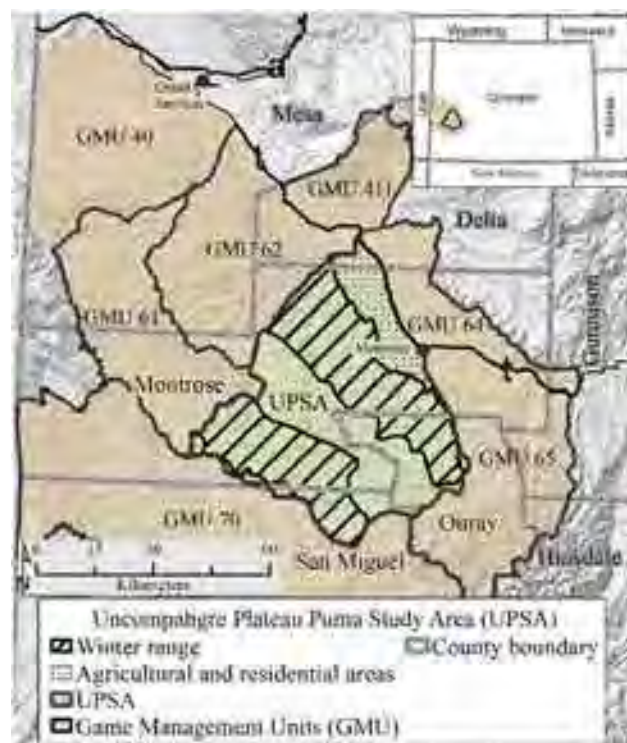


Figure 1. The Uncompahgre Plateau Study Area (UPSA) and surrounding Game Management Units (GMU) in Colorado, USA, 2004–2014.

woodlands dominated by Ponderosa pine (*Pinus ponderosa*) at mid-elevation to the spruce-fir (Engelmann spruce [*Picea engelmannii*], subalpine fir [*Abies lasiocarpa*], and Douglas-fir [*Pseudotsuga menziesii*]) and aspen (*Populus tremuloides*) forests at the highest elevations of about 3,000 m. Mid-elevation forests were interspersed with oak-serviceberry (Gambel oak [*Quercus gambelii*] and Saskatoon serviceberry [*Amelanchier alnifolia*]) shrublands. Expansive sagebrush-steppe (sagebrush [*Artemisia* spp.] and -grass) meadows and basins occupied mid-to-high-elevations, especially in the south-central portion of the area.

Weather was somewhat similar during the reference period years (2005–2009) and treatment period years (2010–2014), as recorded at Sanborn Park on the west side of the UPSA (108°13'00", 38°11'30", 2,417-m elevation) by the United States Department of Agriculture, Forest Service (Western Regional Climate Center, 2005–2014 climate summaries, <https://raws.dri.edu/wraws/coF.html>, accessed 2 Feb 2019). The reference period was characterized by an average annual precipitation of 35.5 cm (range = 29.0–41.3), average December temperature of -4.6°C (range = -24.4–13.3), and average July temperature of 19.8°C (range = 7.8–35.0). The treatment period was characterized by a slightly higher average annual precipitation of 45.8 cm (range = 31.5–51.8), and similar average December temperature (-3.4°C, range = -23.3–12.8) and average July temperature (19.4°C, range = 2.2–33.9).

The prey community available to puma on the UPSA was diverse, and included wild and domestic animals. Mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*) were common on the Uncompahgre Plateau and surrounding areas. Adult pumas on the UPSA preyed primarily on mule deer and elk, and killed them in approximately equal proportions (Alldredge et al. 2008). In winter (Nov–Mar) the study area consisted of about 1,701 km² of lower elevation core winter range (980 km² east slope, 721 km² west slope) for pumas, mule deer, and elk that migrated there as snow accumulated at higher elevations. Cattle and domestic sheep grazed on high-elevation summer ranges and low-elevation pastures in winter. Cattle were rare prey for pumas, with 1 recorded killed during this study. Sheep were occasional prey for pumas, with 10 recorded incidents during this study, each involving 1–20 sheep. Mostly rural, year-round human occupation occurred along the eastern and western fringes of the area. Other animals kept by people included alpacas, llamas, goats, and pigs. There were 5 recorded incidents of puma predation on these animals during this study, with each incident involving 1–4 animals (CPW, Game Damage Program, unpublished data).

Potential competitors with pumas were coyotes (*Canis latrans*), black bears (*Ursus americanus*), and human hunters. Coyotes were subject to a year-round unlimited hunting season. Black bear hunting was regulated during a September to November season each year. Humans hunted mule deer and elk during annual fall big game seasons.

Prior to our research, pumas on the UPSA were subject to annual regulated hunting from mid-November through March. During the 5 previous years (1999–2003) an average of 12 pumas (range 8–17) were reported killed by hunters on the study area each year (CPW, unpublished data). Based on the

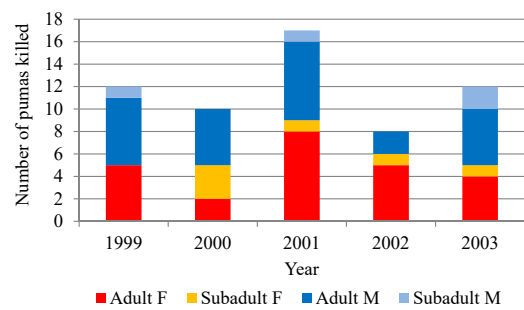


Figure 2. Number of adult and subadult female (F) and male (M) pumas reported killed by hunters during 1999–2003 on the Uncompahgre Plateau Study Area prior to our study, Colorado, USA.

records of the sex and age classes of the animals killed, 41% were classified as adult females; the rest were adult males and subadults of both sexes (Fig. 2). Two other puma deaths were reported on the UPSA during that time span; 1 adult male was shot by a landowner in 2002, and 1 subadult male was struck by a vehicle in 2003.

METHODS

Puma Research and Management in Colorado

We designed this research within the existing context of puma management in Colorado. In Colorado, puma GMUs are subsets of 19 much larger Data Analysis Units (DAUs). Each DAU has a median of 6 (range = 2–14) GMUs. Sizes of DAUs range from 4,048–21,054 km² (\bar{x} = 9,282 km²). The GMU and DAU boundaries are delineated primarily so hunters can easily recognize boundaries (e.g., roads, rivers) for administering hunting management. We assumed GMUs and DAUs were not discrete puma populations because we expected the animals to move across administrative boundaries given that home ranges of adults in North America vary in size from about 50–700 km² (Logan and Sweanor 2010) and habitat in Colorado is well connected (McRae et al. 2005). In addition, we expected dispersing subadults to move across GMU and DAU boundaries (Anderson et al. 1992, Sweanor et al. 2000).

Colorado Parks and Wildlife managers attempt to manipulate puma abundance with hunting at the DAU scale. Within each DAU, they apply assumptions and judgments on density, sex and age structure, population growth rates, and impacts of hunting and other causes of mortality. Each GMU within a DAU is allocated a harvest quota (i.e., harvest limit) to spatially distribute harvest to achieve 1 of 2 desired DAU-wide population states: 1) a stable or increasing population to provide hunting opportunity and species conservation, and 2) a declining or low-phase population with hunting used to reduce puma conflicts with livestock, big game ungulates, and human safety while also providing hunting opportunity. Management plans for DAUs identify mortality rates of independent pumas expected to achieve the desired population states (i.e., 8–15% for stable or increasing, $\geq 16\%$ for declining).

Puma hunting seasons began in mid-November and ended in March, at latest. Quotas were not sex-specific. Successful hunters were required to report their kills to CPW within 48 hours

of harvest and present carcasses for inspection within 5 days of harvest. Harvest within a GMU was updated daily, and hunters were required to call a free telephone number before each hunting day to check whether GMUs were closed because quotas had been reached. Puma hunting ended in each GMU when the quota was reached or the end of the hunting season, whichever came first.

Field Methods

Capture, marking, sampling, and monitoring.—Capturing, marking, and fitting individual pumas with telemetry collars and monitoring them was essential to a number of research objectives, including obtaining data on population abundance, sex and age structure, reproduction, survival, mortality causes, and movements in relation to study area boundaries and emigration. We handled all animals in accordance with approved CPW Animal Care and Use Committee (ACUC) capture and handling protocols (ACUC file #08-2004, ACUC protocol #03-2007) following the American Society of Mammalogists (Sikes and the Animal Care and Use Committee of the American Society of Mammalogists 2016). We marked captured pumas with a telemetry collar, ear-tag (Allflex USA, Dallas, TX, USA), and tattoo. An identification number tattooed in at least 1 pinna was permanent and could not be lost unless the pinna was detached.

We captured pumas using trained dogs, cage traps, and by hand (for small cubs). Pumas captured with dogs usually climbed trees to take refuge. We anaesthetized adults and subadults captured for the first time or requiring a change in telemetry collar with Telazol (tiletamine hydrochloride-zolazepam hydrochloride) dosed at 5 mg/kg estimated body mass. We delivered the drug into the caudal thigh or shoulder muscles via a Pneu-Dart® shot from a carbon dioxide-powered pistol (Pneu-Dart X-Caliber; Pneu-Dart, Williamsburg, PA, USA) or by a syringe at the end of an extendable pole. We deployed a 3-m by 3-m square nylon net beneath the puma to catch it in case it fell. We immediately restrained individuals that fell into the net with a catch pole. If the puma stayed in the tree, one of us climbed the tree, fixed a rope to 2 legs of the animal and lowered it to the ground with an attached climbing rope. Some pumas jumped from the tree after being struck by the dart. In those cases we followed its tracks until we found it sedated on the ground. To secure the animal, we covered its head, tethered its legs, and then monitored its vital signs. We considered normal signs to be pulse = 70–80 bpm, respiration = 20 bpm, a capillary refill time of ≤ 2 seconds, and rectal temperature = 38.3°C average (range = 35–40°C; Kreeger et al. 1999). We recorded the sex and dental characteristics of each puma we handled and measurements of each adult and subadult animal, including the length and width of plantar pads (mm measured with calipers), total length, tail length, chest girth, hind foot lengths (cm measured with a steel tape), and weight (kg measured with a spring scale). When a treed puma could not be safely immobilized and handled, we simply recorded the individual's sex, life stage, association with other individuals (e.g., mother, siblings), and location prior to leaving it.

Cage traps captured adults, subadults, and large cubs (Bauer et al. 2005, Sweanor et al. 2008). We lured animals to traps using road-killed or puma-killed ungulates. We set a cage trap

only if a target animal (i.e., an unmarked, required a collar change) scavenged on the lure. We continuously monitored a set cage trap from about 0.5–1 km distance by using very high frequency (VHF) beacons on the cage. This allowed us to respond to a captured puma in ≤ 30 minutes. We sedated them with Telazol injected into the caudal thigh or shoulder muscles with a syringe and restrained and monitored them as described previously.

We captured cubs at nurseries (i.e., nurslings) when mothers were away as determined by radio-telemetry. We captured cubs ≤ 10 weeks old using our hands covered with clean gloves or with a catch pole. We did not sedate these cubs with drugs, and instead restrained them inside new burlap bags. We removed cubs from nurseries at distances of about 20–100 m to reduce our disturbance of the nurseries. We marked each cub and recorded data on litter size. Afterwards, we immediately returned the cubs to the exact nurseries and vacated the area (Logan and Sweanor 2001).

We fitted captured adult and subadult pumas with either global positioning system (GPS; Lotek GPS 4400S) or VHF (Lotek LMRT-3; Lotek Wireless, Newmarket, Ontario, Canada) collars, each weighing about 400 g and 300 g, respectively. Budget constraints limited the number of GPS collars available annually; therefore, we fitted those collars primarily to adult pumas of both sexes. We fitted other adults and subadults with the VHF collars.

We attempted to collar all cubs in each observed litter of nurslings with a small VHF transmitter (model 080; Telonics, Mesa, AZ USA) mounted on an expandable collar (total weight 62 g) when cubs weighed 1.3–10 kg. The collars could expand to 54 cm circumference to accommodate growth to the adult stage. We fitted cubs weighing ≥ 7 kg with a larger expandable collar weighing 90 g (model 210; Telonics) that also could expand to 54 cm circumference. We fitted cubs approaching the age of independence (11–14 months old) with Lotek LMRT-3 VHF collars each with a leather expansion link that added 10–14 cm to the collar circumference to accommodate an adult neck size.

We initially estimated the ages of adult pumas by the gum-line recession method (Laundré et al. 2000) and later with dental characteristics of known-age animals (i.e., observed from cubs to older ages) from this study. We recognize these aging methods are not exact for pumas with unknown histories. We found them useful, however, to place individuals into 2-year age increments to examine age structures and to back-age certain adults into previous winter counts. We estimated ages of subadults and cubs initially based on dental and physical characteristics of known-age pumas from New Mexico (K. A. Logan, Colorado Parks and Wildlife, unpublished data) and later from known-age animals in this study. We estimated the ages of nurslings from birth dates indicated by GPS and VHF location data of collared mothers.

We focused our capture efforts of adults and subadults in winter to gather data on harvest-age animals in association with the Colorado puma hunting season. During the reference period when no hunting was allowed, our capture team operated from early snow accumulation in November until April when high ambient temperatures and black bear emergence from hibernation affected the dogs' effectiveness. During the treatment

period, we began our dog-assisted capture operations after the UPSA puma-hunting quota was reached (Dec–Jan) so as to avoid interfering with hunters' activities or harvest preferences. Although this could have resulted in a shorter dog-assisted capture period, it was mitigated by deploying 2 capture teams. Houndsmen in our capture teams were not allowed to hunt pumas for sport on the UPSA during the treatment period.

The UPSA was accessible by roads and trails, enabling us to canvass the study area repeatedly each winter, and thereby facilitated our detection and capture of pumas. We searched less-accessible areas by hiking canyon rims and bottoms to detect puma tracks while allowing dogs to freely search for the animal's scent. Our objective was to apply intensive, uniform searching effort and to directly monitor via radio-telemetry a large majority of independent pumas that used the UPSA each winter. Thus, we prioritized our efforts to detecting and capturing non-collared independent animals. When we followed fresh tracks that led us to <1 km (usually <0.5 km) from GPS- and VHF-collared individuals based on strengthening radio-signals, we re-directed our efforts away from those animals and toward finding non-collared ones.

We monitored radio-collared pumas year-round. We programmed GPS collars to fix locations 4 times per day (0600, 1200, 1900, 2400) during RY1–TY2, then 2 times per day (1200, 2400) during TY3–TY5 to extend battery life. We attempted to locate all collared pumas once per week from fixed-wing aircraft as weather and scheduling conditions allowed, and opportunistically from the ground (Logan and Sweanor 2001). We checked the live or dead signal status from collared pumas during aerial and ground telemetry. The VHF and GPS collars had mortality modes set to alert researchers when animals were immobile for 3 hours and 24 hours, respectively, so that we could examine dead pumas. We downloaded GPS collars remotely roughly once per month to retrieve location data. Emigration from the study area was revealed by movements of radio-collared animals or hunter returns of ear-tags from pumas killed outside of the study area. We investigated female pumas for evidence of reproduction whenever they exhibited constrained movements over a 1–4-week period with GPS and VHF location clusters of <300-m radius or recurring movements to farther distances that returned to focal locations (Logan and Sweanor 2001).

Hunting manipulation.—In the 5-year reference period, puma hunting was prohibited on the UPSA. In addition, any radio-collared or ear-tagged pumas that ranged off the UPSA onto GMUs 61 and 62 north of the UPSA were protected from hunting (Fig. 1). Otherwise, animals that were involved in depredation on livestock and public safety events on the UPSA and elsewhere could be killed following established CPW management policies.

In the 5-year treatment period, pumas on the UPSA were subjected to regulated hunting. The hunting season began in mid-November and ended the date that the last puma on the quota was killed each winter. The initial harvest quota was set at 8 pumas, which represented a 15% target harvest of the estimated number of 53 independent animals using the UPSA in TY1. We modeled this estimate from count data in winter RY4. After we detected a linear decline in winter counts of

independent pumas during TY1–TY3, we used a simple linear regression model to project the expected count for independent animals for TY4. The model projected 44 pumas, so we adjusted the harvest quota down to 5, an expected 11% target harvest in TY4, to examine the effect of a reduced harvest on abundance. We also applied the quota of 5 pumas in TY5 (Table S1, available online in Supporting Information).

During our 10-year study, puma hunting quotas on the GMUs bordering the UPSA did not vary annually, except in GMU 65. There annual quotas were 5 in RY1–RY4, 4 in RY5 and TY1, 5 in TY2 and TY3, and 6 in TY4 and TY5. All GMUs bordering the UPSA were in 2 DAUs of which 1 (including GMUs 61, 62, 64, and 65) had a management objective for a stable puma population and 1 (with GMU 70) had a management objective for a stable or increasing population (Fig. 1).

Hunter information.—Puma hunters on the UPSA were required to adhere to the same regulations as others in Colorado. Consistent with Colorado's puma hunting management, the number of hunters on the study area each winter was potentially unlimited because the actual harvest was limited by the quota. Puma hunters on the UPSA, however, were mandated to obtain a special hunting permit. Each hunter could obtain the free permit from the CPW Service Center in Montrose, Colorado. Each permit allowed the hunter to hunt in the UPSA for 14 days from the issue date. Unsuccessful hunters that wanted to continue hunting past the permit expiration date could get serial 14-day permits until they harvested a puma, stopped hunting, or until the end of the season. Each hunter also received a voluntary survey with their hunting permit and a stamped return envelope. We asked hunters to complete the survey as soon as possible for each period associated with the permit. Responsive hunters either mailed or handed in their surveys. If hunters did not respond to our first request, we tried to contact them a second time by telephone or in person, and asked them to complete and return the survey.

The permit system and survey responses provided data that included 1) permit holders that actually hunted on the UPSA; 2) number of days each hunted on the UPSA; 3) the sex of puma (we provided hunters with male and female track measurements) that made the first set of tracks <1 day old that a hunter encountered on the UPSA (representing the first theoretically catchable independent puma); 4) the sex and life stage of a puma harvested by the hunter on the UPSA; 5) counts and sexes of independent pumas that were captured and released by hunters on the UPSA; 6) if marks on the animal (i.e., collar, ear-tags) influenced a hunter's decision to harvest it; 7) if the hunter used dogs; and 8) self-identification as a selective or non-selective hunter. On this last point, we provided definitions. A selective hunter is one that purposely is hunting for a specific type of legal puma, such as a male, large male, or large female. The selective hunter attempts to distinguish between male and female tracks, and large and small males or females, and thus is deciding not to kill certain pumas. A non-selective hunter is one that intends to harvest whatever legal puma is first encountered or caught, with no preference for sex or size.

Our research personnel visually examined each puma harvested on the UPSA and officially marked it with a metal, numbered tag to indicate legal possession by the hunter, consistent with Colorado

hunting regulations. At the time of carcass check-in, hunters also completed a CPW mandatory harvest form, which included the puma's sex, age estimate, date of kill, and kill-site location.

Analysis

Abundance and growth rates.—The parameter of interest to wildlife managers was the abundance of independent pumas (i.e., adults and subadults) each winter coinciding with the hunting season in Colorado. Initially, we obtained an index of abundance of independent pumas that used the UPSA based on counts of animals we detected from November through March (i.e., winter counts) from RY4–TY3 (Table S1). We used this information for setting the hunting quotas in the treatment period. Winter puma counts consisted of the sum total of all individuals, including known marked, non-marked we captured but could not safely handle, and non-marked harvested on the UPSA. In addition, our counts included other individuals of unknown identity detected by their tracks as recorded by our capture teams on the study area. We concluded that individuals were unique if their track characteristics fit these criteria: 1) did not match known movements and locations of radio-collared pumas, 2) exhibited measurements that did not match those of individuals we subsequently captured, and 3) different counts of cub tracks with mother's tracks (e.g., mother's tracks associated with tracks indicating 1, 2, or 3 cubs would differentiate mothers). We used hind-foot plantar pad inside width measurements to distinguish sex (≥ 52 mm classified as male, ≤ 50 mm classified as female [measured with a steel ruler]).

After we compiled all our data on winter capture efforts, observed mortalities, and fates of pumas with non-functional collars, we used the Chapman method for the Lincoln–Petersen (LP) estimate (Petersen 1896, Lincoln 1930, Pollock et al. 1990) to estimate the number of independent pumas (i.e., \hat{N}_c) that used the UPSA from November through March each winter before any individuals were removed from the population from RY2–TY5:

$$\hat{N}_c = [(n_1 + 1)(n_2 + 1)/(m_2 + 1)] - 1 \quad (\text{Pollock et al. 1990:equation 2.2}).$$

This approach also provided estimates of variance:

$$\text{var } \hat{N}_c = (n_1 + 1)(n_2 + 1)(n_1 - m_2)(n_2 - m_2)/(m_2 + 1)^2 \times (m_2 + 2) \quad (\text{Pollock et al. 1990:equation 2.3})$$

and precision with 95% confidence intervals:

$$\hat{N}_c \pm 1.96 (\text{var } \hat{N}_c)^{0.5} \quad (\text{Pollock et al. 1990:11}).$$

We defined the LP parameters as n_1 = the number of marked independent pumas we expected to be using the UPSA at the start of each November, n_2 = the total number of independent pumas detected during the hunting and capture season, and m_2 = the number of the n_2 sample that was previously marked. We treated each capture and hunting season (Nov–Mar) as a single sampling period. This extended capture effort potentially minimized bias from capture heterogeneity by allowing sufficient time for us to search the entire study area, to use data on

puma captures both from our study team and hunters, and to detect individuals with home ranges that overlapped the border of the UPSA. Detections consisted of marked independent pumas recaptured by hunters, previously marked animals we recaptured during our winter capture operations, and radio-collared individuals we detected by following tracks toward radio-signals during our ground-capture operations. We counted radio-collared adults in the n_1 data with home ranges that overlapped the UPSA and adjacent areas as detected in the m_2 data if they were harvested on a portion of their home range off the UPSA. We counted adult pumas with failed radio-collars that had previously established home ranges on the UPSA in n_1 data in winters they were not detected if they were subsequently either recaptured or harvested (i.e., their fates were known) on the UPSA in subsequent winters. If any of these individuals had temporarily emigrated from the UPSA when they went undetected in any year, then the actual number of independent animals using the UPSA would be somewhat lower. In addition, we back-aged pumas with estimated ages ≥ 3 years old that we caught for the first time and assumed they were present on the UPSA the previous winter(s) beginning when they were ≥ 2 years old (e.g., a puma aged 3.5 years old in TY2 would be counted as a 2.5-year-old in TY1; Logan and Sweanor 2001); we counted those individuals in the n_2 data. If any of these individuals were actually absent in any of those years, again, the actual number of independent animals using the UPSA would be lower. We used the change in the LP \hat{N}_c estimates and the 95% confidence intervals as a gauge of changes in the population of independent pumas that used the UPSA during the reference and treatment periods. We recognize that this estimate of abundance assumes the population is closed, which this population is not. Therefore, the abundance estimates are biased (Seber 1982, Kendall 1999). However, this method is an improvement on the use of simple counts that are more susceptible to biases due to annual changes in detection probability and prone to errors of underestimation. We were unable to use a robust design capture-recapture model (Schwarz and Stobo 1997) because the sampling intervals were inadequate for that method. We attempted to use the Jolly-Seber approach to estimation of abundance (Jolly 1965, Seber 1965) in Program MARK (White and Burnham 1999), but models would not converge on a solution for the maximum likelihood. Other approaches to estimation of density rather than abundance (e.g., Efford 2004, Ivan et al. 2013) also assume closed populations and thus would invoke similar biases to our method.

We estimated the finite rate of change in abundance (λ) and its 95% confidence interval each year during the reference and treatment periods, RY2–TY5, to interpret changes in abundance without and with the hunting treatment (Fryxell et al. 2014). To calculate λ , we drew 10,000 samples using R statistical software (version 3.1.1; R Core Team 2018) for each year from a normal distribution using that year's LP \hat{N}_c estimate and its standard error. We calculated λ for each set of 10,000 samples by dividing the resulting estimate 1 year forward by the current year. The estimated λ was the median of this sample and the 2.5th and 97.5th percentile values defined the bounds of the 95% confidence interval.

Sex and age structure.—We quantified the sex and age structure of independent pumas on the UPSA each winter RY1–TY5 based on the animals that were captured and the LP estimates. We also used counts of cubs we captured and counts of non-captured cubs we detected from tracks associated with mothers. We graphed the sex and age structure annually for independent pumas that we physically examined (i.e., captured and handled or harvested) by sorting individuals into 2-year age increments (i.e., 1–2, >2–3 yr, and so on). The sex and age structures during the reference period (i.e., RY1–RY5) and up to the start of TY1 represented the population protected from hunting but subject to other causes of mortality and just before any pumas were removed in TY1. The subsequent age structures for the remainder of the treatment period (i.e., TY2–TY5) represented when hunting and other mortality factors affected the independent pumas.

Mortality.—We estimated cause-specific mortality rates of independent pumas at 2 spatial scales. The smaller, local scale included the number of independent pumas estimated to use the UPSA each winter, consistent with the way managers might conceive of applying harvest limits (i.e., quotas) to GMUs. The larger scale included the UPSA and 4 GMUs bordering the UPSA where marked pumas ranged (i.e., GMUs 61, 62, 65, 70; total area = 11,614 km²; none were on GMU 64). We examined fates of independent animals at this larger scale for 2 reasons: First, managers considered puma population segments at a DAU scale (i.e., population scale) for setting broad population state objectives. Second, we recognized that the local UPSA population was open and could be affected by fates of pumas ranging on the UPSA and adjacent GMUs.

The smaller scale represented mortality rates on the estimated number of independent pumas that used the UPSA each hunting season. We examined these mortality rates by using 2 metrics. The first metric represented the proportion of the expected number of independent animals using a GMU that died within the boundaries of the GMU to denote how managers may view mortality rates in units on which they limit the harvest and that are small relative to the population. We used simple quotients with the numerator as the number of independent pumas observed to have died within the UPSA boundaries each hunting season and the denominator being the LP \hat{N}_c estimated number of independent pumas using the UPSA each hunting season. These estimates were biased because the use of LP estimates in an open population can itself be biased, specifically in systems with non-random movement in and out of the study area (Seber 1982, Kendall 1999). Furthermore, the numerator only included animals that died within the UPSA boundaries, but the denominator included animals ranging on and off the UPSA; thus, the estimate was biased low. In the second metric, we accounted for the radio-collared pumas with home ranges overlapping the UPSA that were counted in the denominator and died on adjacent GMUs because their deaths affected future abundance estimates on the UPSA (i.e., independent pumas that died within UPSA plus independent pumas with overlapping home ranges that died on adjacent GMUs divided by the LP \hat{N}_c estimate of independent pumas using the UPSA). This metric could partially mitigate the biases in the first estimate but could not account for any non-marked

pumas estimated in the denominator that might have had home ranges overlapping the UPSA and died on adjacent GMUs.

At the population scale, we used all the marked independent pumas with known fates that ranged on the UPSA and on the 4 GMUs bordering the UPSA where marked animals were reported to have died to calculate annual rates of agent-specific mortality. We used simple quotients with the numerator being the number of marked individuals that died each biological year (i.e., Nov–Oct) and the denominator being the number of marked independent pumas alive at the beginning of each biological year. Likewise, we calculated rates at which marked pumas emigrated beyond the boundaries of the GMUs bordering the UPSA and considered those to be extra-population-scale movements. We calculated 95% simultaneous confidence intervals for the resulting multinomial proportions (Goodman 1965, May and Johnson 1997) of cause-specific mortality and movement.

For cubs, we counted mortalities and categorized them by proximate cause of death. We report numbers and percentages for each mortality type for the reference and treatment periods. We estimated the proportions of litters subject to infanticide in the reference and treatment periods by calculating the binomial proportions and Clopper-Pearson exact 95% confidence intervals by using the PROC FREQ procedure in SAS (version 9.3; SAS Institute, Cary, NC, USA).

Philopatry, dispersal, and emigration.—We defined pumas born on the study area as philopatric if any of their adult stage locations occurred within the 100% minimum convex polygon (MCP) of their mother's cumulative locations (Minimum Bounding Geometry tool, Convex Hull option, ArcGIS version 10.2; Esri, Redlands, CA, USA). We considered individuals born on the study area to have dispersed if none of their adult locations occurred within their mother's MCP. We measured dispersal distances in kilometers using the planar measuring tool in Arcmap 10.2 (Esri) from first captures at nurseries, with mothers or siblings, or as independent pumas to dispersal end points of last radio-telemetry locations or their mortality sites (e.g., harvest, vehicle strike, depredation control). We estimated age at independence (i.e., at the first observed date of separation from mothers without returning) and dispersal of previously radio-collared cubs (i.e., at date of first observed location outside of its mother's MCP without returning), and reported medians, averages, and 95% confidence intervals. We considered pumas that moved completely outside the boundaries of the UPSA to be emigrants. Those included some young independent animals that we captured and marked on the UPSA that could not be connected with known mothers but subsequently exited the UPSA. We estimated a minimum frequency of emigration of offspring from the UPSA by using the known-fate data on the radio-collared cubs we used in the survival analysis (below). Notably, these emigration rates were expected to be higher than the extra-population-scale emigration rates we estimated when analyzing puma mortality because of the shorter movement distance needed for individuals to exit the UPSA.

Survival.—We investigated puma survival in the reference and treatment periods to assess any effects of hunting. We defined the biological year for adult pumas as the period from November

(the month that hunting seasons began) through the next October to encompass complete hunting seasons. We estimated survival rates of subadults and cubs for 12-month periods representing those life stages. We used the known-fate data type and logit link function in Program MARK (White and Burnham 1999) to model survival rates with a candidate set of models that might explain variation in survival (below).

We defined adult pumas as >2 years old, unless we had evidence that they bred at an earlier age. In western North America, average ages of first breeding for samples of known-age females ranged from 23–28 months old and averaged 26.1 months (Utah, $n=6$, Lindzey et al. 1994; New Mexico, $n=12$, Logan and Sweanor 2001; Alberta, $n=6$, Ross and Jalkotzy 1992; Montana, $n=14$, Robinson and DeSimone 2011). That average value was close to the estimated average age of 29 months of first conception for a sample of 14 females in this study (see reproduction results). Furthermore, because our capture efforts for independent pumas were focused during November to April, the youngest animals in the adult stage in November generally could have been 26–32 months old, assuming they were born within the monthly distribution of births in our study. We did not have data on first reproduction for males in our study; however, males in New Mexico were estimated to reach sexual maturity at about 2 years old (Logan and Sweanor 2001).

We examined adult survival from data on radio-collared pumas. We converted radio-location records for each adult to monthly encounter histories. We used Program MARK to estimate monthly survival rates while allowing staggered entry based on when we collared individuals and censoring of individuals if we lost contact with them (Pollock et al. 1989). We used data from RY2–TY5. We did not use data from RY1 because we had collared only 7 adult pumas (3 males and 4 females). Encounter histories of individual adults started on the day of capture or the beginning of RY2 (i.e., 1 Nov 2005) for surviving pumas that we captured previous to that date. We censored individuals if we did not receive their radio-telemetry signal after the month of their last location. Individuals re-entered the data set if we recaptured them and fit them with a new collar. We used known death dates for individuals killed and reported by hunters, those killed for depredation control, and for some vehicle strikes. For individuals that died of other causes, we assigned death dates to those with GPS collars based on the first day that GPS locations indicated that they were immobile. For VHF-collared pumas, we estimated dates as the mid-point of the span of days in which we estimated the animal to have died based on detection of radio-collar mortality signals and carcass decomposition. We categorized causes of death as human causes (e.g., hunting, depredation control, vehicle strike, illegally killed), known natural causes (e.g., intraspecific killing), or unknown natural causes (e.g., presumed disease-related).

Subadult pumas are independent of their mothers and usually do not participate in breeding behavior (Logan and Sweanor 2001). We estimated subadult survival for all known radio-collared, ear-tagged, and tattooed pumas with known fates. Individuals entered the subadult stage under 2 conditions: 1) after they were known to be independent from their mother based on radio-telemetry, or 2) at 13 months if their date of

independence was not known. We used 24 months for the upper end of the range for subadults and 13 months as the lower end. Thirteen months is the median age ($\bar{x}=13.7$ months) for a sample of 15 pumas at known age of independence in this study (see results). Because we did not know exactly when all of the pumas in this life stage became independent, some of them may have been dependent cubs for ≥ 13 months. Encounter histories started when marked pumas entered the life stage and on the first day of capture for subadults caught and marked for the first time. We converted individual radio-telemetry records to monthly encounter histories. We assigned death dates as for adults.

We estimated cub survival for radio-collared pumas between 1–12 months old. Because the youngest cubs we radio-collared were 25 days old, we could not estimate mortality and survival rates for younger animals. The large majority (i.e., 85 of 118) of cubs in this data set were initially radio-collared as 1–2-month-old nurslings. We entered older cubs we collared in the analysis because we converted individual radio-telemetry records to monthly survival histories based on age. This simply allowed us to increase the sample sizes of cubs we monitored in the older months. Encounter histories for the cubs started on the first day they were collared. We assigned a cause of death to each cub and recorded known dates of occurrence. If dates of death were not observed, we used the mid-point of the span of days in which the puma was estimated to have died based on the radio-telemetry data and state of carcass decomposition.

Covariate selection, model selection, and inferences.—Examining survival rates of adults, subadults, and cubs in the reference and treatment periods allowed us to assess changes in survival that might be associated with hunting. A period (i.e., reference vs. treatment) effect would support an inference that hunting mortality was an important factor explaining the variation in puma survival. However, if models lacking the period result received the most support, this would indicate that survival was influenced mainly by other factor(s) or that statistical power was insufficient to detect a treatment outcome. Thus, we developed models with sets of covariates that we hypothesized might affect survival of adult, subadult, and cub pumas of either sex. Because selection of male pumas by hunters was evident, we also modeled adult and subadult survival by varying male survival by period while keeping female survival constant. We used year as a covariate for adults and month for subadults in time-varying models. Cub survival covariates also included period and whether a cub's mother lived or died during the stage of dependency. We modeled survival for all 3 life stages including constant, additive, and interactive combinations of some covariates. Reliable estimates of mule deer and elk abundances for the UPSA did not exist; thus, we could not accurately estimate the effect of a prey covariate.

We evaluated the importance of candidate models in an information-theoretic approach (Burnham and Anderson 1998). For adults and subadults, we used Akaike's Information Criterion adjusted for small sample sizes (AIC_c) to rank the models. We considered models with the lowest AIC_c scores, high AIC_c weights, and models with $\Delta AIC_c < 2$ as having the most support. We report survival estimates for the top model and other supported models. For adults, we used the monthly

survival rates generated in MARK and converted them to annual rates (i.e., S_{monthly}^{12}) with 95% confidence intervals. We used the delta method (Dorfman 1938) to calculate confidence intervals for annual survival rates. Likewise, we used monthly survival rates in MARK for subadults and converted them to life stage survival rates with 95% confidence intervals.

For cub survival, the assumption that each radio-collared individual was an independent random sample (i.e., distribution of mortalities among litters is random) may be violated because we often collared 2–3 cubs per litter, and the fates of siblings might be linked. For example, more than 1 cub in a litter may die from the same proximate cause (e.g., infanticide) or a cub's enhanced survival may be linked to death of siblings (i.e., resulting from greater individual maternal care). Violation of the independence assumption can result in unbiased survival point estimates, but sample variances are expected to be underestimated and the data are over dispersed (Bishop et al. 2008). Therefore, we examined validity of the independence assumption in the cub data by estimating an over dispersion parameter \hat{c} by following the method of Cooch and White (2015). We used the Tests option in Program MARK to run 1,000 bootstrap simulations on our cub data set in the most parameterized survival model we could use. We then estimated \hat{c} by dividing the observed \hat{c} in the original model estimate by the mean simulated \hat{c} . We considered $1.0 < \hat{c} \leq 1.2$ as weak evidence of over dispersion as suggested by Bishop et al. (2008) and Ruth et al. (2011). If the results indicated non-independence in the cub fates, we used the Adjustments option for \hat{c} in MARK and entered in the estimated \hat{c} to adjust for the quasi-likelihood estimate (QAIC_c). We considered the models with the lowest QAIC_c scores, high QAIC_c weights, and $\Delta\text{QAIC}_c < 2$ as having the most support. Survival parameters for cubs were monthly estimates generated in MARK that we converted to life stage survival rates with 95% confidence intervals.

Reproduction.—Females with GPS and VHF collars provided data on parturition (date), gestation (days), litter size (number), sex of cubs observed in nurseries, birth intervals (months), and age at first breeding (months). We verified reproduction by direct observations of cubs in nurseries and in association with adult females during capture events. We estimated ages for a sample of females when they produced their first litters that we observed. We assigned a non-productive status to females with nipples that were tiny and pink or white in color indicating no previous suckling. We reported mean age at first breeding, range, and 95% confidence intervals. We estimated gestation lengths for litters from the first and last days we detected females in association with adult males by GPS- and VHF-telemetry and to the estimated dates of births and reported minimum and maximum, medians, and means with 95% confidence intervals.

We estimated parturition rate, defined as the proportion of adult females giving birth each year, from RY2 through TY5 when ≥ 12 adult females occurred in annual samples ($n = 4$ for RY1). We recorded whether or not individual adult females produced litters each year during the reference and treatment periods. Because the same adult females occurred in multiple samples across periods, we modeled mean period parturition rate by using the generalized linear mixed model procedure with the binomial distribution and logit link (PROC GLIMMIX) in

SAS where the period was the fixed effect and individual puma was the random effect.

We quantified birth intervals for adult females that we could monitor continuously by radio-telemetry. To examine variation in birth interval lengths in the reference and treatment periods, we used data from all mothers in the study except those that we knew had lost all of the cubs in their previous litter. We used individual, study period (i.e., reference, treatment), and birth interval length in months as covariates. Because some adult females occurred in multiple intervals and both periods, we analyzed birth interval as the response variable with the mixed linear model procedure (PROC MIXED) in SAS, with period as the fixed effect and individual puma as the random effect.

We examined litters at nurseries when the cubs were 25–45 days old. If younger cubs died before we observed them, then the litter sizes we recorded might be biased low. We coded the data by adult female, study period, and the number of cubs observed (i.e., 1, 2, 3, 4). Adult females in the samples gave birth multiple times within the same period and in both periods; therefore, we modeled period mean litter size using the mixed linear model procedure (PROC MIXED) in SAS, where period was the fixed effect and individual puma was the random effect. We used a normal distribution error structure for this analysis and assumptions of normality were met. We examined the proportions of male and female nurslings we observed in litters in each study period and the entire study by calculating the binomial proportions and Clopper-Pearson exact 95% confidence intervals by using the PROC FREQ procedure in SAS. We made inferences on period effects on parturition rate (on the logit scale), birth interval, litter size, and proportions of the sexes in litters by examining the 95% confidence intervals on the differences of the estimates for each period by using the delta method (Seber 1982).

Puma hunters.—We compiled data from the surveys returned by hunters. We report ranges and medians for repetitious response values (e.g., number of days hunted). Estimates on number of actual hunters on the study area each treatment year were the number of people requesting permits to hunt UPSA multiplied by the proportion of those that indicated they hunted on UPSA. We report as male:female ratios the number of independent pumas of each sex making tracks <1 day old when first encountered by hunters and researchers, killed and caught and released by hunters, and that were in the LP estimates pre-harvest and post-harvest for each treatment year. We used the ratios to discern risk to pumas of either sex to detection and evidence of selection by hunters.

RESULTS

Puma Capture

From 2 December 2004 to 30 October 2014, we captured as many as 256 pumas a total of 440 times on the UPSA. We considered about 30 individuals to be captured with dogs but we did not handle or mark them at that time because of their dangerous positions in trees or on cliffs. Of those, 11 were in the reference period, of which 6 were associated with marked family members (i.e., mothers or siblings). In the treatment period, we did not handle 19 captured pumas, and 8 of those were

associated with marked family members. It is possible, however, that we captured and marked some of those individuals at later dates in the study, which would reduce the total number of pumas we captured. The number of days we spent each winter searching for pumas with dogs was similar in each period (reference mean = 77, range = 71–82; treatment mean = 79, range = 74–86). However, in RY5 (i.e., 2008–2009) a Colorado state government-mandated hiring freeze resulted in insufficient personnel for thorough searches of the study area and a sub-standard effort to detect pumas. No adults or subadults died from capture procedures. One cub was killed by our tracking dogs. Three cubs died as a result of premature expansions of the radio-collars: 1 nursing starved because the transmitter was caught in its mouth and 2 cubs died after they passed a foreleg through the collar, causing one to starve because it could not keep up with movements of its family, and the other to die apparently of infection after the collar material cut into the axilla.

We uniquely marked 226 pumas, 110 in the reference period and 116 in the treatment period. The number of radio-collared animals monitored each year ranged from 16 to 56 and averaged 40. Marked pumas provided known-fate data on 75 adults, 75 subadults, and 118 cubs. Some cubs and subadults transitioned to older stages, which is why the total of marked individuals in the life stage classes (268) is greater than the total of uniquely marked pumas. By the end of the study, we accounted for the fates (i.e., either survived or died) of all of the radio-collared adults, including those with failed radio-collars, except for 1 female and 1 male. We lost track of the female in TY2 when her collar stopped functioning while she was in a part of her home range outside the UPSA. We lost track of the male when his collar stopped functioning in TY5.

Causes of Mortality in Independent Pumas

In the reference period, the hunting closure on the UPSA and protection of marked pumas in adjacent GMUs to the north effectively eliminated hunting mortality in marked adults of both sexes and subadult females (Fig. 3A). One subadult male was harvested in a GMU adjacent to the UPSA. Over twice as many adults died of natural causes (i.e., intraspecific killing, other causes) than adults that died from human causes (i.e., vehicle strikes, depredation control). Intraspecific killing was the major single cause of death for adults, with 3 times as many females than males. A majority (i.e., 6 of 10) of the independent pumas that died were adult females, with the remainder composed of adult males and subadults. Two subadult female deaths occurred, 1 each from a vehicle strike and trampling by an elk.

In the treatment period, human-causes, hunting in particular, were the most important sources of death for marked adults and subadults, comprising 65% and 100% of adult female and male mortalities, respectively, and 75% of both subadult female and male mortalities (Fig. 3B). Adult females in particular (i.e., 35% of their deaths), and to a lesser extent subadults, continued to die of natural causes. An 11-year-old female that died of starvation apparently in association with senescence was the only independent puma we found that succumbed to that cause during our entire study.

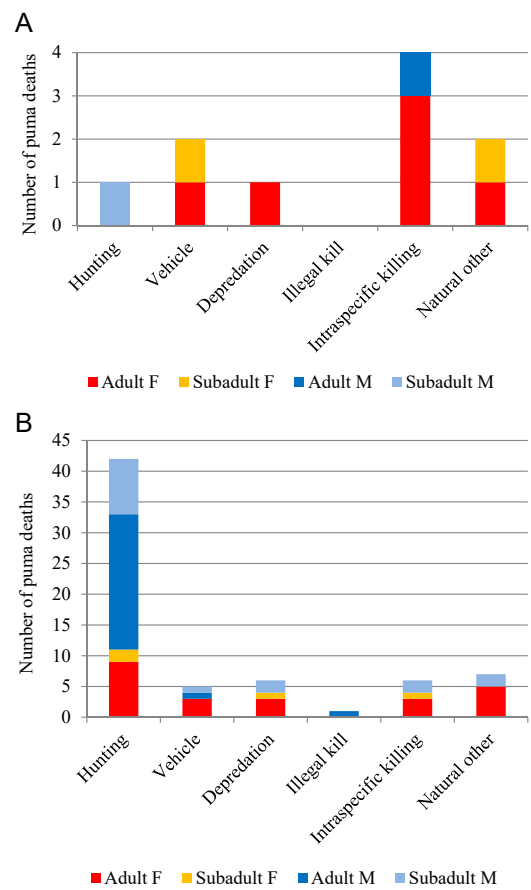


Figure 3. Proximate causes of death in marked adult and subadult female (F) and male (M) pumas during the reference period (A) and the treatment period (B), 2004–2014, Uncompahgre Plateau Study Area Colorado, USA.

Hunting Treatment and Other Mortality

A harvest quota of 8 pumas on the UPSA during TY1–TY3 resulted in 9 animals harvested in TY1 and 8 harvested in each season TY2 and TY3 (Table 1). Harvest rates based on the LP \hat{N}_t estimates (Table 2) of independent pumas on the UPSA for years TY1–TY3 averaged 16% (Table 3). After we reduced the quota to 5 pumas for TY4 and TY5, hunters killed 5 animals in each of those seasons. In TY4 and TY5, UPSA-specific harvest rates averaged 13%. Males comprised 69% and adult males 46% of the total 35 pumas harvested on the UPSA during TY1–TY5. Females comprised 31% and adult females 23% of the total harvest. The average estimated age of all the pumas harvested on

Table 1. Numbers of independent pumas harvested annually during treatment period hunting seasons on the Uncompahgre Plateau Study Area (UPSA) and additional independent pumas with home ranges overlapping the UPSA harvested on adjacent Game Management Units (in parentheses), treatment year 1 (TY1) to treatment year 5 (TY5), 2009–2014, Colorado, USA.

Treatment year	Adult		Subadult		Quota	Total number of pumas harvested
	Female	Male	Female	Male		
TY1	2 (1)	5 (4)	1	1	8	9 (5)
TY2	0	5 (1)	2	1	8	8 (1)
TY3	3	1 (2)	0	4	8	8 (2)
TY4	2 (1)	2 (1)	0 (1)	1	5	5 (3)
TY5	1	3	0	1	5	5
Subtotals	8 (2)	16 (8)	3 (1)	8		

Table 2. Lincoln-Petersen parameter counts, pre-hunting abundance estimates (\hat{N}_c), and 95% confidence intervals (CI) of independent pumas during winter from reference years 2–5 (RY2–RY5) and treatment years 1–5 (TY1–TY5), 2005–2014, Uncompahgre Plateau Study Area (UPSA), Colorado, USA.

Study winter ^a	n_1 ^b	n_2 ^c	m_2 ^d	\hat{N}_c estimate ^e	95% CI	Detection probability ^f
RY2	9	18	7	23	18–28	0.78
RY3	16	22	11	32	25–39	0.69
RY4	17	29	15	33	29–37	0.88
RY5	20	25	12	41	31–51	0.60
TY1	32	48	27	57	52–62	0.84
TY2	29	50	26	56	51–61	0.90
TY3	23	40	21	44	40–48	0.91
TY4	21	37	18	43	38–48	0.86
TY5	21	32	18	37	33–41	0.86

^a We treated each entire capture and hunting season (Nov–Mar) as a sampling period.

^b Number of marked independent pumas expected to be in the UPSA at the start of the sampling period (i.e., Nov).

^c Number of independent pumas physically captured, detected by radio-telemetry, and back-aged into the sampling period.

^d Number of independent pumas detected during the sampling period in the n_2 sample that were previously marked.

^e Pre-harvest abundance in November.

^f m_2/n_1 .

Table 3. Puma mortality rates based on adult and subadult pumas that died on the Uncompahgre Plateau Study Area (UPSA) and with additional adult and subadult pumas with home ranges that overlapped the UPSA that died on adjacent Game Management Units (in parentheses) expressed as a proportion of Lincoln-Petersen abundance estimates (\hat{N}_c) during hunting seasons from treatment year 1 (TY1) to treatment year 5 (TY5), 2009–2014, Colorado, USA.

Treatment year	Puma harvest rate	Total human-caused puma mortality rate	Total puma mortality rate
TY1	0.16 (0.25)	0.16 (0.25)	0.16 (0.25)
TY2	0.14 (0.16)	0.18 (0.20)	0.18 (0.20)
TY3	0.18 (0.23)	0.18 (0.23)	0.23 (0.27)
TY4	0.12 (0.19)	0.12 (0.19)	0.14 (0.21)
TY5	0.14	0.14	0.16

the UPSA during the treatment period was 3.5 years (range = 1.1–9.5).

Six other independent pumas died of causes other than hunting on the UPSA during the hunting seasons, ranging from 0–2 deaths each season; all were adult females (Table 4). With these deaths added to the harvest on the UPSA, total mortality rates during TY1–TY3 averaged 19% (Table 3). In TY4 and TY5 total UPSA mortality rates averaged 15%. However, 4 of the 6 adult females died of natural causes on the UPSA. Just counting the human-caused deaths on UPSA that would have

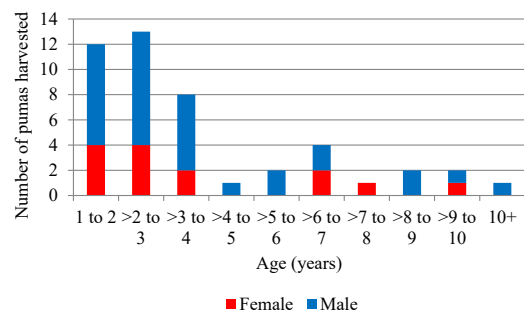


Figure 4. The age structure of pumas harvested on the Uncompahgre Plateau Study Area (UPSA) and with home ranges overlapping the UPSA that were harvested on adjacent Game Management Units, 2009–2014, Colorado, USA.

been detected by wildlife managers (i.e., harvest and depredation control), the total UPSA human-caused mortality during TY1–TY3 averaged 17%. In TY4 and TY5 the total UPSA human-caused mortality rate averaged 13%.

In addition, hunters killed 11 other radio-collared independent pumas (2 adult females, 8 adult males, 1 subadult female) in adjacent GMUs 61, 62, 65, and 70 that had home ranges overlapping the UPSA boundaries (Table 4). Two of the adult radio-collared males were trailed by hunters' dogs off of the UPSA and were caught and killed in adjacent GMUs 65 and 70. Including these pumas, harvest rates as a percentage of the LP \hat{N}_c estimates averaged 21% for TY1–TY3 and 17% in TY4 and TY5. Also, when including these cases, total human-caused mortality (range = 19–25%) and total mortality rates (range = 21–27%) increased during TY1–TY4 but not in TY5 (Table 3). Of the 46 pumas that used the UPSA and were harvested during TY1–TY5, males comprised 70% and adult males 53%. Females comprised 30% and adult females 22% of the total harvest. The average estimated age of all the pumas harvested was 3.8 years (range = 1.1–10.1). Of those, 26% were subadults, 48% were adults >2–5 years old, and 26% were adults >5 years old (Fig. 4).

All marked adults that died from hunting (9 females, 22 males) and depredation control (3 females) were detected by, or reported to, wildlife managers. However, 18 adult deaths, including 15 natural (14 females, 1 male), an illegal kill (1 male), and 2 (both females) of the 4 vehicle strikes (3 females, 1 male) were not detected by wildlife managers but instead by our radio-telemetry monitoring. All marked subadult deaths from hunting (2 females, 10 males), depredation control (1 female, 2 males), and vehicle strikes (1 female, 1 male) were detected by, or reported to, managers. But managers detected only 1 (male) of 6 subadult deaths (2 females, 4 males) due to natural causes.

Table 4. Adult and subadult pumas that died of all causes on the Uncompahgre Plateau Study Area (UPSA) and adult and subadult pumas with home ranges that overlapped the UPSA that died on adjacent Game Management Units (in parentheses) during hunting seasons from treatment year 1 (TY1) to treatment year 5 (TY5), 2009–2014, Colorado, USA.

Treatment year	Hunting	Vehicle strike	Depredation control	Natural	Total mortalities
TY1	9 (5)	0	0	0	9 (5)
TY2	8 (1)	0	2	0	10 (1)
TY3	8 (2)	0	0	2	10 (2)
TY4	5 (3)	0	0	1	6 (3)
TY5	5	0	0	1	6

Table 5. Mortality causes and number and percentage of deaths by sex and total by period of radio-collared puma cubs during the reference ($n = 28$ female, 27 male) and treatment ($n = 27$ female, 36 male) periods, 2004–2014, Uncompahgre Plateau Study Area, Colorado, USA.

Study period	Mortality cause	Female deaths (%)	Male deaths (%)	Total deaths (%)
Reference	Infanticide	9 (64.3)	4 (100)	13 (72.2)
	Predation	1 (7.1)	0 (0)	1 (5.6)
	Unknown natural	3 (21.4)	0 (0)	3 (16.7)
	Vehicle strike	1 (7.1)	0 (0)	1 (5.6)
Treatment	Infanticide	3 (30)	5 (29.4)	8 (29.6)
	Unknown natural	0 (0)	4 (23.5)	4 (14.8)
	Natural starvation	1 (10)	2 (11.8)	3 (11.1)
	Human-caused starvation	4 (40)	2 (11.8)	6 (22.2)
	Vehicle strike	0 (0)	2 (11.8)	2 (7.4)
	Depredation control	2 (20)	1 (5.9)	3 (11.1)
	Mauled by hunter's dogs	0 (0)	1 (5.9)	1 (3.7)

Of 55 radio-collared cubs (28 females, 27 males) monitored in the reference period, 18 died (Table 5). Of those, 72% died when ≤ 5 months old. Natural causes dominated deaths of cubs (94.4%), of which infanticide was the greatest single cause (72.2%). One cub was killed by a vehicle strike. Four non-collared cubs also died, including 1 litter of 3 nurslings that starved to death after the mother was killed for depredation control, and 1 ear-tagged cub that died of infanticide when the mother was also killed by a male puma.

Of the 63 radio-collared cubs (27 females, 36 males) monitored in the treatment period, 27 died (Table 5). Of those, 80% died when ≤ 5 months old. Natural mortality comprised the majority of cub deaths (55.6%). The greatest proximate mortality cause was starvation including 3 cubs of 2 mothers that died of natural causes, 3 cubs of 2 mothers killed by hunters, and 3 cubs of 1 mother killed for depredation control. The 6 cubs that starved because their mothers died from anthropogenic causes comprised 22.2% of mortality during the treatment period. Infanticide deaths declined from 72.2% to 29.6%, and human-caused deaths increased from 5.6% to 44.4% from the reference period to the treatment period. In addition, we observed mortality in 3 litters of non-collared cubs: 2 litters (1 with 2 cubs and 1 with ≥ 1 cub) died of infanticide, and the third litter (with ≥ 1 cub) died because of black bear predation.

Infanticide caused 13 cub deaths in 8 of 32 radio-monitored litters in the reference period. This included 1 litter of 3 cubs killed 1–8 days after the mother was killed by vehicle strike. In the treatment period, 8 cubs in 5 of 45 radio-monitored litters died of infanticide. The proportion of litters subject to infanticide in the reference period tended to be higher (0.25, 95% CI = 0.12–0.43) than in the treatment period (0.11, 95% CI = 0.04–0.24), but the 95% confidence intervals (–0.04–0.32) on the difference included zero.

Abundance, Population Growth, and Mortality in Independent Pumas

The LP \hat{N}_t estimates of independent pumas that used the UPSA increased in the reference period from 23 in RY2 to 57 in TY1

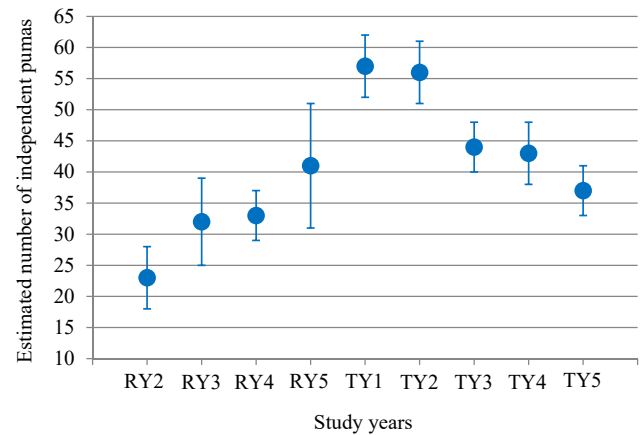


Figure 5. Lincoln-Petersen estimates (dots) with 95% confidence intervals (bars) of independent pumas that used the Uncompahgre Plateau Study Area each winter, reference year 2 (RY2) to treatment year 5 (TY5), 2005–2014, Colorado, USA.

(Table 2; Fig. 5) at median observed finite growth rates (λ) ranging from 1.04 (RY3–RY4) to 1.39 (RY2–RY3 and RY5–TY1; Table 6). In the treatment period, estimated abundance of independent pumas on the UPSA declined from 57 in TY1 to 37 in TY5. The geometric mean of λ showed an average 10% decline in abundance each year. Non-marked pumas captured for the first time or harvested when ≥ 3 years old and used to adjust n_2 data in previous years for LP estimates included 11 females (average age = 4.5 yr, 95% CI = 3.5–5.5) and 13 males (average age = 3.8 yr, 95% CI = 3.3–4.3).

Estimated abundance of independent pumas that ranged on the UPSA declined 23% between TY1 and TY3 (Table 2) after an average 15% harvest on the UPSA in TY1 and TY2 (Table 3; Fig. 5). In total, estimates of independent pumas that ranged on the UPSA declined 35% by TY5 following 4 hunting seasons (TY1–TY4) in which annual harvest rates averaged 15%. For the population declines measured by TY3 and TY5 where the TY1 95% confidence interval on the estimate does not overlap with the interval of TY3, the first indicated decline, and the interval for TY5, the last year, the total human-caused mortality rates on the UPSA averaged 17% and 16%, respectively. Likewise, the UPSA total mortality rates averaged 19% and 18%, respectively. Including the radio-collared pumas with home ranges overlapping the UPSA that were harvested on adjacent

Table 6. Estimated finite growth rates (λ) and lower and upper 95% confidence limits (LCL, UCL) of independent puma abundance, reference years 2–5 (RY2–RY5) and treatment years 1–5 (TY1–TY5), 2005–2014, based on Lincoln-Petersen estimates (N_t) of independent pumas in winter, Uncompahgre Plateau Study Area, Colorado, USA.

Interval	λ		
	Median	95% LCL	95% UCL
RY2–RY3	1.39	1.01	1.94
RY3–RY4	1.04	0.83	1.34
RY4–RY5	1.25	0.94	1.58
RY5–TY1	1.39	1.10	1.82
TY1–TY2	0.98	0.87	1.12
TY2–TY3	0.79	0.70	0.88
TY3–TY4	0.98	0.85	1.13
TY4–TY5	0.87	0.74	1.02

GMUs, harvest rates averaged 21% during TY1–TY4 (Table 3). For the population declines measured by TY3 and TY5, the total human-caused mortality rates on the UPSA averaged 23% and 22%, respectively, and the UPSA total mortality rates averaged 24% and 23%, respectively.

Our multinomial analysis of fates of marked independent pumas at the population scale included 19–44 individuals annually from RY2–RY5 and 39–50 annually TY1–TY5 (Fig. 6A). Of those, 35 females and 42 males died, including 11 females and 33 males that were harvested, all of them in the UPSA and 4 bordering management units (i.e., GMUs 61, 62, 65, 70) managed for stable or increasing puma population objectives (Fig. 7). Only 1 of the marked independent pumas with known fates was harvested during the reference period, a subadult male killed in a GMU adjacent to the UPSA in RY5. In contrast, annual harvest rates in the treatment period ranged from 13–27% (Table 7). Population-level harvest rates for years TY1–TY4 averaged 22% (Table 7), and preceded the 35% reduction in the estimated abundance of independent pumas on the UPSA by TY5. Females and adult females comprised 26% and 21%, respectively, of the total number of marked pumas harvested during TY1–TY5. Other human-caused mortality averaged 2% annually in the reference period and 5% annually in the treatment period. Total annual human-caused mortality rates averaged 3% in the reference period and increased to 25% in the treatment period. Average annual natural mortality rates

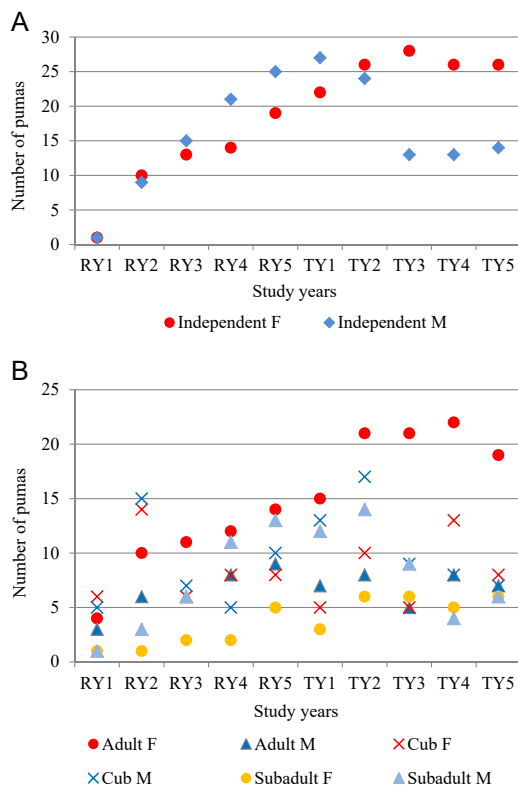


Figure 6. Numbers of marked independent (i.e., adults and subadults) female (F) and male (M) pumas for multinomial analysis of cause-specific mortality rates (A), and adult, subadult, and cub pumas for survival rate estimates (B), reference year 1 to treatment year 5 (RY1–TY5), 2004–2014, on the Uncompahgre Plateau Study Area and bordering Game Management Units, Colorado, USA.

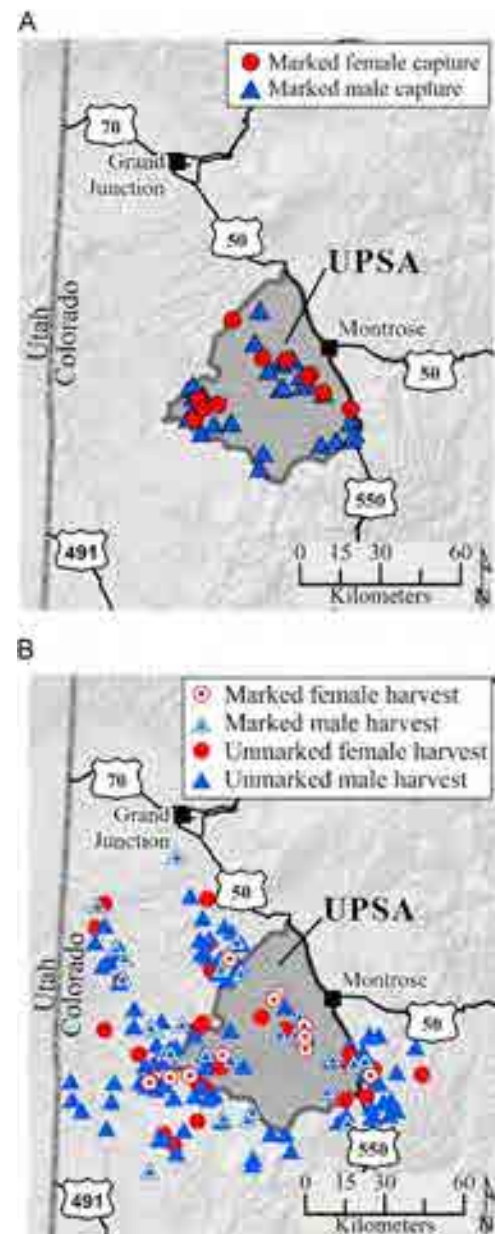


Figure 7. Initial capture locations of marked independent pumas (A), and harvest locations of marked and unmarked independent pumas (B) that were either harvested on the Uncompahgre Plateau Study Area (UPSA) or adjacent Game Management Units during the treatment period, 2009–2014, Uncompahgre Plateau, Colorado, USA.

were low in both the reference and the treatment periods (5%, 6%, respectively). Total annual mortality rates averaged 8% in the reference period and increased to 31% in the treatment period. The average annual population-scale emigration rate (i.e., from the UPSA and adjacent GMUs) was similar in the reference and treatment periods (8%, 4%, respectively).

Sex and Age Structure

The sex and age structure on the UPSA in winter, based on LP estimates of adult females, males, and subadults indicated that adults were more abundant than subadults every year (Table 8). In the reference period, adult females were in parity with adult males during RY2–RY3 when the abundance of independent

Table 7. Population-scale estimated puma agent-specific mortality rates and emigration rates (with 95% CIs) for marked adult and subadult pumas with known fates from multinomial analysis of reference years 2–5 (RY2–RY5) and treatment years 1–5 (TY1–TY5), 2005–2014, Uncompahgre Plateau Study Area and adjacent Game Management Units, Colorado, USA.

Study year	Hunting mortality	Other human-caused mortality	Natural mortality	Population-scale emigration ^a	Total human-caused mortality	Total mortality
RY2	0	0	0.05 (0.01–0.31)	0.05 (0.01–0.31)	0	0.05 (0.01–0.31)
RY3	0	0	0.07 (0.02–0.28)	0.07 (0.02–0.28)	0	0.07 (0.02–0.28)
RY4	0	0.03 (0.00–0.20)	0.06 (0.01–0.24)	0.14 (0.05–0.34)	0.03 (0.00–0.20)	0.09 (0.02–0.26)
RY5	0.02 (0.00–0.17)	0.05 (0.01–0.20)	0.02 (0.00–0.17)	0.05 (0.01–0.20)	0.07 (0.02–0.23)	0.09 (0.03–0.25)
TY1	0.22 (0.11–0.40)	0.04 (0.01–0.18)	0.04 (0.01–0.18)	0.06 (0.02–0.21)	0.27 (0.14–0.44)	0.31 (0.18–0.48)
TY2	0.14 (0.06–0.31)	0.10 (0.03–0.26)	0.10 (0.03–0.26)	0.08 (0.02–0.23)	0.24 (0.12–0.41)	0.34 (0.20–0.51)
TY3	0.27 (0.13–0.47)	0.02 (0.00–0.18)	0.07 (0.02–0.25)	0.05 (0.01–0.21)	0.29 (0.15–0.49)	0.37 (0.21–0.55)
TY4	0.23 (0.11–0.43)	0.05 (0.01–0.22)	0.03 (0.00–0.18)	0	0.28 (0.15–0.47)	0.31 (0.17–0.49)
TY5	0.13 (0.04–0.31)	0.03 (0.00–0.18)	0.08 (0.02–0.25)	0.03 (0.00–0.18)	0.15 (0.06–0.34)	0.23 (0.11–0.42)

^a Population-scale emigration rates refer to marked subadult pumas that moved beyond the boundaries of the Uncompahgre Plateau Study Area and bordering Game Management Units.

pumas was lowest. As the abundance of adults increased to the beginning of TY1, adult females became more numerous than adult males by ratios ranging from 1.2:1–1.9:1. During the treatment period, ratios of adult females to males diverged further, ranging from 1.2:1–3:1, with the widest margins during TY3–TY5 when the population declined again to a low phase. Subadult females occurred slightly more than males (i.e., 29 females: 25 males; Fig. 8) throughout the study. Cubs outnumbered subadults every year, and generally numbered less than adults (Table 8).

During the reference period, we found relatively few pumas 1–2 years old of which there were over twice as many females as males (Fig. 8). In the first 2 years of the reference period, adults >5 years old were few (Fig. 8). The number of pumas >5 years old increased, however, during RY3 to the beginning of TY1 as the population on the UPSA increased.

The broadest age distribution for both sexes occurred at the start of the treatment period and after 5 years of no hunting (i.e., TY1; Fig. 8). Pumas 1–5 years old comprised 66% of the independent animals; the other 34% were adult females and males >5 years old (Fig. 8). In TY1, adult males >5 years old comprised 43% of that segment of the population. Estimated winter

abundance of adult males declined by 59% between TY1 and TY4 and remained as low in TY5 (Table 8). After 2 years of hunting, adult males >6 years old were absent from the sampled winter sex and age structures (TY3–TY5; Fig. 8D). There were more pumas 1–2 years old tallied each year in the treatment period than each year in the reference period. Also, there were almost as many females (21) as males (23) 1–2 years old throughout the treatment period.

Estimated adult female abundance was generally stable from TY1–TY4 but declined to its lowest in TY5 (Table 8). The difference in the TY4 and TY5 adult female estimates could mostly be explained by 5 adult females that died during TY4 (2 harvested on the UPSA, 1 harvested adjacent to the UPSA, 1 died of natural cause, 1 died of vehicle strike) and 1 adult female that stayed on a portion of her home range outside the UPSA after June in TY4. In addition, 2 adult females caught in TY5 with home ranges that overlapped the UPSA were back-aged into the TY4 estimate. We could not directly account for other non-marked adult females estimated in TY4 that might have died before TY5 or had overlapping home ranges with the UPSA. Adult female age distribution was relatively even from TY1–TY3; but adult females >6 years old declined during TY4 and TY5 (Fig. 8C).

At the beginning of RY1, independent males averaged 2.7 years old (95% CI = 1.8–3.7). Similarly, independent females averaged 3.3 years old (95% CI = 2.3–4.2). By the beginning of TY1, independent males averaged 4.2 years old (95% CI = 3.1–5.2), similar to the average of 4.4 years for independent females (95% CI = 3.4–5.3). By the start of TY5 the average age of independent males was 2.9 years old (95% CI = 2.1–3.7), indicative of the declining male age structure. Independent females at the start of TY5 averaged 4.5 years old (95% CI = 3.3–5.7), similar to TY1.

Philopatry, Dispersal, and Emigration

We estimated age (months) of transition from the cub to subadult stage for 15 radio-collared pumas (11 males, 4 females). They became independent at a median age of 13.0 months (\bar{x} = 13.7 months, range = 9–16). Ten pumas (8 males, 2 females) dispersed from natal areas at a median age of 14.5 months (\bar{x} = 15.5 months, range = 10–22) and during April to October. Seven of those (5 males, 2 females) dispersed from natal areas

Table 8. Lincoln-Petersen winter estimates and 95% confidence intervals of adult female, adult male, and subadult (sexes combined) pumas, and counts of cubs (sexes combined), reference years 2–5 (RY2–RY5) and treatment years 1–5 (TY1–TY5), 2005–2014, Uncompahgre Plateau Study Area, Colorado, USA.

Study year ^a	Adult females	95% CI	Adult males	95% CI	Subadults	95% CI	Cubs ^b
RY2	11	8–14	10	6–14	2	2–2	14
RY3	16	13–19	15	8–22	1	1–1	16
RY4	19	16–21	10	9–12	3	3–3	20–21
RY5	24	16–32	13	10–16	5	0–10	21
TY1	26	22–29	22	19–25	9	7–11	19–24
TY2	28	27–30	18	15–21	10	10–10	39
TY3	23	21–24	10	10–10	10	10–10	19
TY4	27	23–31	9	9–9	6	6–6	24
TY5	19	17–20	9	7–11	9	9–9	25–28

^a Numbers of adults and subadults deviate by 1 animal from estimates of independent pumas in Table 2 because of rounding errors for RY4, RY5, TY3, and TY4.

^b Includes cubs observed with mothers and cubs counted from tracks associated with mothers.

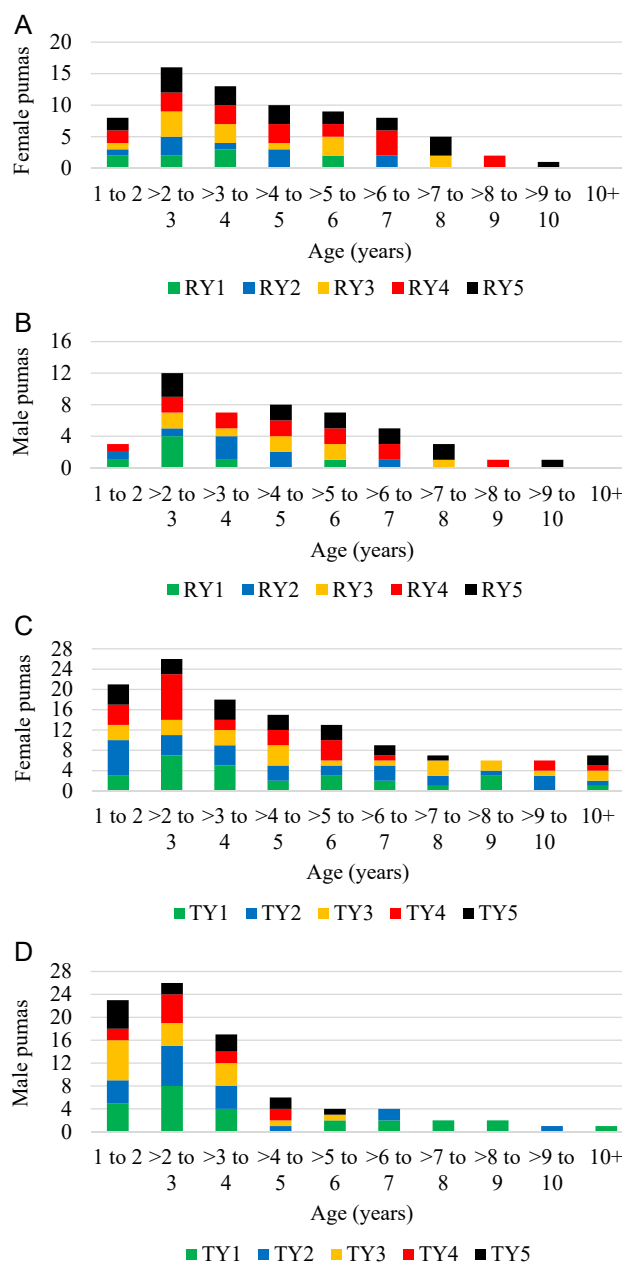


Figure 8. Sex and age structure of adult and subadult pumas that were captured, harvested, and examined in the reference and treatment periods, 2004–2014, on the Uncompahgre Plateau Study Area, Colorado, USA. Females and males are presented in panels A and B, respectively, for reference period years (RY1–RY5). Females and males are presented in panels C and D, respectively, for treatment period years (TY1–TY5).

before their first winter in the subadult stage, and all except for 1 female emigrated from the UPSA.

Six marked pumas born on the study area that survived to adult ages exhibited philopatry. Five females established adult home ranges overlapping those of their mothers; 4 of those subsequently reproduced. One male was killed by a hunter within his mother's home range when he was 30 months old. We recaptured another male when he was 28 months old, 1.8 km north of his mother's home range; 1 week later he was killed by a hunter 3 km north of his mother's home range. Because of the short time he wore a radio-collar as an adult, we could not determine the extent his movements overlapped with his mother's home range. Both males may have also ranged off of

the study area, as did their mothers, after their cub collars quit functioning and we could no longer monitor their movements. Both of the males died 11.1 km and 12.8 km from the nurseries where they were initially marked.

Of 37 cubs surviving to the subadult stage in the reference period, at least 10 (27%; 9 males, 1 female) were known to have emigrated from the UPSA. Similarly, of 36 cubs surviving to subadult stage in the treatment period, at least 9 (25%; 8 males, 1 female) were known to have emigrated from the UPSA.

We collected data on 34 pumas (7 females, 27 males) that were born on the UPSA and dispersed from natal areas (Fig. 9). Four females and 24 males emigrated entirely from UPSA. Females dispersed an average of 30.7 km (95% CI = 23.2–38.2,

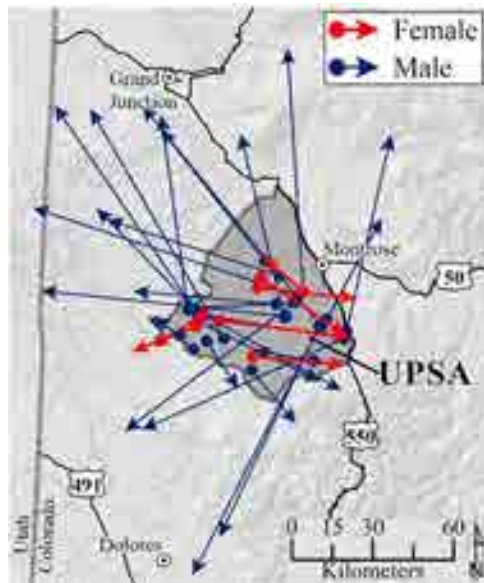


Figure 9. Pumas born, captured, and marked on the Uncompahgre Plateau Study Area (UPSA) Colorado, USA, 2004–2014, that later dispersed from their natal areas after separation from mothers. End points of their movements indicated by the ends of the arrows are to the last known locations.

range = 18.7–46.8). We determined dispersal endpoints for females when they were 17–44 months old (\bar{x} = 26.7, 95% CI = 24.7–28.8). Males dispersed longer distances than females, averaging 63.9 km (95% CI = 53.8–74.0, range = 17.7–104.1). We determined dispersal endpoints for males when they were 17–65 months old (\bar{x} = 33.1, 95% CI = 27.8–38.3).

We obtained data on 14 other independent pumas (8 females, 6 males) with unknown origins that were initially captured and marked on the UPSA but subsequently emigrated (Fig. 10). At their first capture, estimated ages of females averaged 21 months (95% CI = 17–26) and males averaged 21 months (95% CI = 17–25). Females moved on average 70.9 km (95% CI = 21.4–119.2, range = 18.4–214.1) from capture sites to endpoints. We found endpoints for the females when they were about 24–79 months old (\bar{x} = 33, 95% CI = 20–46). Males moved on average 190.5 km (95% CI = 76.4–304.6, range = 39.6–369.1) from capture sites to endpoints. Males were about 26–55 months old (\bar{x} = 39, 95% CI = 29–49) when we determined their endpoints. Pumas from this group made the farthest movements; 1 female and 1 male moved to northern New Mexico, 1 male moved to the eastern slope of the Rocky Mountains in Colorado, and 1 male moved to southern Wyoming.

Survival

Adults.—The adult survival data included 75 radio-collared individuals, with 32 (21 females, 11 males) monitored in the reference period and 61 (39 females, 22 males) monitored in the treatment period. Sixteen (10 females, 8 males) were monitored in both periods. The number of adult females and males monitored annually ranged from 10–22, and 6–9, respectively (Fig. 6B). Survival modeling resulted in 2 closely ranked models ($\Delta AIC_c < 2$) that accounted for 89% of the model weights. The top-ranked model indicated a period effect interacting with sex



Figure 10. Pumas of unknown origin captured and marked on the Uncompahgre Plateau Study Area (UPSA), Colorado, USA, 2004–2014, that later dispersed to locations outside of the UPSA. End points of their movements indicated by the ends of the arrows are to the last known locations.

(Table S2, available online in Supporting Information). Adult male annual survival was over 2 times higher in the reference period (0.96) than in the treatment period (0.40; Table 9). The estimate for annual adult female survival was also higher in the reference period (0.86) than in the treatment period (0.74). The evidence ratio from AIC_c weights indicated the top-ranked model had 1.2 times the support of the second-ranked model with adult male survival interacting with period and adult female survival constant. In this model adult male annual survival varied in each period as in the top model, and adult female annual survival was 0.78 over both periods. The remaining 7 models in the 9-model candidate set had weak to no support ($\Delta AIC_c > 4$).

Subadults.—The subadult survival sample included 75 individuals with known-fates: 22 (8 females, 14 males) in the reference period and 53 (19 females, 34 males) in the treatment period.

Table 9. Top-ranking survival models (difference in corrected Akaike's Information Criterion [ΔAIC_c] < 2) for adult and subadult pumas, and estimated adult annual and subadult stage survival rates with 95% confidence intervals, 2005–2014, Uncompahgre Plateau, Colorado, USA.

Life stage	Model ^a	Sex	Reference period survival (95% CI)	Treatment period survival (95% CI)
Adult ^b	Sex × period	Male	0.96 (0.75–0.99)	0.40 (0.22–0.57)
		Female	0.86 (0.72–0.94)	0.74 (0.63–0.82)
	M × period (F constant)	Female	0.96 (0.75–0.99)	0.40 (0.22–0.57)
Subadult ^c	M × period (F constant)	Female	0.78 (0.70–0.85)	
		Male	0.92 (0.57–0.99)	0.43 (0.25–0.60)
	Sex × period	Female	0.68 (0.43–0.84)	
		Male	0.92 (0.57–0.99)	0.43 (0.25–0.60)
		Female	0.63 (0.17–0.89)	0.70 (0.39–0.88)

^a Period = reference (no hunting) vs. treatment (hunting allowed). M = male. F = female.

^b Sample sizes of adult pumas included 11 males and 21 females in the reference period and 22 males and 39 females in the treatment period.

^c Sample sizes of subadult pumas included 14 males and 8 females in the reference period and 34 males and 19 females in the treatment period.

The number of subadult females and males monitored annually ranged from 1–6, and 1–14, respectively (Fig. 6B). Survival modeling resulted in 2 closely ranked models ($\Delta AIC_c < 2$) that accounted for 77% of the model weights (Table S3, available online in Supporting Information). The top-ranked model indicated period as an important factor explaining male survival and constant female survival. Subadult male survival was 2 times higher in the reference period (0.92) than in the treatment period (0.43). Subadult female survival was 0.68 over the 2 periods (Table 9). The evidence ratio from AIC_c weights indicated that the top model had 2.6 times the support of the second-ranked model of sex interacting with period. Subadult male survival varied in the 2 periods the same as in the top model, and subadult female survival was variable but similar in the reference (0.63) and treatment (0.70) periods. The remaining 7 models in the 9-model candidate set had weak to no support ($\Delta AIC_c > 2$).

Cubs.—The cub survival data included 118 radio-collared cubs: 55 cubs (28 females, 27 males) from 32 litters in the reference period, and 63 cubs (27 females, 36 males) from 45 litters in the treatment period. The number of females and males monitored annually ranged from 5–14, and 5–17, respectively (Fig. 6B). The estimated \hat{c} for the most parameterized cub survival model we could use (i.e., period \times sex) was 1.55, indicating that the fates of siblings were not independent. We documented numerous occasions of this phenomenon. In the reference period, 7 radio-collared siblings in 3 litters died at the same time from infanticide. In addition 3 non-collared cubs in 1 litter starved after the mother was killed for depredation control. In the treatment period, 19 radio-collared siblings in 8 litters died at the same time from a variety of causes including depredation control (3 cubs in 1 litter), vehicle strike (2 cubs in 1 litter), infanticide (7 cubs in 3 litters), and starvation (7 cubs in 3 litters). In addition, 2 non-collared cubs in 1 litter died from infanticide.

Modeling results indicated 4 models with a $\Delta QAIC_c < 2$; all 4 supported models contained the covariate for mother status alive

or dead (i.e., mother status) and accounted for 78% of the model weights (Table S4, available online in Supporting Information). These models indicated that survival of the mother during cub dependence was the most important factor to cub survival. Evidence ratios using $QAIC_c$ weights indicated the top model with the covariate mother status alone had 2.5 times the support of the second-ranked model, sex + mother status, and 2.7 times the support of the third- and fourth-ranked models, period + mother status and sex \times period + mother status, respectively. In the top model, the survival estimate of cubs with living mothers (0.51) was over 3 times higher than of cubs whose mothers died (0.14; Table 10). With sex and mother status as main effects, survival estimates of male and female cubs (0.54 and 0.49, respectively) with living mothers were 3 to 4 times higher than for cubs of those sexes (0.16 and 0.12, respectively) with mothers that died. With period and mother status as main effects, survival estimates of cubs with living mothers in the reference (0.53) and the treatment (0.49) periods were over 3 times higher than of cubs with mothers that died in the reference (0.16) and treatment (0.13) periods. With sex interacting with period and mother status as a main effect in the reference period, survival estimates of male (0.74) and female (0.37) cubs with living mothers were 2 to 7 times higher than for cubs of those sexes (0.38 and 0.05, respectively) with mothers that died. In the treatment period, survival estimates of male (0.44) and female (0.59) cubs with living mothers were 3 to 6 times higher than for cubs of those sexes (0.08 and 0.19, respectively) with mothers that died. There was no support for period alone explaining variation in cub survival ($\Delta QAIC_c = 5.8$).

Reproduction

Adult females on the UPSA produced litters in the months of March to September. Data on 66 birth dates revealed that births increased rapidly in May and June, peaked in July, declined slightly in August and rapidly declined in September. No live births were detected from October through February (Fig. 11).

Table 10. Top-ranking survival models (difference in corrected quasi-Akaike's Information Criterion [$\Delta QAIC_c$] < 2) for puma cubs monitored in the reference (27 males, 28 females) and treatment (36 males, 27 females) periods, and the estimated stage survival rates with 95% confidence intervals, 2005–2014, Uncompahgre Plateau, Colorado, USA.

Model ^a	Covariates	Survival (95% CI)
Mother status	Mother alive	0.51 (0.35–0.66)
	Mother dead	0.14 (0.03–0.34)
Sex + mother status	Male	0.54 (0.33–0.71)
	Female	0.49 (0.27–0.67)
	Male	0.16 (0.03–0.41)
	Female	0.12 (0.02–0.34)
Period + mother status	Reference	0.53 (0.31–0.71)
	Treatment	0.49 (0.27–0.69)
	Reference	0.16 (0.01–0.49)
	Treatment	0.13 (0.03–0.33)
Sex \times period + mother status	Male, Reference	0.74 (0.37–0.92)
	Female, Reference	0.37 (0.14–0.62)
	Male, Reference	0.38 (0.03–0.79)
	Female, Reference	0.05 (0.00–0.33)
	Male, Treatment	0.44 (0.19–0.68)
	Female, Treatment	0.59 (0.27–0.82)
	Male, Treatment	0.08 (0.01–0.30)
	Female, Treatment	0.19 (0.03–0.47)

^a Mother status = mother was alive or dead when individual cubs were dependent. Period = reference (no hunting) vs. treatment (hunting allowed).

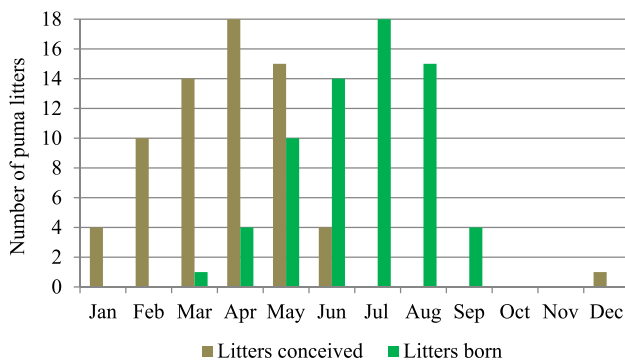


Figure 11. Monthly puma conception and birth frequency from 19 May 2005 to 30 September 2014 ($n = 66$ litters of 33 females). We examined 60 litters at nurseries when cubs were 25–45 days old; we confirmed 4 litters by tracks of ≥ 1 cubs following radio-collared mothers and 2 litters by remains of cubs of 2 radio-collared mothers when cubs were ≤ 45 days old, Uncompahgre Plateau, Colorado, USA.

We estimated minimum and maximum gestation for 17 litters of 13 females. Gestation length medians were 91–92 days and averages were 90.4–91.8 days (95% $CI_{min.} = 89.1$ –91.6; 95% $CI_{max.} = 90.8$ –92.9). Considering an average 92-day gestation period and the distribution of birth months on the UPSA, puma breeding activity spanned the months of December to June, increased in February, and peaked March through May when 71% of the litters were conceived (Fig. 11).

The average age that 14 females (12 approximately aged by our methods, 2 of known age) gave birth to their first litters was 32 months (95% $CI = 27$ –36, range = 21–48). Those females conceived at the average age of 29 months (95% $CI = 24$ –33, range = 18–45) assuming a 92-day gestation period.

Reproduction parameter estimates, including average birth interval length, average litter size, proportions of male and female nurslings, and parturition rate in the reference and treatment periods were similar (Table 11). The 95% confidence intervals on the differences of the estimates for each period for all parameters included zero.

Puma Hunters

The number of people requesting a permit to hunt on the UPSA each season in the treatment period ranged from 66–78 (Table 12). The number of hunters that responded to the voluntary surveys in the 5 seasons ranged from 40–62, representing 56–79% of the people that requested permits. Hunters did not answer all the questions on the survey, especially if they did not harvest a puma. The estimated number of active hunters on the UPSA each season ranged from 38–54. The greatest number of hunters participated in TY1. The lowest numbers of hunters were in TY4 and TY5 when the quota was reduced to 5 pumas. Hunters on the UPSA generally used dogs to hunt pumas, yet 1–4 individuals (median = 4) each winter said they did not use dogs. Forty-nine of 52 hunters indicated on their surveys that presence of marks (i.e., collar, eartags) would not influence their decision to harvest an animal. Two hunters indicated marks would make them more likely to harvest a puma; 1 killed a marked adult male and 1 killed a non-marked adult female. One hunter reported he would be less likely to harvest a marked puma; this hunter treed and released 2 different marked adult females and did not kill any others.

Harvest quotas on the UPSA during TY1–TY5 were reached by 11 December to 10 January each winter; the median date was 23 December. Only hunters using dogs harvested pumas. The number of days that hunters took to reach the 8-puma quota during TY1–TY3 ranged from 21–33 (Table 13). To reach the 5-puma quota in TY4 and TY5, it took 41 and 54 days, respectively. The number of days that each person hunted on UPSA ranged from 1–14, and the median number of days for each year was either 1 or 2. Hunter effort to harvest a puma ranged from 1–6 days and medians ranged from 1–2 days. During TY1–TY3, the number of days that hunters took to harvest a puma ranged from 1–4 (median = 1). It typically took the same number of days to harvest a male or female (median = 1), but the range was larger for males (1–4 days) than for females (1–2 days). During TY4 and TY5, the number of days to harvest a puma ranged from 1–6 (median = 1.5). The number of days hunted to harvest a female ranged from

Table 11. Puma reproduction parameter estimates and 95% confidence intervals in the reference and treatment periods, 2005–2014, Uncompahgre Plateau, Colorado, USA.

Reproduction parameter (units)	Period	Sample size	Estimates (95% CI)	95% CI on the difference ^a
Average birth interval (months)	Reference	17 intervals, 10 mothers	18.3 (15.5–21.1)	–3.1–5.4
	Treatment	13 intervals, 10 mothers	19.4 (16.2–22.6)	
Average litter size (cubs/litter)	Reference	26 litters, 14 mothers	2.8 (2.4–3.1)	–0.1–0.9
	Treatment	21 litters, 14 mothers	2.4 (2.0–2.8)	
Proportions of the sexes in litters (males, females)	Reference	41 male, 31 female	0.57 (0.45–0.69), 0.43 (0.31–0.55)	–0.023–0.301
	Treatment	27 male, 22 female	0.55 (0.40–0.69), 0.45 (0.31–0.60)	
	Both periods	68 male, 53 female	0.56 (0.47–0.65), 0.44 (0.35–0.53)	0.000–0.248
	Reference	12–13 adult females/year	0.63 (0.49–0.75)	
	Treatment	13–17 adult females/year	0.48 (0.37–0.59)	–0.12–1.32 ^b

^a We made inferences on period effects on these parameters by examining the 95% CIs on the differences of the estimates for each period using the delta method (Seber 1982). The 95% CIs on the differences for all tests included zero.

^b This 95% CI for the difference on the estimates is on the logit scale.

Table 12. Puma hunter participation during treatment year 1 (TY1) to treatment year 5 (TY5), 2009–2014, Uncompahgre Plateau Study Area (UPSA), Colorado, USA.

Treatment year ^a	Number of hunters that requested permit	Number of hunters that responded to survey	Percent of hunters that returned survey	Number of hunters that indicated they hunted on UPSA	Estimated number of hunters that hunted on UPSA
TY1	78	62	79	43	54
TY2	70	50	71	31	43
TY3	73	40	56	28	51
TY4	70	43	61	24	39
TY5	66	45	68	26	38

^a Puma hunting quotas on the UPSA included 8 pumas during TY1–TY3 and 5 pumas during TY4 and TY5.

Table 13. Lincoln-Petersen estimates (\hat{N}_c) of independent puma abundance and puma hunting and hunter survey results during treatment year 1 (TY1) to treatment year 5 (TY5), 2009–2014, Uncompahgre Plateau Study Area (UPSA), Colorado, USA.

Treatment year	\hat{N}_c	Harvest quota	Actual harvest	Number of days hunted on UPSA (range, median, <i>n</i>)	Number of days to fill the quota	Number of days per successful hunter to kill a puma (range, median)
TY1	57	8	9	1–14, 2, 51	26	1–4, 1
TY2	56	8	8	1–12, 2, 35	21	1–3, 1.5
TY3	44	8	8	1–6, 1, 31	33	1–3, 1
TY4	43	5	5	1–12, 2, 23	41	1–6, 1
TY5	37	5	5	1–5, 2, 32	54	1–5, 2

1–3 (median = 1), whereas days to harvest a male ranged from 1–6 (median = 2).

Hunters reported they encountered more fresh tracks (i.e., <1 day old) of females than of males during TY2, TY3, and TY5 (the survey in TY1 did not address this question), with annual male:female ratios ranging from 1:1.5–1:2.2 (Table 14). But in TY4, hunters reported they encountered more fresh tracks of males than females by a ratio of 1.8:1. The ratio of male to female tracks encountered by hunters in TY2, TY3, and TY5 reflected the observed male to female ratio of independent pumas in the population TY1–TY5, which annually ranged from 1:1.2–1:2.8. Our researchers encountered more fresh tracks of females than males each treatment year during our post-hunting capture operations, consistent with the sex structure of the independent pumas in the population after the seasons.

Hunters self-identified as selective 84–97% of the time and the sex ratio of independent pumas killed (2.2 males:1 female)

reflected selection toward males (Table 14). Hunters harvested more males than females, even though they reported encountering more fresh female tracks in 3 of 4 seasons that we asked this survey question. Hunters reported capturing and releasing 7 male and 19 female independent pumas during TY1–TY3. But in TY4 and TY5, hunters reported they caught and released 1 and 3 independent males, respectively, and 0 independent females.

DISCUSSION

Overarching Demographic Effects of Hunting

We found that annual harvest rates of independent pumas averaging 22% at the larger population scale and 15% at the UPSA scale over 4 years resulted in a 35% decline in their abundance on the main study area. As noted previously, however, the 15% UPSA-scale average harvest rate is biased low

Table 14. Counts arranged by sex ratio (male: female) of puma tracks recorded by hunters, pumas harvested, pumas captured and released by hunters, puma tracks recorded by researchers, and of independent pumas counted for Lincoln-Petersen (LP) estimates, and ratio of hunters that self-identified as selective:non-selective, treatment year 1 (TY1) to treatment year 5 (TY5), 2009–2014, Uncompahgre Plateau Study Area, Colorado, USA.

Treatment year	Sex ratio of first puma tracks <1 day old encountered by hunters ^a	Sex ratio of hunter-killed pumas	Sex ratio of pumas caught and released by hunters	Ratio of hunters that self-identified as selective: non-selective	Sex ratio of first puma tracks <1 day old encountered by researchers	Sex ratio of independent pumas counted for LP estimates pre-harvest	Sex ratio of independent pumas counted for LP estimates post-harvest
TY1	NA ^b	6:3	5:9	23:1	NA ^b	26:27	20:24
TY2	10:20	6:2	1:7	30:1	21:47	21:32	15:30
TY3	6:13	5:3	1:3	22:2	12:70	17:25	12:22
TY4	13:7	3:2	1:0	21:4	23:46	11:29	8:27
TY5	8:12	4:1	3:0	23:2	11:37	13:22	9:21

^a Tracks were assumed to be of independent pumas.

^b Not addressed in hunter survey in TY1.

because of the mis-match of the harvest limited on the UPSA (the numerator) relative to the number of independent pumas using this and adjacent areas (the denominator). Moreover, if we committed any errors by counting adults with failed radio-collars and others we back-aged to ≥ 2 years old in LP parameters, the actual UPSA-scale harvest rate would be higher. Hunting deaths were largely additive as indicated by a decline in survival and abundance and no reduction in other causes of mortality. Also hunting mortality was not fully compensated by reproduction and recruitment. Recruitment of young pumas did not compensate for losses of adult males and only partially ameliorated losses of adult females. The decline in puma abundance on the UPSA was likely due to the higher harvest rates occurring at the population scale, which included independent animals on the UPSA, those with home ranges overlapping the UPSA, and others on adjacent management units. We found that hunters exhibited selection for males, which reduced their survival and affected the sex and age structure of the population.

Change in Puma Abundance

Abundance of independent pumas changed on the UPSA as we manipulated hunting. Abundance increased with the absence of hunting on the UPSA and protection of marked pumas in adjacent management units. This occurred even with other natural and human causes of mortality acting on the animals. Thus, hunting mortality as it was applied prior to our study probably had reduced the abundance of pumas on the UPSA to a low phase and well below the capacity of the habitat. Moreover, the high finite growth rates of independent pumas on the UPSA, especially during RY4–RY5 and RY5–TY1 (i.e., $\lambda = 1.25$ and 1.39 , respectively), suggested that if the population continued to be protected from hunting, abundance would likely have increased further. Theoretically, had the non-hunted puma population been naturally limited by food and regulated by competition, growth would have declined (Logan 2019, Ruth et al. 2019). The decline, however, could follow a 4–8-year time lag (Laundré et al. 2007, Pierce et al. 2012). In our study, though, the absence and presence of hunting mortality determined population growth within the extents of the reference and treatment periods.

Our findings along with those from other western states reveal the range of puma population responses to variations in harvest rates (Fig. 12). At one end of the spectrum, a study in Utah revealed that abundance of independent pumas in the Monroe Mountains declined by $>50\%$ when subjected to an average 10% harvest rate (range = 7–12) over 6 years. That same population subsequently increased close to previous abundance when subject to an average harvest rate of 5% (range = 4–9) over 10 years (Wolfe et al. 2016). At the other extreme, pre-hunt estimates of independent pumas in a Wyoming population declined by 41% after 2 years with annual harvest rates of 43% and 44%. When harvest rates were reduced to an average 18% (range = 14–23), the population increased over the next 3 years to previous abundance by spring of the third year (Anderson and Lindzey 2005). The Wyoming study reports the highest known average harvest rate (i.e., 18%) associated with an increasing puma population. In this case, density-dependent population growth (*sensu* Logan and Sweanor 2001) might have regulated the rate of population recovery. In Washington, Beausoleil et al. (2016)

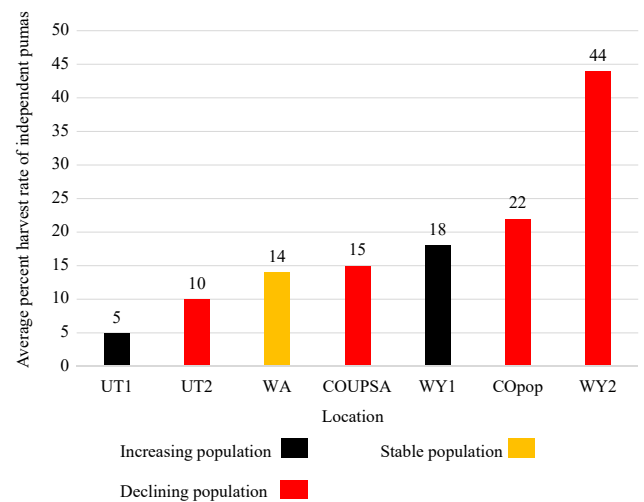


Figure 12. Average percent harvest rates of independent pumas associated with population trends in North America. Location designations refer to 2 harvest periods in 1 population in Utah (UT1 and UT2; Wolfe et al. 2016), a study in Washington (WA; Beausoleil et al. 2016), our Uncompahgre Plateau Study Area (UPSA) average harvest rate (COUPSA), our average population-scale harvest rate (COpop), and 2 harvest periods in 1 population in Wyoming (WY1 and WY2; Anderson and Lindzey 2005).

estimated puma density and found the population trend over 9 years to be stable or declining with an average annual harvest rate of 14% (range = 7–21) of independent pumas.

Caution is warranted in interpreting results from these cases, just as we noted biases with our own LP abundance estimates and the derived harvest rates on the UPSA. Potential biases in reported population sizes and harvest rates should be considered when minimum abundance indices are used (Wolfe et al. 2016) and abundance estimation methods require an assumption of population closure (Anderson and Lindzey 2005, Beausoleil et al. 2016) unless convincing evidence on geographic and demographic closure are provided to support the assumption. Moreover, reported variations in effects of hunting mortality on puma abundance may partly be due to differences in capacities for population growth (i.e., ecological carrying capacity; *sensu* Fryxell et al. 2014), other competing carnivores, regional population demographics, management actions at local and regional scales, parameter definitions, and population segment scales used in harvest rate estimation. Our study reveals how these latter 3 factors influenced estimated harvest rates.

Consistent with other research, we found that 21% of adult females in the total harvest at the population scale and 23% at the UPSA scale resulted in a decline in abundance of independent pumas that used the UPSA and surrounding area. The Wyoming puma population declined when adult females comprised about 25% of the harvest but sustained a harvest comprised of 10–15% adult females (Anderson and Lindzey 2005). Researchers in southern Idaho and northern Utah suggested that a harvest that included 15–20% adult females probably would not reduce a puma population (Laundré et al. 2007).

Mortality and Survival

In the absence of hunting on the UPSA, adult pumas died primarily of natural causes, especially intraspecific killing, and

human-caused deaths were rare. Deaths of subadults that occurred on the UPSA, by any cause, were unusual. Survival rates of adult and subadult males were high and exceeded those of their female counterparts. In contrast, regulated hunting in the treatment period reduced the survival of adults of both sexes and subadult males. Survival of independent males was substantially lower than of the independent females. Because of the ranging behavior of independent pumas, especially males, some were subject to hunting mortality on the UPSA and adjacent areas, which increased the risk of hunting mortality to those animals beyond the harvest limits set on the UPSA.

At the population sizes and harvest rates in our study, there was no compensation of hunting-caused mortality by a reduction in frequency of other causes of death for marked independent pumas in the treatment period. Natural mortality rates varied, and averaged about the same in the reference and treatment periods. But total mortality in the treatment period greatly increased over that in the reference period, primarily from hunting. Moreover, abundances of adult and independent pumas, and survival of adults and subadult males declined with the addition of hunting.

Hunting-caused deaths added to other mortality in other puma populations in North America. Researchers in Utah (Lindzey et al. 1992), Wyoming (Anderson and Lindzey 2005), and Montana (Robinson and DeSimone 2011) found that puma populations declined or increased as hunting mortality rates were increased or reduced, characteristics of additive mortality from hunting. Furthermore, researchers in Washington (Cooley et al. 2009b) and Montana (Robinson et al. 2014) directly addressed this issue and concluded that hunting mortality was additive at the puma population sizes and harvest rates they studied. In Utah, Wolfe et al. (2015) could not reject the additive mortality hypothesis of hunting for a heavily harvested puma population. They detected partial compensation of hunting mortality, however, associated with a decline in natural mortality in a lightly hunted population. To our knowledge the extent to which hunting mortality is additive or compensatory in puma populations that have reached or exceeded ecological carrying capacity has not been investigated. There may also be an extra-additive mortality effect (Creel and Rotella 2010) operating at increased rates of female harvest. When mothers with litters die, their cubs will also likely be lost (as in our study), which will reduce potential recruitment to the population.

Adult males on the UPSA were the most affected by hunting because of hunter selection. Within 4 years their annual survival and total winter abundance was reduced by more than half, including an almost halving in abundance of adult males <6 years old and likely elimination of males >6 years old. These demographic changes might alter the puma breeding process. Pumas have a polygamous and promiscuous mating system (Seidensticker et al. 1973, Anderson 1983, Logan and Sweanor 2010). Studies of non-hunted puma populations show that multiple territorial males compete for access to mates, and adult females choose mates from multiple available adult males and exhibit reproductive fidelity to males they chose in previous breeding occasions. Adult males in the same population exhibit highly variable individual reproductive success with a few adult males, especially the oldest, exhibiting the highest success

(Murphy 1998, Logan and Sweanor 2001). This process is expected to favor the fittest males (Darwin 1859, Andersson 1982, Jones and Ratterman 2009). Moreover, long-lived territorial adult males may establish tolerant if not amicable relationships (beyond breeding) with adult females residing in their territories that contribute to the fitness of the participating animals via higher survival of the adults and their offspring (Logan and Sweanor 2001, Ruth et al. 2011, Elbroch et al. 2017). Such a condition resulting in mating competition, mate selection, and social relationships likely occurred on the UPSA where after 5 years of no hunting, the abundance of adult males approached that of adult females and adult survival was high. Also, the long period of dependence for puma young reduces the operational sex ratio (i.e., the ratio of reproductively receptive males to receptive females; Clutton-Brock 2007), favoring adult males, and is to likely intensify mating competition (Logan and Sweanor 2001). In hunted puma populations with high adult male turnover, however, mating is expected to be constrained to relatively few available younger adult males with each male having low reproductive success (Logan and Sweanor 2010). For instance, in a Montana puma population reduced by hunting, 60% of litters were sired by males 30–37 months old (Onorato et al. 2011), and the oldest male was 6 years old (Robinson and DeSimone 2011). Thus, sexual selection processes may be relaxed (Mysterud 2011). This outcome was plausible on the UPSA when pumas were hunted, with all harvest occurring November to January and 92% of all litters sired afterwards, February through June. It is unknown if altering the breeding process through hunting-induced demographic changes affects the long-term fitness of pumas. To address this question, long-term research is needed on non-hunted and hunted puma populations where demographics, breeding behavior, survival, and individual reproductive success are studied (e.g., Milner et al. 2007, Newbolt et al. 2017, Bischof et al. 2018, Van de Kerk et al. 2019).

Growth in hunted puma populations has been shown to be most sensitive to adult female survival (Martorello and Beausoleil 2003, Lambert et al. 2006, Robinson et al. 2014). Empirical evidence on adult female survival rates and population growth in western North America reveal that puma populations have a greater tendency to decline when annual adult female survival is ≤ 0.78 (Fig. 13; Table 15). An exception is a puma population in competition with wolves and grizzly bears on the Greater Yellowstone Northern Range that declined with an adult female annual survival rate of 0.84 (Ruth et al. 2011, 2019). Puma populations have a greater tendency to increase when adult female annual survival rates are ≥ 0.86 .

Moreover, the risk of losing adult females to hunting is important because in any year females rearing dependent young may comprise a majority of the adult females in the population, a phenomenon in our study and in puma populations in New Mexico, Washington, and Montana (Logan and Sweanor 2001, Cooley et al. 2009a, Robinson et al. 2014, respectively). Adult females in our study were not affected as much by hunting as were adult males because of hunters' preferences to harvest males. Nevertheless, the survival of mothers while cubs were dependent was vital to cub survival. Similarly, in Montana, Robinson and DeSimone (2011) found that hunting influenced cub survival mainly owing to the deaths of mothers.

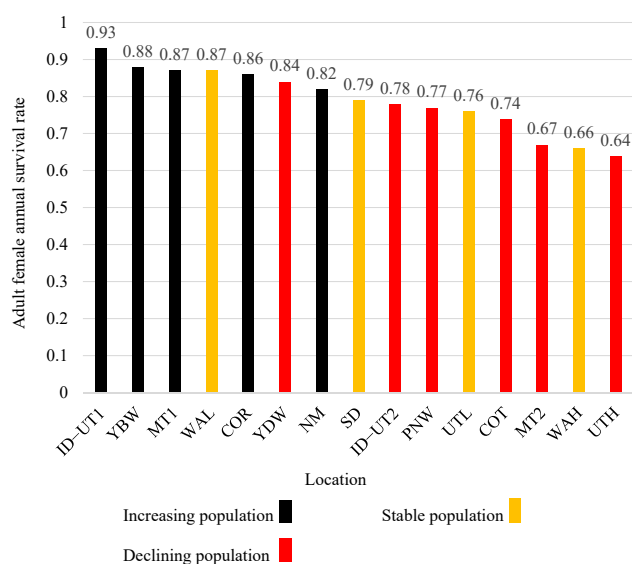


Figure 13. Adult female puma annual survival rates associated with population trends in North America. Location designations refer to Idaho and Utah (ID-UT1 and ID-UT2; Laundré et al. 2007), the Greater Yellowstone Northern Range before and during occupation by wolves (YBW and YDW, respectively; Ruth et al. 2011, 2019), Montana (MT1 and MT2; Robinson and DeSimone 2011), Washington low and high harvest (WAL and WAH, respectively; Cooley et al. 2009b), our reference period and treatment period (COR and COT, respectively), New Mexico (NM; Logan and Sweanor 2001), South Dakota (SD; Jansen 2011), Pacific Northwest (PNW; Lambert et al. 2006), and Utah low and high harvest (UTL and UTH, respectively; Stoner et al. 2006).

Cub survival estimates on the UPSA were generally lower than in 5 of 7 other western states, and was most similar to cub survival in the Greater Yellowstone Northern Range (Ruth et al. 2011; Table 15). In that population, which was lightly hunted and subject to competition with wolves and grizzly bears, Ruth et al. (2011) found that cub survival increased with elk calf biomass. We did not have data specific to the UPSA to test if cub survival varied with prey abundance. All starvation we observed in cubs occurred because their mothers were not alive to provision them. Cubs in a heavily hunted population in Washington had the lowest survival (Cooley et al. 2009b). Variation in reported cub survival estimates among the studies, however, may be affected by the ages of cubs included in the respective analyses. Inclusion of nurslings tends to result in lower survival estimates than data skewed toward older cubs because most mortality occurs in cubs ≤ 5 months old (this study, Logan and Sweanor 2001, Jansen 2011, Ruth et al. 2011).

Infanticide occurred at high frequencies on the UPSA in both periods. We observed that infanticide was primarily associated with males and tended to be higher in the reference period with an increasing abundance of adult males and lower in the treatment period with a declining abundance of adult males. Though, this did not lead to an increase in cub survival in the treatment period, likely because of concurrent increases in mortality of attending mothers. Ruth et al. (2011:1386) hypothesized “that instability of adult males, whether through removal (hunting or management related) or during re-establishment and population recovery, can result in increased [puma cub] mortality.” Presumably this would occur as adult

males compete for access to mates (Hrdy 1979, Logan and Sweanor 2010). The theory holds that periods of male territory instability reduce cub survival via increased infanticide as immigrant males and shifting adult males move into vacated territories and compete for mates (Logan and Sweanor 2001, Ruth et al. 2011). Our results indicated that infanticide certainly occurred in both conditions as hypothesized by Ruth et al. (2011), and contributed to relatively low cub survival on the UPSA. We could not test if infanticide rates declined with territorial stability, however, because adult male territoriality was unstable in the reference and treatment periods.

Reproduction

There were few differences in birth interval length, litter size, proportion of males and females in litters, and parturition rates between the reference and treatment periods. Thus, there was no evidence of a compensatory reproductive response associated with hunting mortality. Furthermore, there is no evidence that reproduction compensates for hunting mortality in pumas elsewhere in North America (Table 16). Data from our study, South Dakota (Jansen 2011), and Montana (Robinson et al. 2014) found litter sizes were similar in non-hunted and hunted conditions. Likewise, Cooley et al. (2009b) found that litter sizes did not differ in lightly hunted and heavily hunted study areas in Washington. Sex ratios of nurslings did not differ in non-hunted and hunted conditions on the UPSA. In South Dakota, males were favored in the non-hunted condition (Jansen 2011). The author of that study cautioned, however, that the results were likely an artifact of low sample size during a non-hunting period compared to the hunting period ($n = 6, 25$, respectively). Just as we found on the UPSA in the non-hunted and hunted conditions, researchers in New Mexico found similar parturition rates in a non-hunted area and where the number of adult pumas were experimentally reduced by half (Logan and Sweanor 2001). Both in Washington (Cooley et al. 2009b) and Montana (Robinson et al. 2014), mean maternity rates (i.e., kittens/adult female/yr) did not differ between lightly hunted and heavily hunted, or hunted and non-hunted populations, respectively.

The timing of observed puma births in North America may be influenced by weather conditions interacting with variations in prey abundance and distribution that affect cub survival. Cubs born during spring to fall are expected to have advantages for survival because of moderated weather conditions and increasing abundance and diversity of vulnerable prey (Laundré and Hernández 2007, Jansen and Jenks 2012). In contrast, cubs born in winter are expected to have lower survival and die as nurslings (Laundré and Hernández 2007). We could not test hypotheses about seasonal variation in cub survival, however, because we did not observe any births from October through February. Also as a practical matter, neonate deaths are expected to exacerbate the ability of researchers to detect such births (Logan and Sweanor 2001). Our observations of births on the UPSA primarily in early spring and summer (May–Aug) and peaking June to August were similar to birth distributions in South Dakota and Wyoming (Jansen and Jenks 2012, Elbroch et al. 2015, respectively). Puma births in Utah and Idaho (Laundré and Hernández 2007) and in Montana (Robinson and

Table 15. Estimated annual and life-stage puma survival rates for males (M) and females (F) in hunted and non-hunted populations in North America, 1992–2020.

Location	Adults non-hunted	Adults hunted	Subadults non-hunted	Subadults hunted	Cubs	Reference
Colorado	0.86 F 0.96 M	0.74 F 0.40 M	0.63 F 0.92 M	0.70 F 0.43 M	0.51 ^a 0.14 ^b	This study
Colorado	NA ^c	0.69–0.92 F and M	NA	0.64 F and M	NA	Anderson et al. (1992)
Colorado	NA	0.77 F 0.63 M	NA	NA	NA	Moss et al. (2016)
California	0.56 ^d	NA	0.56 ^d	NA	0.56 ^d	Vickers et al. (2015)
Florida	0.87 prime F 0.76 old F 0.80 prime M 0.64 old M	NA	0.95 F 0.71 M	NA	0.32	Hostetler et al. (2010) Benson et al. (2011)
New Mexico	0.82 F 0.91 M	NA	0.88 F 0.56 M	NA	0.64	Logan and Sweanor (2001)
Utah	NA	0.64 F and M ^e 0.76 F and M ^f	NA	NA	NA	Stoner et al. (2006)
British Columbia, Idaho and Washington	NA	0.77 F 0.59 M	NA	0.32 F 0.37 M	NA	Lambert et al. (2006)
Idaho and Utah	NA	0.93 F ^g 0.78 F ^h	NA	NA	0.86 ^g 0.57 ^h	Laundré et al. (2007)
Washington		0.87 F ⁱ 0.65 M ⁱ 0.66 F ^j 0.48 M ^j	NA	0.76 F ⁱ 0.51 M ⁱ 1.00 F ^j 0.54 M ^j	0.72 F ⁱ 0.53 M ⁱ 0.32 F ^j 0.31 M ^j	Cooley et al. (2009b)
Greater Yellowstone Northern Range	NA	0.88 F ^k 0.75 M ^k 0.84 F ^l 0.68 M ^l	NA	NA	0.46 ^k 0.59 ^l	Ruth et al. (2011)
Montana	NA	0.67 F 0.72 M	NA	0.49 F 0.39 M	0.49 F 0.76 M	Robinson and DeSimone (2011)
South Dakota	0.90 F 0.70 M 0.86 F 0.89 M	0.79 F 0.40 M NA	1.0 F 0.63 M	NA	0.52 ^m 0.67	Jansen (2011) Thompson et al. (2014)
Oregon	NA	0.84–0.86 F ⁿ 0.57 M ^o 0.78–0.86 M ^p	NA		0.66	Clark et al. (2014a, 2015)
Wyoming	0.89 ^q	0.82 ^r	0.87 ^q	0.85 ^r	0.44 ^q 0.28 ^r	Elbroch et al. (2018)

^a Mothers lived.^b Mothers died.^c Not applicable.^d Survival was constant across age stage, sex, and population segment.^e Monroe Mountains, Utah.^f Oquirrh Mountains, Utah.^g Before deer decline.^h After deer decline.ⁱ Light puma hunting.^j Heavy puma hunting.^k Prior to wolf presence. Adult and subadult pumas were combined.^l During wolf presence. Adult and subadult pumas were combined.^m Pumas were hunted.ⁿ Puma hunting with and without dogs. Adult and subadult pumas were combined.^o Puma hunting with dogs. Adult and subadult pumas were combined.^p Puma hunting without dogs. Adult and subadult pumas were combined.^q Sexes were pooled across years; survival estimate for the non-hunting season (1 Apr–30 Sep).^r Sexes were pooled across years; survival estimate for the hunting season (1 Oct–31 Mar).

DeSimone 2011) occurred almost year-round, but peaked July to October. In the Greater Yellowstone Northern Range, almost all births occurred from April to November with a major peak May to July and a second minor peak August to October (Ruth et al. 2019). In southern New Mexico, however, puma litters occurred almost year-round with a high frequency of births extending from May to October with a peak from July to September

(Logan and Sweanor 2001). Female pumas are polyestrous (i.e., cycle into reproductive receptivity continually until pregnant) and some mothers may lose entire litters at any time, which allows for some births to occur outside of the peak periods. Females can resume estrous within as few as 1–3 weeks and usually in 3–4 months after loss of a litter (Logan and Sweanor 2001, Ruth et al. 2019).

Table 16. Puma reproduction parameter estimates in hunted and non-hunted populations, North America, 1983–2020.

Parameter	Average	Hunting status	Range	95% CI	Sample sizes	State or Province	Reference
Gestation (days)	90.4–91.8	Combined ^a	84–95	89.1–92.9	17 litters, 13 mothers	CO	This study
	91.9	NA ^b	84–98	90.6–93.2	42 litters	Various	Anderson (1983)
	91.5	Combined	83–103	90.1–92.9	31 litters, 18 mothers	NM	Logan and Sweanor (2001)
Birth interval (months)	18.3	No hunting	11.7–23.9	15.5–21.1	17 intervals, 10 mothers	CO	This study
	19.4	Hunting	11.0–34.7	16.2–22.6	13 intervals, 10 mothers		
	17.4	Combined	12.6–22.1	16.2–18.6	16	NM	Logan and Sweanor (2001)
	17.4	Hunting	11.5–24.0	NA	12	NV	Ashman et al. (1983)
	24.3	No hunting	19–40	19.3–29.3	7	UT	Lindzey et al. (1994)
	19.7	Hunting	12–32	NA	12	AB	Ross and Jalkotzy (1992)
	19.8	Combined	NA	16.5–23.0	NA	MT	Robinson et al. (2014)
Age at first conception (months)	28.7	Combined	18–45	24.1–33.2	14	CO	This study
	27.0	Hunting	21–34	NA	6	AB	Ross and Jalkotzy (1992)
	26.1	Combined	19–37	22.7–29.5	12	NM	Logan and Sweanor (2001)
	23.0	No hunting	17 min. ^c	19.4–26.6	6	UT	Lindzey et al. (1994)
	28.4	Combined	20–34	NA	14	MT	Robinson et al. (2014)
Age at first litter (months)	31.7	Combined	21–48	27.1–36.3	14	CO	This study
	29.1	Combined	22–40	25.7–32.5	12	NM	Logan and Sweanor (2001)
	26.0	No hunting	20 min. ^c	22.4–29.6	6	UT	Lindzey et al. (1994)
	31.4	Combined	23–37	NA	14	MT	Robinson et al. (2014)
Litter size (nurslings)	2.8	No hunting	1–4	2.41–3.12	26 litters/14 mothers	CO	This study
	2.4	Hunting	1–4	1.99–2.76	21 litters/16 mothers		
	3.1	Hunting	1–5	NA	36 prenatal litters	NV	Ashman et al. (1983)
	2.4	No hunting	1–4	1.6–3.2	26 litters	UT	Lindzey et al. (1994)
	3.0	Combined	2–4	2.8–3.2	53 litters	NM	Logan and Sweanor (2001)
	2.5	Hunting	NA	1.99–3.0	15 litters	WA	Lambert et al. (2006)
	2.5	Hunting	NA	2.1–2.9	15 litters	WA	Cooley et al. (2009b)
	3.0	No hunting	2–4	2.5–3.5	8 litters	SD	Jansen (2011)
	2.9	Hunting	2–4	2.6–3.2	26 litters		
	2.9	Combined	NA	2.7–3.1	24 litters	MT	Robinson et al. (2014)
Male:female cub sex ratio	41:31	No hunting	NA	NA	72 nurslings	CO	This study
	27:22	Hunting	NA	NA	49 nurslings		
	75:73	Combined	NA	NA	148 nurslings	NM	Logan and Sweanor (2001)
	1:1.13	Hunting	NA	NA	17 cubs	WA	Lambert et al. (2006)
	33:37	Hunting	NA	NA	70 nurslings	SD	Jansen (2011)
Parturition rate	0.63	No hunting	NA	0.49–0.75	12–13 mothers, 4 yrs	CO	This study
	0.48	Hunting	NA	0.37–0.59	13–17 mothers, 5 yrs		
	0.48	No hunting	0.21–0.73	NA	7 yrs	NM	Logan and Sweanor (2001)
	0.52	Removal ^d	0.29–0.75	NA	7 yrs		
	0.44	Heavy hunting	NA	NA	6 yrs	WA	Cooley et al. (2009b)
	0.51	Light hunting	NA	NA	6 yrs		
	0.58	Combined	NA	NA	9 yrs	MT	Robinson and DeSimone (2011)

^a Data were compiled over hunted and non-hunted time periods.^b Not applicable.^c A minimum quantity was reported.^d Pumas were removed alive and translocated, resulting in a 50% reduction in the adult puma population.

Recruitment

Puma population growth on the UPSA was affected by recruitment of young females and males from *in situ* reproduction and apparent immigration, and animals that emigrated. Offspring that exhibited philopatry as adults on the UPSA were infrequent, and mostly female. Dispersal of young from natal areas was frequent, with some of these animals settling as adults in other parts of the UPSA. Males emigrated more frequently and moved longer distances than females. Some pumas we captured as subadults with unknown origins were likely a combination of immigrants from elsewhere moving through or to the UPSA and non-marked offspring of mothers on the UPSA. We assumed some recruitment on the UPSA was from immigration because we observed subadults emigrating from the UPSA and expected other subadults were

moving into the UPSA. Recruitment in the reference period resulted in an increasing abundance of adults. In the treatment period, although there were more 1–2-year-old animals than in the reference period, recruitment was insufficient to replace losses of adults, particularly males, but it apparently partially compensated for adult female losses in 2 of 4 years (i.e., TY2 and TY4).

Philopatry and dispersal of young independent pumas have been reported by other researchers. Anderson et al. (1992) reported that pumas on the Uncompahgre Plateau in the 1980s displayed characteristics similar to our observations with philopatry exhibited by some females, although most females dispersed, and males dispersed more frequently and at longer distances than females. Investigators in New Mexico, the Northern Greater Yellowstone Ecosystem, and Utah reported

that philopatry was usually exhibited by females, that females and males dispersed, and males generally dispersed more frequently (Sweaner et al. 2000, Biek et al. 2006, Stoner et al. 2013, respectively). Longer dispersal distances were exhibited by males in New Mexico (Sweaner et al. 2000). But there were no sex differences in dispersal distances reported in Utah, the Northern Greater Yellowstone Ecosystem, and the Blackfoot drainage in Montana (Newby et al. 2013, Stoner et al. 2013). Philopatric males apparently occur more frequently in Southern California and Florida where puma habitat is fragmented by human development to the extent of obstructing or constricting dispersal movements (Beier et al. 1995, Maehr 1997, respectively). Dispersal by pumas, especially of males, is important in inbreeding avoidance and gene flow (Biek et al. 2006). Consequences of disrupted dispersal, as in pumas in California, include lower genetic diversity and strong population genetic structuring (Gustafson et al. 2019). Philopatry in males living in connected habitat appears to be exceptional, with 2 cases reported in the Greater Yellowstone Northern Range (Ruth et al. 2019), and possibly 2 that we found. High adult male mortality, as we documented in our study, and the associated reduced male competition might result in a higher frequency of young males expressing philopatry as an alternate strategy to dispersal, such as our 2 cases. Their deaths, though, from hunting at young ages might have precluded later dispersal.

The roles of emigration and immigration in puma population dynamics have been recognized in a number of regions in the western United States, including New Mexico, Utah, Washington, the Greater Yellowstone Northern Range, the Great Basin, and Montana (Sweaner et al. 2000, Stoner et al. 2006, Cooley et al. 2009a, Ruth et al. 2011, Andreassen et al. 2012, Robinson et al. 2014, respectively). These authors revealed that puma population segments interacted at a large landscape scale through immigration and emigration and recognized these as metapopulation processes (*sensu* Hastings and Harrison 1994) that along with *in situ* reproduction, mortality and recruitment determined population segment growth (Sweaner et al. 2000, Stoner et al. 2006, Cooley et al. 2009a, Newby et al. 2013). Our observations of pumas emigrating from the UPSA and their attendant long-distances moves to eastern Utah, northern New Mexico, and southern Wyoming indicated that pumas on the Uncompahgre Plateau are probably part of a larger metapopulation structure or one expansive contiguous population because of the connectedness of habitat in Colorado (McRae et al. 2005). In either case, local population segments or regions might exhibit varying growth rates influenced by the capacity of the environment and variable risks of mortality.

Associated with these dynamics, a source-sink model is recognized as biologically valid for depicting spatial variation of risk and inter-population connectivity for large carnivores including the puma (Sweaner et al. 2000, Laundré and Clark 2003, Cooley et al. 2009a, Ruth et al. 2011, Newby et al. 2013), black and grizzly bears (Draheim et al. 2016, Schwartz et al. 2010, respectively), wolf (Schmidt et al. 2017), and African lion (*Panthera leo*; Sinclair 1995). In a source-sink structure hunting mortality occurs in a spatially variable manner

and animals emigrate from protected or relatively lightly hunted source population areas (i.e., recruitment exceeds death rates and the area is a net exporter of individuals) and are immigrants into more heavily hunted areas that act as sinks (i.e., death rates exceed recruitment; Pulliam 1988, Hanski and Simberloff 1997, Runge et al. 2006, Stoner et al. 2013). Lower survival of pumas (Ruth et al. 2011), grizzly bears (Schwartz et al. 2010), African lions (Loveridge et al. 2010), and wolves (Schmidt et al. 2017) has been associated with movements of these animals from source areas to adjacent sink areas with higher human-caused mortality.

Population Structure

Hunting mortality changed the puma population structure on the UPSA. The first 3 years of the reference period, with no hunting, indicated a population with very few animals >6 years old, probably an effect of high hunting mortality prior to our study. With the continued absence of hunting, however, the age distribution increased as would be expected with greater survival of adults. After hunting resumed, the age distribution skewed younger, and abundance of adult males in particular declined, as expected with lower survival. Similar effects of hunting mortality or experimental removal on puma population age structure have been reported in New Mexico (Logan and Sweaner 2001), Wyoming (Anderson and Lindzey 2005), Utah (Stoner et al. 2006), Washington (Cooley et al. 2009b), and Montana (Robinson and DeSimone 2011).

The UPSA puma population in winter was structured similarly to other North America populations (Logan and Sweaner 2010). Adults represent multiple age cohorts and, thus, are the most abundant segment. Pumas have a polygynous, promiscuous mating system where adult females have smaller overlapping non-territorial home ranges compared to males and therefore generally outnumber adult males, which have large territories (Seidensticker et al. 1973, Logan and Sweaner 2001). Cubs are the second most abundant segment in winter, although they may be more abundant in the summer. This is because a large majority of mortalities occur when cubs are ≤ 5 months old and prior to their first winter (this study, Logan and Sweaner 2001, Jansen 2011, Ruth et al. 2011).

The subadult segment, representing a single cohort, was the least abundant in winter on the UPSA. Other researchers that quantified puma population structure in winter in New Mexico (Logan and Sweaner 2001), Utah and Idaho (Laundré et al. 2007), and Montana (Robinson and DeSimone 2011) also found that subadults were the least abundant life stage. Studies in Alberta, New Mexico, Montana, and South Dakota indicated pumas averaged 15–16 months old at dispersal (Ross and Jalkotzy 1992, Sweaner et al. 2000, Laundré and Hernández 2007, Robinson and DeSimone 2011, Jansen and Jenks 2012), similar to our observations. The average age of dispersal was 14 months in Wyoming (Anderson and Lindzey 2005). The low abundance of subadults we observed was probably partially due to mortalities that occurred in the cohort during the cub life stage, among subadults in the UPSA, and potential immigrating subadults outside the UPSA. For subadults, particularly males, mortality would be expected to be primarily from hunting (this study, Newby et al. 2013). Furthermore, most subadults would be

expected to emigrate from the UPSA before their first winter, as demonstrated by UPSA subadults we monitored, and before our winter efforts to survey puma abundance. Likewise, a large majority of young pumas in the Snowy Range of Wyoming emigrated between the months of April and September (Anderson and Lindzey 2005). In Utah, Stoner et al. (2013) reported that subadults emigrated primarily during March to June in association with heightened breeding behavior of adults.

Puma Hunters

Hunters on the UPSA normally used dogs to catch pumas, which usually took refuge in trees. This enabled hunters to assess the sex of a captured animal prior to deciding whether or not to kill it. Hunters were likely able to distinguish sex because of experience and sex identification material provided to them through the CPW puma education and identification course made mandatory since 2007 (CPW 2017). Similarly, experienced hunters using dogs in Washington were able to correctly identify the sex of treed pumas 70% of the time (Beausoleil and Warheit 2015).

Hunters selected for males even though they generally encountered fresh tracks of females more frequently than those of males, and females were more abundant. Our researchers' observations of more fresh tracks of females than of males were consistent with the hunters' reports. Hunters apparently encountered female tracks in relation to their relative abundance in the independent puma population. These results were contrary to the assumption that males as a group are more vulnerable to hunting with dogs because hunters detect tracks of males more frequently than those of females (*sensu* Anderson and Lindzey 2005). Instead, it is more likely that males are more vulnerable because of selection by hunters using dogs. Hunters in Washington killed more males than females when hunting with dogs but more females than males when dogs were subsequently prohibited (Martorello and Beausoleil 2003). The authors explained this shift occurred because hunters with dogs could practice selection, but when dogs were prohibited hunters encountered pumas by chance and killed the sexes relative to their abundance in the population. In Oregon, Clark et al. (2014a:785) found that hunting with dogs "greatly increased mortality of male [pumas] where male harvest was more than 2 times greater compared to when hunting with dogs was prohibited."

Hunter participation on the UPSA was highest when the harvest quota and puma abundance were high and lowest when the quota and abundance were low. Hunters used similar efforts to kill males and females when pumas were relatively abundant, but they took longer to kill males when the abundance of adult males was low probably because hunters still preferred to practice selection. Similarly, hunters took more days to reach the quota when the quota and abundance were lowest likely because of a reduced chance of encountering independent pumas, especially preferred adult males.

Hunter selection resulted in demographic effects that included substantially lower adult and subadult male survival and lower abundance and average age of independent males. Loss of adult territorial males may encourage the immigration of young males

as they search for puma habitat with high prey availability, prospective mates, and reduced male competition (Logan and Sweanor 2001, Laundré and Hernández 2003, Robinson et al. 2008).

MANAGEMENT IMPLICATIONS

Wildlife agencies can conserve and manage pumas by regulating hunting mortality. In our study, a harvest rate at the population scale averaging 22% of independent pumas over 4 years and with >20% adult females in the total harvest greatly reduced abundance. Puma abundance is the basic parameter that managers must consider either empirically, or theoretically in harvest management. Prevalent in their range, however, are non-surveyed regions where managers routinely extrapolate population parameter estimates derived from the literature. Density assumptions are commonly extrapolated, have questionable accuracy, and are used to calculate proxies for puma abundance estimates for the setting of harvest limits. Errors in assumptions can thwart achievement of management objectives. Results from our study and others in North America indicate that reducing puma abundance with hunting, particularly with the use of dogs, is fairly easy to achieve. But reliably managing puma population segments for conservation, while providing sustainable hunting opportunity, is more challenging. Thus, in non-surveyed areas managed for puma conservation and sustainable hunting, managers should apply conservative density assumptions and harvest rates to improve the odds of successful management. When resources allow for rigorous monitoring, puma abundance could be estimated over time using newly developed genetic sampling and photographic mark-recapture methods in representative management units (e.g., Proffitt et al. 2015, Beausoleil et al. 2016, Alldredge et al. 2019, Murphy et al. 2019).

Hunting is the only feature of puma mortality that managers can regulate to affect population size, as the other causes of mortality occur randomly and vary annually. Some non-hunting human causes of death (e.g., depredation control kills, some vehicle strikes) can be observed and quantified by managers, but natural deaths are rarely detected and some human-caused deaths (e.g., vehicle strikes, illegal killing) go unobserved. In addition, hunting deaths may not be compensated by increased survival, reproduction, and immigration (this study, Cooley et al. 2009a, Robinson et al. 2014, Wolfe et al. 2015). In areas managed for puma conservation and sustained hunting opportunity and where total human-caused mortality metrics are used to set mortality limits, all detected human-caused mortalities of independent pumas occurring year-round could be counted in those limits.

Regulated hunting used to manipulate abundance in smaller management units to address local issues (e.g., over-kill of adult females, depredation on livestock) may be successful if managers recognize the effects of hunting pumas in those areas and adjacent areas. We demonstrated this in the reference period by protecting marked independent pumas in adjacent northern management units for 5 years, which contributed to high survival and increased abundance of independent pumas on the UPSA. Conversely, abundance declined when all independent pumas were legal game in the UPSA and surrounding

management units. Moreover, emigrating pumas from the UPSA to areas across southwest Colorado, eastern Utah, and as far as southern Wyoming and northern New Mexico suggested that the UPSA plausibly could be receiving immigrants from just as far away. However, the emigration, dispersal distance, and establishment success of pumas could be negatively affected by human-caused mortality, particularly from heavy harvest (Newby et al. 2013). Therefore, larger regions for management purposes are more appropriate to the scale of puma movements and demographics. In our study system, that region ranged from about 11,600 km² to 12,300 km². The low range included the UPSA and 4 adjacent GMUs where marked pumas moved and prescribed our population scale. The higher range included the UPSA and all 5 adjacent GMUs where the management objectives were consistent (i.e., for a stable or increasing population state).

Results from our study revealed how the management outcome at the population scale can diverge from the stated objective and assumptions. To address this, managers could apply adaptive management (Walters 1986, Williams et al. 2001) to hunting and further learn its effects on puma behavior and populations. Besides informing puma management (e.g., Montana Fish, Wildlife, and Parks 2019), this process is also recommended for other harvested felids including African leopard (*P. pardus*; Balme et al. 2010) and Eurasian lynx (*Lynx lynx*; Linnell et al. 2010). In so doing, managers examine relationships of response variables (e.g., puma survival rates, ungulate survival rates, puma predation rates) to estimates of puma abundance or harvest data (e.g., Anderson and Lindzey 2005, Hurley et al. 2011, Wolfe et al. 2016), thus enabling them to apply the best available information and practices to puma management (Cougar Management Guidelines Working Group 2005, Jenks 2011).

Puma population dynamics in our study fit a source-sink management model, which can provide for conservation, hunting opportunity, options for mitigating conflicts with humans and other wildlife, and a framework for research (Logan and Sweanor 2001, Wyoming Game and Fish 2006, Robinson et al. 2008, Cooley et al. 2011, Robinson et al. 2014, Ruth et al. 2019). Similarly, a source-sink approach was developed for managing leopards in South Africa (Balme et al. 2010). Because managers rely upon assumptions about puma populations and effects of hunting in areas unless they are surveyed, they should consider the extents of areas managed with objectives for population reduction relative to those managed for stable or increasing abundance when puma conservation is a state-wide goal (Novaro et al. 2005). There are some likely protected (e.g., national parks and monuments, state parks) and lightly hunted areas already on the landscape. Managers need to reckon the validity of those as sources, however, by assessing the expected puma abundances within them, home range sizes, and movements in and around those areas and ascertain whether or not human-caused mortality along the perimeters might actually be creating sinks (Noss et al. 1996, Woodroffe and Ginsberg 1998).

Selective hunters using dogs and trained in sex identification of pumas could influence population demographics and facilitate source-sink management. Hunter selection can

reduce hunting pressure on independent females and contribute to sustainable puma hunting. Selection by hunters for males, particularly adults, can reduce independent male survival, reduce adult male abundance, and create a younger age structure. As puma abundance and the male component declines further, however, hunter selection and encounters with males are expected to diminish and result in higher adult female harvest (Anderson and Lindzey 2005), potentially with a reduction in survival of dependent cubs. Thus, protection of mothers and limits on adult female harvest are appropriate in areas managed for puma conservation and hunting. Similarly, in management plans where the roles of sex and age structure in life-history strategies are deemed important for adaptive potential, conservative harvest rates and pursuit-only opportunities could be applied in an effort to maintain a natural population structure. Dispersal of non-selected pumas from those areas and refuges from harvest and into more heavily hunted areas with attendant recruitment and genetic mixing could counteract potential effects of selective harvest (Tenhumberg et al. 2004, Festa-Bianchet 2017). Conversely, hunters with dogs are capable of efficiently harvesting pumas and causing population declines in areas where that is a management objective.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

POPULATION MANAGEMENT OF BEARS IN NORTH AMERICA¹

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Abstract. Population management for black bears (*Ursus americanus*), brown grizzly bears (*U. arctos*), and polar bears (*U. maritimus*) in North America is reviewed. In different areas bear populations are managed to achieve goals of population control, conservation, or sustained yield. Most North American bears are managed for sustained yields and this topic is emphasized. The consequence of error in population management for US bears is to produce slowly and reduced populations will require many years to recover. Simulation results where reproductive rates were generous, natural mortality rates were low, and harvests were 15% of maximum sustainable rates, indicated that populations reduced by half will require 140 years to recover for brown/grizzly bears and 117 years for black bears. Under optimal conditions for reproduction, natural mortality, and with males were as vulnerable as females, maximum sustainable harvest mortality was estimated as 5.2% of total population for grizzly bears and 14.2% for black bears. In recent decades, all 3 species have obtained the status of game animals in most jurisdictions and management for control objectives is increasingly uncommon. Management for conservation requires primary emphasis on habitat protection and on minimizing mortality from any source. Managers of hunted bear populations use information from hunters, trappers, and age composition of killed bears from research programs, and from computer simulation studies. Some critical uses of data from any of these sources may lead to management error. Data on age at harvest is especially prone to misinterpretation. Techniques used to limit harvests by managers of hunted bear populations are reviewed. The primary constraints to long bear population management derive from inadequate habitat protection, political pressures, technology, a limitation of available population management techniques, and inadequate financial support for management.

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Population management efforts designed to enhance or stabilize bear numbers are recent in the United States and Canada. In the last century and early portion of the present century, black and grizzly bears were widely regarded as impediments to desired development and human safety. Bounties for killing bears were offered in many jurisdictions. This attitude, combined with habitat destruction, led to the elimination of grizzly bears throughout most of the United States except Alaska and the reduction of black bears especially in the southern and southeastern United States (Cowan 1972, Jonkel 1987). By the mid-19th century, polar bear populations were also greatly reduced by market hunting for their hides (Anon. 1965, Stirling 1986).

Attitudes towards bears began to change in the 20th century. Instead of being classified as "predators" or "vermin" that could be killed indiscriminately, bears were classified as fur animals subject to regulated commercial harvests. By the 1930's, bears were elevated to the status of "game" animals in most areas (Table 1). Typically, limitations on sale of hides, meat or other bear products came along with game animal status as well as significant limitations on hunting opportunities (seasons, bag limits, techniques, etc.). In some areas further limitations resulted when bear populations were greatly depleted. At this point populations were classified as "threatened", the status of the grizzly in the lower 48 states, or "endangered", such as the black bears in Texas since 1987 (Wallace 1987). There is nothing inevitable about a downward trend in bear numbers to a threatened or endangered status. For black bears, at least, popula-

tions currently are stable in much of the United States and Canada. Also, in some regions, with formerly depleted populations of all 3 species, bears have recovered to a secure status.

The techniques used in modern bear management are the subject of this paper. These techniques are applied to 3 general goals for population management listed by Caughley (1977:168): *control* (treatment of a population that is too dense to stabilize or reduce its density), *conservation* (treatment of a small or declining population in such a way as to raise its density), and *sustained yield* (exploitation to take from a population a long-term sustained yield of surplus animals without causing a population decline). Although all 3 of these goals are discussed, primary emphasis in this paper is on sustained yield management.

This paper was prepared in response to an invitation from E. Bunnell to prepare a plenary paper for this conference. Numerous persons very kindly responded to my request for management plans and other information that described how bears are managed in their jurisdictions including: S. Amstrup (AK), R. Archibald (BC), J. Beecham (ID), L. Berchault (NY), J. Brown (MT), J. Collins (NC), A. Doud (MT), K. Elowe (MA), D. Garshelis (MN), J. Gunnson (AB), R. Johnson (WA), D. Koch (CA), G. Kolenosky (ON), O. Oedekeoven (WY), A. LeCointe (AZ), D. Martin (VA), R. Masters (OK), C. McLaughlin (MA), E. Orff (NH), J. Pederson (UT), A. Polenz (OR), J. Rieffenberger (WV), S. Schliebe (AK), J. Schauf (KY), C. Servheen (MT), B. Smith (YK), J. Stahl (MI), D. Taylor (AK), M. Taylor (NW), C. Winkler (TX), and J. Wooding (FL). K. Schneider, C. Schwartz, S. Stringham, and 3 anonymous referees offered many valuable suggestions on an earlier draft of this manu-

Table 1. Year in which bears were declared to be game animals at different portions of North America. Dates refer to black bears except where indicated by "G" for grizzly bear or "P" for polar bear.

Location	Year classified as game animal	Source
Alaska	1902(G) ¹	57th Cong. Sess. 1 Chap. 1037
New York	1903	Clark (1978)
Pennsylvania	1905 ²	At and Lindsey (1980)
British Columbia	1909 ³	Anon. (1980)
Montana	1923	Doed et al. (1986)
Montana	1923(G)	Doed et al. (1986)
Oregon	1925, 1930 ⁴	Anon. (1987a)
Idaho	1925	Winkler (1975)
Michigan	1925	Hager (1980)
Quebec	1926	Caron (1980)
Yukon Territory	1928 ⁵	MacHutchon and Smith (1988)
Alberta	1929(G)	Nagy and Gieson (1988)
Arkansas	1923	Cooley (1977)
Arizona	1927 ⁶	LeComte (1977)
South Carolina	1927	Stokes (1977)
Arizona	1929(G)	Brown (1985, 1984)
Wisconsin	1930	Kohn (1982)
Maine	1932 ⁷	McLaughlin (1986)
Washington	1933, 1969 ⁸	Pretker and Hartwell (1973)
Alaska	1939	Code Fed. Reg. Title 50.92.11
Vermont	1941	Wiley (1978)
Colorado	1941	Beck (1979)
Manitoba	1942	Shewsmith (1977)
Idaho	1943	Beecham (1986)
California	1948	Anon. (1987a)
Alaska	1948(P)	Anon. (1985, 51)
Northwest Territories	1949(P)	Ungava and Schwemmler (1984)
Maryland	1949	Taylor (1984)
Yukon	1950(P) ⁹	Stirling and Calvert (1985)
California	1951	Nahs (1977)
Massachusetts	1953 ¹⁰	Cardova (1978)
Newfoundland	1961	Russell and Forsey (1978)
Ontario	1961 ¹¹	Clarke (1961)
New Brunswick	1961	Corbitt (1975)
Newfoundland	1962	Mahoney (1984)
Saskatchewan	1963	R. Seguin (Sask. Parks, Recreation and Culture, Meadow Lake, pers. commun.)
Nova Scotia	1966	Patton (1978)
Utah	1967	Burgess (1979)
West Virginia	1969	Riedelberger and Allen (1978)
Quebec	1969(P) ¹²	Stirling and Calvert (1985)
Ontario	1970(P) ¹³	Stirling and Calvert (1985)
Manitoba	1970(P) ¹⁴	Stirling and Calvert (1985)
Newfoundland	1971(P)	Stirling and Calvert (1985)
Minnesota	1971	Hagie et al. (1978)
New Hampshire	1983 ¹⁵	Orr (1987)

¹ Date of first bag limit or season restriction.

² First declared game in 1924, replaced, then redeclared in 1970.

³ Viller (1977) cites 1970 as date game status was assigned in Quebec.

⁴ Date of total season closure.

⁵ Harris and Huger (1977) state black bears were hunted until 1951 and game status was being recommended in 1977.

⁶ Date of first season game animal status repealed in 1951 in some areas, reinstated in 1969.

⁷ Bunker (1973) gives 1957 as date game status was assigned in California.

⁸ Date of legal basis for current management.

⁹ Polar bears in Ontario have been treated, for management purposes, as a furbearer since 1931 (cf. Kalnitsky, Dist. Ministry of Nat. Resour., Maple, pers. commun.).

¹⁰ 520 hours followed from 1955, first season in 1961.

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CONSEQUENCE OF ERROR

For all 3 management objectives the consequence of error in managing bear populations is high. Bear populations that are inadvertently reduced to lower levels than desired will require many years to recover. This is because all 3 species of North American bears have long lifespans (>20 years), low reproductive rates (an average of 2 cubs produced by adult females every 2-6 years), delayed reproductive maturity (first breeding at 3-7 years), high survivorship of adults, variable survivorship of young, which is frequently dependent on environmental conditions (Rogers 1983), and typically little fluctuation in number of adults from year to year (Junkel 1987, Kolenosky and Strathern 1987, Kolenosky 1987).

The period required for recovery of reduced populations of black and grizzly bears was simulated using a simple deterministic model (Miller and Miller 1988) in a scenario involving overharvests by hunters. In these simulations, maximally productive populations of black and grizzly bears that were stabilized by hunting were suddenly overharvested by doubling the exploitation rate. When the population declined to half its original size, hunting was restricted and the time required for the population to recover to its initial size was noted. When no hunting occurred during the recovery period, the black bear population recovered in 6 years compared to 10 years for grizzly bears (Table 2). When hunting during the recovery period occurred at 75% of the maximum sustainable hunting rate, it took almost 3 times longer for black bears to recover and 4 times longer for grizzly bears (Table 2). These results are minimal values as the reproductive and natural mortality rates used were set at the most optimistic values that have been reported (Miller 1989).

Table 2. Simulation results for estimating period required to recover from overhunting that caused a 50% reduction in maximally productive grizzly bear and black bear populations. During recovery period population was subject to hunting rates of 0, 50, and 75% of the initial rates at which populations were stable.

	Grizzly bear	Black bear
Years required to recover from reduction when hunting is held at following fractions of initial hunting rate		
No hunting	10	6
50%	19	9
75%	40	17

MANAGEMENT FOR CONTROL OF BEAR NUMBERS

Until the current century, reduction of bear numbers was the most common objective for bear population management. In some parts of North America, bears are still sufficiently abundant or troublesome to humans that management efforts involve reducing bear densities (e.g., Poelker and Hartwell 1973, Jorgensen et al. 1978, Ambrose and Sanders 1978, Poelker and Parsons 1980, Will 1980, Miller 1990a, Gasaway in press). Such areas have become increasingly rare and geographically restricted in recent decades. They will likely become even rarer.

However, where human and bear populations coexist, managers will have to deal with some problems. These problems can result in bear mortalities that are large enough to be significant from a population management standpoint. For Yellowstone grizzlies, control killings of only a few additional females may mean the difference between continued population decline and recovery (Knight and Eberhardt 1984, 1985). In such cases, human populations, not bear populations, must make the needed accommodations for coexistence.

Many states and provinces compile data on the number of human-bear conflicts reported. It is sometimes implied that an increase in the number of nuisance bear complaints reflects an increase in bear numbers. More often, however, increased complaints reflect a change in human use of bear habitat. Increased human-bear conflicts more commonly correspond to a decline in bear populations, not an increase.

Research in Alaska and other northern regions has demonstrated that predation from bears and wolves (*Canis lupus*) can inhibit recovery of depleted moose (*Alces alces*) and caribou (*Rangifer tarandus*) populations (Ballard et al. 1980, Franzmann et al. 1980, Gasaway et al. 1983, Ballard and Larsen 1987, Ballard and Miller 1987, Boertje et al. 1988). These findings have resulted in pressure from sportsmen and subsistence hunters to reduce numbers of predators to permit faster growth and higher harvests of prey populations. In response to such pressures, grizzly bear seasons have been liberalized and harvests have increased in many portions of interior Alaska (Miller 1989). These changes represent a geographically widespread shift from conservative grizzly bear management strategies to more aggressive ones in which the likelihood of management error in these areas is increased. In at least 2 areas, increased harvests have resulted in declines in grizzly bear populations (Reynolds and Hechtel 1988, Miller 1990a). Elsewhere, results are inconclusive (Gasaway 1988) or no field studies designed to evaluate trends in bear numbers are ongoing.

Responsible management of bear populations under circumstances such as these is especially challenging because the techniques available to document changes in bear populations are imprecise. This makes it difficult to establish realistic criteria by which to judge when bear population reduction goals have been met. Also, there sometimes is inadequate recognition that management prescriptions for predator reduction programs that involve bears (e.g., Gasaway in press) need to be different than for predators like wolves that have much higher reproductive rates.

MANAGEMENT FOR CONSERVATION

Conservation is the general objective for grizzly bear management efforts in the lower 48 states, for black bear management in southern and southeastern states, and for management of all species in national parks. In some large Alaskan parks where grizzly bears are abundant, population management is less important than people management and habitat protection. Most national parks in the U.S. and Canada are not so fortunate and require active bear management to assure perpetuation of bear populations (Knight and Eberhardt 1987, Knight et al. 1988, Horejs 1989).

Even in parks and other protected areas, baseline data on population density and composition may be critically important in evaluating impacts of environmental accidents or changing patterns of human use of areas occupied by bears. The absence of a systematically obtained baseline estimate of bear density in Katmai National Park made it difficult to evaluate whether the bear population had declined as a result of the 1989 oil spill from the *Exxon Valdez*. Similarly, in Glacier National Park, the lack of a systematically collected historical record of bear numbers made it difficult to isolate human use patterns, which may have caused a reduction in bear numbers (Hayward 1989, Keating 1989).

In parts of North America small bear populations survive only in small pockets of habitat isolated from each other. This fragmentation exposes these populations to higher probabilities of extinction because of chance events and environmental variation. Managers of these populations must determine how large these populations and reserves should be to insure persistence in the face of natural catastrophes, and random environmental, demographic, and genetic events (Schaffer and Sampson 1985). For Yellowstone grizzlies the minimum viable population that gave a 95% probability of surviving for 100 years was estimated at 50-90 bears (Schaffer and Sampson 1985). Using the same general approach but with different data on mortality rates, the estimated

minimum viable population was estimated at 125 bears (Suchy et al. 1985).

The Interagency Grizzly Bear Committee formed in 1983 is an example of the kind of coordination that is essential if remnant populations of grizzly bears are to survive in the lower 48 states (Salwasser et al. 1987). This committee includes representatives of 5 U.S. agencies that manage portions of grizzly habitat plus 6 state or provincial wildlife agencies, and 2 Indian tribes. Working together, these agencies have developed a coordinated set of objectives and strategies to direct conservation efforts. The International Agreement on the Conservation of Polar Bears and their Habitat is another example of the kind of cooperation needed to perpetuate healthy bear populations (Stirling 1986, 1988a).

Techniques for estimating population size and trend, discussed below, are especially needed in management of reduced populations for conservation objectives. Unfortunately, some of the techniques that provide the most accurate population estimates may frequently be inappropriate for very small remnant populations of bears because these techniques are usually imprecise when applied to small populations. In addition, subjecting such populations to the additional stress and mortality associated with marking studies may be unwise. In managing greatly reduced remnant populations of bears, managers may find it more productive to concentrate on habitat protection issues rather than on efforts to document bear numbers or mortality rates with marking studies that may produce only uncertain results.

SUSTAINED YIELD

Sustained yield management of bear populations is the management goal in most areas of North America inhabited by bears. Most commonly the yields are taken by hunters. Perhaps because sustained yield management is not usually conducted in a crisis atmosphere where bear populations are threatened or where bears are seen as damaging to humans' economic interests, sustained yield management has not received as much attention as it deserves. More concern is merited because correct management of populations that have sustained yield goals may prevent crisis situations from developing. Also, population management techniques are especially important in managing for sustained yields. For these reasons this topic is given primary emphasis in this review.

The principle behind sustained yield management is that populations produce a surplus of animals that can be removed or harvested without causing population declines. Under sustained yield management, harvesting

takes the place of mortalities that would occur from old age and other causes. In very dense populations, reproductive rates of bears are suppressed by density-dependent mechanisms that act to prevent the population from overshooting carrying capacity. Because population growth is suppressed by these mechanisms, populations at carrying capacity can support little harvest. If such dense populations are harvested and bear density declines, reproductive rates should increase and natural mortality rates should decline, which produces a surplus that can be taken annually without causing declines in bear numbers. Maximum sustainable yield (MSY) is the point where population size and productivity balance to produce the maximum size of harvest without causing a population decline. At populations lower than MSY, productivity and sustainable harvest rates remain high but fewer total bears can be harvested without causing a population decline.

For bear managers the MSY population size is more useful theoretically than practically since the "optimum" population size will be unknown. This is because reproductive and mortality rates can vary from year to year in a density independent fashion based on fluctuations in food supply (Jonkel and Cowan 1971; Rogers 1976, 1983, 1987). Managers striving for sustained yields from exploited bear populations try to maintain populations that have good average reproductive rates and small average natural mortality rates in the expectation that such populations will be producing harvestable surpluses at high levels.

The challenge facing managers managing bear populations for sustained high harvests is to identify correctly what harvest levels are sustainable and when sustainable levels are exceeded. To assist in making these determinations the population manager may have information available from hunters, from the animals that are harvested, from field investigations, and from simulation studies.

Information Provided by Hunters

Hunters can provide valuable information to managers of exploited bear populations. Information from hunters is most useful as a flag that alerts managers to potential problems or helps to form hypotheses about population status. These hypotheses can then be evaluated using other lines of evidence.

Number Killed. -- Perhaps the single most basic and useful piece of information that can be provided by hunters is the number of bears killed. Increasing numbers of bears killed should alert managers that populations could be declining. Of course, population trend is not

necessarily correlated with number killed; increasing harvests could occur without population decline as long as sustainable harvest levels were not exceeded.

Probably the best way to use data on harvest number requires calculation of sustainable harvest rate. With information on reproductive and mortality rates derived from research, this rate can be estimated using simulation models, discussed below. The calculated sustainable rate can be compared with actual harvest rate obtained by dividing number killed by estimated population size. This approach resulted in a recommendation against an increase in polar bear hunting quotas in the Northwest Territories (Stirling et al. 1985).

In a few instances, efforts have been made to use kill numbers to derive population size by assuming the kill represents some percentage of the total population, usually the calculated sustainable harvest rate, and back-calculating from this rate to derive a total population estimate. This is a reasonable procedure only if managers have independent evidence that the population is stable.

Unreported sport or nuisance kills and wounding losses can represent significant sources of mortality that managers should consider. In rural northwestern Alaska, less than half the grizzly bear sport and subsistence harvest is reported as required (W. Ballard, Alas. Dep. of Fish and Game, Nome, pers. commun.). On the heavily hunted Kenai Peninsula in Alaska, where reporting is thought to be fairly complete, wounding loss of black bears was estimated to be 13-16% of reported kill based on mortalities of radio-marked bears (Schwartz and Franzmann in prep.). "Control kills" of nuisance black bears accounted for 36% of known human-caused mortalities and unreported control kills were estimated to equal or exceed reported ones in the Yukon (MacHutchon and Smith 1988). Poaching accounted for 9% of deaths of marked black bears in Maine (Hughie 1982). A third of the known grizzly bear mortality was illegal harvest in Alberta (Peck et al. 1987). The mortality rate of marked grizzlies in Montana was estimated at 0.47, all from illegal, unreported kills (Knick and Kasworm 1989). In 6 studies of marked grizzly bears, 26% of mortalities were caused by illegal harvests compared to 42% by legal hunting (McLellan 1990). Managers need to incorporate estimates of all significant mortality sources into their bear management efforts.

Hunter Effort. -- Number of bears killed is best interpreted along with information on level of hunting effort. Increases in number of bears killed under conditions where effort is constant may lead managers to suspect an increasing bear population. The same increase in harvest number where effort is also increasing may suggest an

increased exploitation rate and a declining bear population. This indicator was used in Alberta, where managers noted that harvests of grizzly bears increased 140% during a period when effort increased 350% (Nagy and Gunson 1988). In a heavily hunted area in south-central Alaska where grizzly bear density was reduced by about half as a consequence of liberalized hunting regulations, successful hunters reported spending more time before shooting a bear than before the density was reduced (Miller 1990a). Typically, hunter effort data are highly variable and statistical tests seldom reveal significant differences. This does not, however, invalidate the cautious use of such effort data to assist managers in forming hypotheses about population trends.

Hunter Success. Hunter success rates are influenced by improved access or hunter technology, motivation, and number of bears. This means that effort indices should be used with caution. Variability in effort unrelated to population status is apparent in Alaska where non-resident grizzly bear hunters are required to hunt with guides and pay high fees. Resident hunters have no such restriction and need only buy a \$25 tag. These differences in cost of hunt affects motivation and is reflected in success rates. The statewide success rate for non-residents is much higher (52% in 1987) than for residents (8.4%) (Alaska Dep. of Fish and Game [ADF&G] unpublished file data). However, in the Game Management Unit that includes Kodiak Island, where highly prized brown bear hunting permits are allocated by lottery, both types of hunters had higher success rates: 19% for residents and 74% for non-residents (ADF&G unpublished file data for 1986). In contrast, average harvest success rate for grizzly bear hunters in Alberta was 3% for residents and 12% for non-residents during 1971-1987 (Nagy and Gunson 1988). Even where hunting is limited by permits, hunter success can be low. Arkansas black bear permittees had 0.4-2.2% success in different years (Pharris and Clark 1987). This variability underscores the need to look for trends in success rates within groups that are as homogeneous as possible with respect to residency, transportation type, motive, and area hunted.

Kill density. The geographic location of hunter kills is also important. Harvest number with geographic location permits managers to estimate kill per unit area or kill density. Excluding effects of immigration, sustainable kill density can either be calculated (like sustainable harvest numbers) or estimated based on areas where both population trend and kill density are known. Kill density divided by population density was used to approximate grizzly bear harvest rate in a heavily hunted portion of

Alaska (Miller 1988, 1990a). Kill density estimates were used to illustrate that dangers of overkill of a grizzly bear population was higher in the Canadian portion of the Northern Continental Divide Ecosystem where a legal hunting season was in place than on the U.S. side (Horejs 1989). Kill density also can be used to establish quantifiable management objectives in management plans.

Integrated Approaches. In Minnesota, black bear population managers use a hunter survey to collect data on hunting success and bears killed per hunter-day. Data are adjusted to correct for annual variation in food abundance and are used to select the most conservative growth curve that fits this trend from a series of model-generated curves of population growth. Managers then use the selected curve and some subjective criteria to develop estimates of population size and to set harvest quotas (D. Garshelis, Minn. Dep. of Nat. Resour., Grand Rapids, pers. commun.). This approach appears to be a worthwhile effort toward integrating information obtained from hunters with that from other sources into a standardized management framework useful in making objective management decisions.

Information Provided by Harvest Composition

Detection of bear population trend from the sex and/or age structure of harvested bears is more often attempted than achieved (Caughley 1974, Wiley 1980, Gilbert et al. 1978, Bunnell and Tair 1980, 1981, Miller and Miller 1988). Procedures that are appropriate for more productive ungulate populations (e.g., Fraser 1976, Fryxell et al. 1988) are difficult to apply to bears because they are a long-lived and low density species that can sustain only low harvest rates (Harris and Metzgar 1987a). Low harvest rates provide a small sample of harvested animals from which to make inferences about the population and a delay in the time required for harvest to perturb the population's sex and age structure. Sex ratio of harvest is more sensitive as an indicator of population status than age structure (Harris 1984), perhaps because all the harvest is distributed between only 2 sexes compared to 20 or more age classes. It is popular to try to use data on age composition of harvest because hunters can be required to submit teeth from their kills. These can be sectioned and age estimated by counting cementum annuli (Stoneberg and Jonkel 1966). The age of harvest results in tables of supposedly "hard" data, the utility of which is more frequently assumed than demonstrated.

Differences in the sex and age composition of bear populations subjected to different levels of hunting have been documented (Jonkel and Cowan 1971, Beecham 1980, Kolenosky 1986, Reynolds and Hechtel 1988,

Miller 1988, 1990a). As yet, these differences have not been clearly related to differences in the age composition of bears harvested from these populations. Increases in number of black bear females harvested has been correlated with increased harvest rate in Ontario (Kolenosky 1986).

The sample of bears shot by hunters will seldom directly reflect the population composition. Hunters are selective and bears have differential vulnerability based on sex, age, or reproductive status (Bunnell and Tait 1980). A further problem is that most interpretations of harvest composition data assume a stable age distribution, which is usually inappropriate. Relaxation of stable age distribution assumptions may be possible if independent information on rate of change in population is available (Giberhardt 1985, 1988).

Commonly, age data on sex or age composition of bear harvests are used to infer that populations are stable because mean (or median) age or sex ratio of harvested animals is constant. Similarly, some managers look for decreasing mean (or median) age of harvest (especially of males) or increasing proportions of females in the kill as indicators of overharvest. Such interpretations can lead managers into unwarranted complacency about population status. When birth and death rates are constant, the sex and age composition of the population will stabilize regardless of population trend. This has been recognized since the 1907 paper by Lotka (Caughley 1977) but remains a source of confusion. When birth and death rates are not constant or vulnerability by sex or age class is changing, harvest composition may change in response. This change, however, is not necessarily related to a change in population status.

Managers should be cautious in setting planning objectives based on age or sex ratio in harvest statistics. Benchmarks such as "no fewer than 60% males in the total harvest" may be inadequate to prevent overexploitation. The sex ratio of harvest at sustainable harvest levels is not a constant. Instead, this value is a function of a number of factors including the relative vulnerability of each sex to human-caused mortality, sex and age-specific natural mortality rates, proportion of total mortality that is represented by harvest, and sex ratio at age of first vulnerability to hunters. Failure to meet an objective of at least 60% males could, for example, be "remedied" by adding an early spring season when males have high vulnerability (O'Pezio et al. 1983, Miller 1990b, Van Daele et al. 1990) rather than by decreasing kill of females. It is preferable to set exploitation guidelines in terms of the total adult female harvest as has been done for polar bears (Taylor et al. 1987b).

A promising approach to interpretation of sex and age composition of black bear harvest data was suggested by Fraser et al. (1982). This approach exploits the higher harvest vulnerability of males compared to females (Bunnell and Tait 1980), which results in a progressive decline in the proportion of males in older age classes. At some age, the higher vulnerability of males will be offset by the larger number of surviving females and the harvest at that age and older will favor females. In lightly exploited populations the age at which females predominate in the harvest will be older than in heavily exploited populations. A regression of percent males in harvest on age class will have a steeper negative slope in heavily hunted populations (Fraser et al. 1982).

Simulation studies have indicated that for bears this model is sensitive to a number of likely violations of underlying assumptions (Harris and Metzgar 1987a). Even if it lacks robustness, however, this approach may be useful as a tool to examine conflicting interpretations of available data. In a portion of south-central Alaska, the Fraser et al. (1982) approach was successfully used to document that current grizzly bear exploitation rate was higher than formerly (Miller 1988). Even though harvest rate could not be directly estimated because of violations of the model's assumptions, this analysis was useful in discrediting the hypothesis that the bear population was unaffected by increased harvests. Also, the most likely bias in the use of the Fraser et al. (1982) approach in Alaska would have resulted in an underestimation of harvest rate. This was because vulnerability of females declined in the adult age classes when females were periodically protected by being accompanied by offspring (it is illegal to shoot grizzly bears accompanied by cubs or yearling offspring). Because the estimated harvest rate was an overestimate but was still higher than the calculated sustainable rate, it was useful in demonstrating a clear need for reduced harvests.

A more complex approach for interpreting sex and age composition of harvest data was developed by Tait (1983). Using sex and age composition of harvest data, Tait's approach uses non-linear optimization procedures to develop maximum likelihood estimates for historic population size, hunting rate, recruitment rate, and other parameters. Unfortunately, Tait's model has yet to be adequately tested with real harvest data or evaluated to see how robust it is when underlying assumptions are violated. Alaska is currently making an effort to conduct such tests.

The limitations of sex and age composition of harvest data should not discourage managers from collecting these data and continuing to investigate meaningful ways

of using them. Compared to field studies as a way of evaluating population status, harvest data are much less expensive to collect. In using these data, managers must be aware of the limitations, however, as common misinterpretations could lead managers into misclassifying declining populations as stable. With existing technology, it is clear that the limitations on use of composition of bear harvest data are such that hunting remnant populations of bears cannot be justified on the basis that such data would be helpful in evaluating population status.

Information Obtained from Research

Research is an important component of sustained yield management for bears. Research is necessary because bear population management has few generally accepted techniques that can be widely applied to evaluate population size or trend (Harris 1986). Research is not needed for each exploited population. Frequently, adequate results can be obtained by cautious extrapolation from research done elsewhere. However, it should be recognized that responsible sustained yield management of a bear population will be expensive and may require field studies to estimate population size, population density, movements, or critical reproductive and mortality rates.

Population Size and Trend. Research programs most commonly address estimation of population size. Frequently, population size is estimated using some variation of capture-mark-recapture procedures such as the Seber-Jolly technique (DeMaster et al. 1980, Beecham 1983, Amsnip et al. 1986, Kolenosky 1986). This technique requires an estimate of survival rate in addition to the other standard assumptions of capture-recapture procedures (Seber 1982). Where survival estimates are not available, black bear population estimates have been obtained using more traditional Lincoln Index procedures (Jonkel and Cowan 1971, LeCount 1982, Young and Ruff 1982, Miller and Ballard 1982, Beecham 1983, Aune and Brannon 1987). Frequently it is difficult to convert population estimates obtained using such techniques to density estimates because of uncertainty about size of the area occupied by the estimated population.

In Alaska, intensive capture-recapture techniques using radio-telemetry to correct for lack of population closure have been used to derive black and grizzly bear density estimates in small ($<2,000 \text{ km}^2$) areas (Miller et al. 1987). With this approach the area occupied by the estimated population does not have to be estimated. In 1 area this technique was used to document statistically significant declines in bear numbers caused by hunting (Miller 1990a). Elsewhere, these estimates serve as baselines for

documenting potential changes in density caused by hunting, development, or habitat deterioration (Schoen and Beier 1989, Miller and Sellers 1989, Ballard et al. 1990). Such density estimates were made for 9 grizzly bear and 1 black bear populations in Alaska in a variety of habitats and over a range of bear densities from 6.7-380 bears/ $1,000 \text{ km}^2$ (Miller et al. 1987, Barnes et al. 1988, Schoen and Beier 1989, Miller and Sellers 1989, Miller 1990a, Ballard et al. 1990, Schwartz and Franzmann in prep.). Not all of the problems associated with using these techniques have been resolved. The best methods for dealing with capture bias, small sample sizes, and extrapolation of results to larger areas need additional study. A correction factor for small sample bias in such estimates was developed by Liberhardt (in press).

Other approaches to estimating bear density are based on movements of radio-marked bears (Rogers 1977, Hughie 1982, Reynolds et al. 1987, Schwartz and Franzmann in prep.). Typically, these techniques involve plotting home ranges of individual bears over a study area and calculating the proportions of each home range overlapping the study area. These proportions are summed to derive a population estimate and divided by the size of the study area to obtain a density estimate. Such estimates are usually identified as minimum values because of the possibility that not all bears in the study area were radio-marked. These estimates usually do not include a variance estimate and may contain subjective elements that make them difficult to replicate by different observers. However, they may provide more accurate density estimates than capture-recapture procedures used when the size of the area occupied by the estimated population is uncertain (Hughie 1982).

In the small but politically significant populations of grizzly bears in Glacier and Yellowstone National Parks, grizzly bear population size and trend were estimated from direct observations of bears (Martinka 1971, 1974; Craighead et al. 1974; Knight and Eberhardt 1984, 1985; Keating 1986; McDonald et al. 1988; Hayward 1989). In a Montana study area, number of grizzlies was estimated by adding marked bears known present with unmarked bears seen (Aune and Brannon 1987). Systematic application of direct observation techniques may be preferable for deriving such estimates for critically small populations of grizzly bears such as in the Yellowstone area (Harris 1986). However, these approaches are too labor-intensive to be useful to managers of exploited bear populations. They also lack variance estimates, which makes it difficult to evaluate the significance of reported changes in population numbers.

Another promising approach towards estimating bear

density without marking animals was described by Dean (1987). This method employs intensive aerial surveys and a sightability correction factor to estimate number of animals missed during aerial searches.

Research aimed at developing indicators of population trend have not yet produced consistently reliable procedures. Different techniques have been used to detect changes in bear numbers (see review in Harris 1986 and discussions in Pelton et al. 1978, Phelps 1979, LeFranc et al. 1987). There are ongoing efforts to develop trend indices based on use of bait stations (D. Garshelis, Minn. Dep. of Nat. Resour., Grand Rapids, pers. commun.), scent stations (Lindzey et al. 1977, J. Beecham, Id. Dep. of Fish and Game, Boise, pers. commun.), and on track counts in Florida (J. Wooding, Fla. Game and Fresh Water Fish Comm., Wildl. Res. Lab., Gainesville, pers. commun.). In some parts of Alaska, annual aerial counts of bears are conducted at food concentration sites such as along salmon streams. Correct interpretation of such data from any 1 year requires many replicate counts (Erickson and Simff 1963). Also, the utility of counts at food concentration areas to detect population trend is questionable. Numerous bears would likely be observed in such areas long after the number of bears in less preferred habitats had declined significantly. Away from food concentration areas, high direct annual counts from aircraft may provide a useful index of trend where bear populations are dense and visibility is high. Such counts in alpine habitats are conducted in southeastern Alaska (Schoen and Beier 1989) and on Kodiak Island (R. Smith, Alas. Dep. of Fish and Game, Kodiak, pers. commun.).

Vital Rates.—Rates of birth, death, and recruitment for bear populations can only be established by research programs or by extrapolation from research. For long-lived species with low reproductive and adult mortality rates like bears, estimation of these parameters requires many years of study of >10 radio-marked females (Miller 1989). Estimates of survivorship rates based on regular locations of radio-marked animals can be calculated using procedures developed by Heisley and Fuller (1985) and Pollock et al. (1989). These procedures have been applied on populations of grizzly and black bears (Knick and Kasworm 1989, Schwartz and Franzmann in prep.). Other approaches using kill rates of tagged black bears were described by LeComt (1982), Kolenosky (1986), and Miller (1987). For polar bears and grizzly bears, mortality rate of adult females was shown to be the most critical factor in correctly estimating population growth rate or sustainable mortality rates (Knight and Eberhardt 1985, Taylor et al. 1987b).

In cases where research objectives require capture or handling of bears, the studies themselves will result in some mortalities or other stresses on bear populations. These stresses may not be significant to healthy bear populations (Ramsey and Stirling 1987), but they may make such studies inappropriate for depleted populations. Whether conducted on depleted populations or not, all proposed studies requiring handling of bears should receive adequate peer review to assure that poorly designed or implemented projects are not authorized.

Information Obtained from Simulation Studies

Information obtained from hunters, from harvested bears, and from field studies needs to be integrated into a conceptual framework or model where it can be used to make management decisions. Managers are increasingly finding mathematical models of populations to be useful tools for organizing and making decisions from such information. Computers are useful tools for examining such models as they permit managers to quickly make the lengthy and repetitive calculations needed to estimate parameters like sustainable harvest levels.

Deterministic models used to estimate sustainable harvest levels have only 1 result per set of inputs. These models are relatively simple to make. Useful deterministic models can be made by persons without programming talents using conventional spreadsheet software. Such models may introduce systematic error in species, like bears, with multi-year periods of maternal care (Taylor et al. 1987c).

Stochastic models, where life history events are assigned probabilities instead of fixed rates, are useful in examining the range of possible outcomes per set of inputs. Software useful in constructing stochastic models for species with any kind of life history has been developed by Harris et al. (1986). This software was used to evaluate sensitivity of harvest data (Harris and Metzgar 1987b) and is useful in predicting, for example, probability of survival of small populations of bears.

Deterministic models based on ANURSUS (Taylor et al. 1987a) with optional stochastic features have been developed specifically for each of the 3 North American bear species. ANURSUS attempts to mimic the dynamics of bear populations and, as a result, requires a daunting number of input parameters. The 3 species models based on ANURSUS are currently being linked and documented (M. Taylor, Northwest Terr. Dep. of Renewable Resour., Yellowknife, pers. commun.). When this is accomplished, ANURSUS can be more widely tested and used to establish management objectives based on sustainable yield.

ANURSUS was used to estimate sustainable harvest levels for adult female polar bears. Less than 1.6% of the total population of all bears could be harvested as adult females (Taylor et al. 1987b). Based on this finding sustainable harvest number can be approximated (M. Taylor, Northwest Territ. Dep. of Renewable Resour., Yellowknife, pers. commun.) as:

$$H = (N)(0.015/F),$$

where H is number of bears that can be harvested, N is total population number, F is the proportion of adult females in the harvest, and the 0.015 constant is derived from the simulation result that <1.6% population can be harvested as adult females (Taylor et al. 1987b). It follows that if the whole harvest is adult females, then harvests of 1.5% of the population can be sustained. If a proportion of the harvest is male then a larger percent harvest can be sustained. The maximum sustainable harvest rate for polar bears was estimated at 4.5%; this occurred when 33% of the harvest is female (Stirling 1988b). In the Yukon Territory, ANURSUS was used to make preliminary estimates of maximum sustainable harvest levels for male (6%) and female (2.5%) segments of regional grizzly bear populations (B. Smith, Yukon Dep. of Renewable Resour., Fish and Wildl. Branch, Whitehorse, pers. commun.).

Deterministic models were used by Bunnell and Tait (1980) to estimate sustainable mortality from all causes. When natural mortalities are subtracted separately, such models estimate sustainable harvest levels. The consequence of error simulation discussed earlier illustrates this application. With the generous estimates of reproductive rates and survivorship from natural mortality used to estimate population recovery period (Table 1), maximum sustainable harvests were estimated at 7.8% for grizzly bears older than 2.0 and at 15.9% for black bears >1.0 (Table 3). These were converted to estimates of sustainable harvest of the whole population using typical values for mortality of cub and yearling grizzly bears and cub black bears (Bunnell and Tait 1985). Under these conditions and assumptions, maximal sustainable annual hunting mortality was 5.7% for grizzly bears and 14.2% for black bears (Table 3). Elsewhere this approach was used to estimate that sustainable harvests for Yukon grizzlies was 2-3% of the population (Sidorowicz and Gilbert 1981). McCullough (1981, 1986) estimated higher sustainable harvest levels than other models by incorporating density-dependent effects on recruitment. There is both direct and indirect evidence for such relationships (Rogers 1983; Kemp 1972; Stringham 1980, 1983; Young and Ruff 1982; Schwartz and Franzmann in prep.). In my view, however, these relationships are as

yet too poorly understood to be safely incorporated into estimates of sustainable harvest levels for hunted populations.

Estimates of sustainable harvest rates derived from models may be compared with calculated harvest rates derived from kill numbers and population estimates. In cases where different sexes have different vulnerability to hunters, population harvest rate can be estimated directly from information on the sex and age composition of the population (Bunnell and Tait 1985) or harvest (Fraser et al. 1982). Such comparisons should be viewed skeptically especially when age distributions are not stable (Caughley 1974, 1977; Harris 1984).

Harvest Controls

Managers have numerous regulatory tools for influencing the number or composition of bears harvested (Phelps 1979; Harger 1978). The effectiveness of any particular tool will vary among areas depending on hunting conditions and the type and motives of the hunter.

Seasons and Bag Limits. Number of bears taken by hunters can usually be reduced by shortening seasons and increased by lengthening seasons. However, season length works to reduce kill only to a point; in Pennsylvania, 736 black bears were taken in a 1979 open hunting season only 1 day long (Lindzey et al. 1983). A similar number are currently being taken with a 3-day season (G. Ali, Pa. Game Comm., Moscow, pers. commun.). Seasons can be held periodically instead of shortened. On the Alaska Peninsula in southwestern Alaska, grizzly bear hunting has been allowed only on alternate years in an effort to reduce harvest and maintain open hunting (Sellers and McNay 1984).

Shorter seasons may give managers just as many bears killed by hunters in a shorter time, hunting under more crowded conditions. When this occurs, managers may choose to limit the number of hunters by issuing permits. Hunting by limited permit can augment the quality of the

Table 3. Estimated sustainable yield from maximally productive populations of grizzly and black bears (input parameters reported in Miller [1989]).

Annual hunting rate for initial stabilized population of grizzly bears (>2.0 years-old) and black bears (>1.0 years-old)	7.8%	15.9%
Equivalent hunting rate for total population (all ages)	5.7*	14.2%*

* Total population estimated from number of 2-year olds by assuming yearling and cub mortality rates of 0.29 and 0.15, respectively, for each sex.

** Total population estimated from number of yearlings by assuming cub mortality rates of 0.22 for each sex.

hunting experience and, depending on number issued, may serve to maintain trophy bears in the population.

In some parts of Alaska, special permits and seasons are also used to minimize damage by and danger from grizzly bears that enter rural villages. By providing for these bears to be taken legally, managers achieve more accurate records on kill rates and allow the public to effect control actions that would otherwise have to be accomplished at public expense.

Seasons can also be adjusted to influence the sex of bears taken. This is particularly true during spring seasons because male bears tend to leave dens earlier than females, move greater distances, are not accompanied by cubs, and spring hunters may be more selective for large (male) bears (O'Pezzo et al. 1983, Schoen et al. 1987, Miller 1990b, Van Daele et al. 1990). During spring grizzly bear seasons in Alaska (1984-1988), 74% of grizzly bears taken ($n = 2,563$) were male compared to 55% of bears taken in fall seasons ($n = 2,963$) (ADF&G unpublished data). A similar pattern was evident for black bear where 75% of spring bears harvested during 1984-1988 were male ($n = 4,691$ bears killed) compared to 64% in fall harvests ($n = 2,887$). In some areas, polar bears killed in seasons open during the den entrance and emergence period are more likely to be females because dens are typically on land, which may be near villages of native hunters, and only pregnant females use dens (Stirling 1986, Kolenusky 1987). In parts of Canada pregnant females are protected from hunting by delaying opening of hunting until 1 December, after the den entrance period (Stirling and Calvert 1985). Black bear tracking studies in Maine revealed that black bears are likely to be distant from their breeding ranges during early fall seasons. The geographic distribution of kill at such times would not, as a result, accurately depict the origins of harvested bears (Hughie 1982).

A chronology of sex ratio in kill of grizzly bears harvested in a portion of southcentral Alaska was given by Miller (1990b). There was little change in sex ratio of kill over time during fall seasons, but there was an increase in the proportion of females killed as the spring season progressed. This suggested that the last part of spring seasons should be eliminated if hunter kills need to be reduced. However, 2-4 times as many females are killed during each of the first 2 weeks of September than during any week of the spring seasons. Also, the percentage of females in the kill is higher in the early fall than at any other time of the year (Miller 1990b). In this area, more females would be protected from hunters if the first 2 weeks of the fall season were closed than could be accomplished by closing the whole spring season.

Bag limits can also be adjusted to influence the number of bears taken. In most of Alaska, grizzly bear bag limits are 1 per 4 years. The multi-year bag limit serves to make hunters more selective as by taking a bear they forego the opportunity to take a better bear in subsequent years. In Alaska's Game Management Unit 13, grizzly bear bag limits were changed from 1 per 4 years to 1 per year during fall seasons in 1982-1986 and harvests averaged 81 bears per season (range 59-96). When bag limits were 1 per 4 years, fall harvests were lower averaging 60 bears (range 40-73) in the 5 years before the change and 53 (range 48-58) bears per season in the 2 years after the change (ADF&G unpublished data).

Increase in reported kill for certain areas may result from misreporting by hunters. This may occur when areas with multiple-year and annual-year bag limits are mixed. Differences in bag limits and seasons give hunters incentives to report location of their kills incorrectly. In Alaska, an investigation by Fish and Wildlife Protection Officers resulted in the prosecution of a guide who had misreported the location of at least 25 grizzly bears killed by himself, his relatives, and his clients during 1 season. Half of these were wrongly reported as having been taken in areas with a 1 per year bag limit when they had, in fact, been taken in an area with a 1 per 4 year bag. Such misreporting can result in serious management error in circumstances where managers rely on accuracy in these statistics.

Another way to affect bear harvests is to time bear seasons to occur at the same time as hunts for other species. In some areas harvests will be increased if hunters can take bears incidental to hunts designed primarily to take ungulates. This approach has been used in a number of different areas to influence taking black bears (Burk 1977) as well as grizzly bears in Alaska.

Closed Areas. Areas closed to hunting are also a potentially useful tool for managers. Closed or lightly hunted reservoir areas can be sources of surplus animals that immigrate to open or more accessible areas where they can be hunted (Beecham 1986). To be effective such areas must be large.

Methods, Means, and Legal Bear Definitions.—Besides season adjustments and limited entry systems, managers use restrictions on methods and means of hunting to influence harvest. These include restrictions on weapon type, transportation methods, use of attractants like bait, and use of dogs. In Michigan, the age of black bears taken by hunters using dogs was older than for hunters not using dogs (Harger 1978). However, regulations that permit baiting or hunting with dogs could result in adverse population impacts if hunters select for fe-

males, which are more likely to "tree" when chased by dogs.

One of the most effective ways to maximize sustainable harvest of bears with minimal influence on the reproductive capability of the population is to direct hunter harvest away from adult females by prohibiting shooting females accompanied by offspring. Where female bears produce new litters every 2 or 3 years, adult females are vulnerable only 1/2 to 1/3 as frequently as males. Experiments are ongoing in the Yukon Territory to direct the harvests of outlitters away from female grizzly bears by giving them incentives to harvest males (Smith 1990). Clearly, it is difficult to differentiate between sexes of bears but it will be done more often if hunters have incentives to do so. In Ontario it was shown that not all females contribute equally to reproduction (Kolenosky 1990). Protection of maternal black bear females, which are producing the bulk of recruits, is especially important when this is the case (Kolenosky 1990).

Commercialization and Restrictions by Class of Hunter. Limitations on commercial use of bear parts is a useful tool in preventing excessive harvests. Commercial exploitation of wildlife has the potential to reduce and eliminate wildlife populations and species quickly (Geist 1988). The Lacey Act of 1900 in the United States was a largely successful effort to stop the trend of commercial overexploitation of many wildlife species and populations (Trefethen 1961). In many areas the sale of black or grizzly bear hides or parts, such as gall bladders, is illegal as is the sale of polar bear hides. These restrictions reduce harvests over what would occur if commercial sales of bear parts were allowed (Geist 1988). Commercial sales of bear parts could be allowed in some states without creating local management problems, but this may exacerbate problems elsewhere by giving lawbreakers the ability to claim the parts came from somewhere sales were legal.

Regulations designed to benefit or restrict special groups of hunters such as resident, non-resident, native, sport, trophy, or subsistence hunters can be used to constrain harvests. As an alternative to using limited entry permits, such regulations allow only certain classes of hunters to participate. This is the system in effect for polar bear in both Canada and the United States where only indigenous people have hunting rights.

DISCUSSION

In most areas, bear population management has evolved from efforts to reduce bear numbers to objectives based on maintenance or augmentation of population numbers.

The ability of managers to maintain or increase bear population numbers successfully is limited by 4 major constraints.

The first constraint is adequate protection of bear habitat. This topic is treated elsewhere (McLellan and Shackleton 1988, McLellan 1990, Malison 1990, Schoen 1990).

The second constraint on bear population management is political. Bear population managers are pressured by many special interest groups, frequently with diametrically opposed objectives. In Alaska, for example, subsistence and sport hunters frequently pressure managers to reduce populations of bears and other predators. On the other extreme are groups that agitate to reduce or eliminate hunting. One such group managed to eliminate the black bear hunting season in California in 1989 (D. Koch, Calif. Dep. of Fish and Game, Sacramento, pers. commun.). Wildlife managers must spend an increasing amount of their personnel and financial resources dealing with the demands and proposals of special interest groups. These expenditures represent resources that are diverted from habitat and population management programs. Some groups, commonly those opposed to hunting, even target resource management agencies as the problem. These activities reduce public confidence and support for management efforts. An important challenge facing wildlife managers is to direct the activities of these groups into activities that increase support for soundly based management. This is easier to say than to do. Clearly, however, in the North American political system, the concerns of such groups cannot be ignored without ultimate counter-productive consequences. Although it may be frustrating at the time, it will help if these special-interest groups are involved in the development of management plans. This provides a forum where their concerns can be heard by managers and managers' concerns can be heard by them.

There appears to be more political will to protect remnant populations of bears than there is to reestablish bears in areas where they have been eliminated. Although grizzlies have been eliminated from 99% of their former range south of Canada (Servheen 1987 cited by Junkel 1987), there is little interest in reestablishing them in places like California, Colorado, or Arizona (Brown 1985). In Texas much of the public is opposed to management actions that would result in a significant increase in black bear population numbers or distribution (C. Winkler, Tex. Parks and Wildl. Dep., Austin, pers. commun.). Reintroduction of bears into an area where they have been eliminated is a positive action that will provoke some opposition. In North American political

systems, it appears to be more difficult to take action than to do nothing. Thus, it is important to assure that the *status quo* includes bears.

The third constraint is the technological tool kit available for use by managers. Many of the tools used by managers to assess the success or failure of bear management strategies lack precision, estimates of variability, or produce potentially biased results. It is easier to detect potential sources of bias and imprecision in analyses of bear populations than it is to develop approaches without these flaws. Unfortunately, the decisions managers have to make do not disappear just because the information available has uncertain accuracy or precision. In making these decisions, however, managers should incorporate the limitations of the data into their management strategies. Usually this will mean setting management objectives and guidelines on the conservative side of what might be estimated to be optimal. The costs associated with unintended population declines and the difficulties of detecting such declines until they are far advanced mandate a conservative approach to bear population management.

The fourth major constraint to population management is financial. Some of the technological constraints of existing bear population management techniques can be overcome if adequate funds were available. Where the commitment to spend the necessary money is lacking, bear population managers have little choice but to implement conservative management strategies.

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ABSTRACT

We produced three, statewide, inductive habitat suitability models and population estimates for mountain lions for New Mexico. The first two models used a binary logistic regression to produce the linear combination of habitat variables that best predicted the distinction between either (1) mountain lion harvest locations and random points; or, (2) gps collared mountain lion locations and random points. The third model was produced by combining the mapped results of the first two models by adding the “excellent” and “good” habitat from the collar model to the harvest model. The models produced by binary logistic regression were entered into Raster Calculator in ArcGIS to produce maps of habitat suitability state wide. Habitat suitability was simplified to 5 categories (quintiles) using Spatial Analysis, Reclassify, in ArcGIS. Finally, the area of each habitat suitability class for each mountain lion management zone was multiplied by plausible mountain lion densities (derived from the literature) to produce an estimated range of mountain lion population sizes. The harvest, collar, and combined models predicted 8%, 16%, and 60% greater statewide mountain lion population estimates, respectively, than the current New Mexico Department of Game and Fish population estimates based on a deductive model. (Note: The higher population estimate produced by our harvest model is not uniform across mountain lion management zones. Approximately, half of the management zones were predicted to have smaller populations than previously predicted.) Our harvest model is the most conservative of the three and is in close agreement, at the state level, with the deductive model. We suggest that the harvest model be the primary source for guiding an adaptive management approach to mountain lion conservation in New Mexico.

INTRODUCTION

Information on the abundance and distribution of any species is essential for its responsible management. According to the New Mexico Department of Game and Fish Strategic Plan for 2008 through 2012, the mission of the agency is:

“To provide and maintain an adequate supply of wildlife and fish within the state of New Mexico by utilizing a flexible management system that provides for their protection, propagation, regulation, conservation, and for their use as public recreation and food supply.”

Meeting these objectives for mountain lions poses significant challenges as these animals are secretive and occur at relatively low densities, making it difficult to conduct population counts. Even the result of such a census may be primarily local in application. However, the density estimates obtained from local studies is a critical starting point in understanding mountain lion population sizes and distribution.

To address these needs in mountain lion management alternative approaches to direct population counts are used. One increasingly useful approach is the use of habitat or niche modeling with GIS technology (Hirzel et al. 2006). The Cougar Management Guidelines Working Group (2005) suggests this technique as a primary means of planning statewide mountain lion management programs. This approach has been used to predict mountain lion habitat dispersal corridors and habitat patches in the Midwest (LaRue and Nielson 2005) as well as mountain lion population distribution and dispersal routes in Riverside County California, and to

inform mountain lion management in New Mexico (Negri and Quigley 2010). These models have employed a deductive approach using expert opinion regarding mountain lion habitat preferences. Actual location data may be used to produce more objective, and possibly more accurate models. Location data may come from hunter harvest records or from VHF or GPS collars worn by free roaming mountain lions. The resulting models are inductive, generalizing habitat preferences from a subset of the mountain lion population across a broad geographic area. It should be noted that models built from harvest data may also be biased by hunter distribution and success. Data from collared mountain lions can address some of these biases. Perhaps the greatest utility of these models is that they represent testable hypotheses about the distribution and density of mountain lions that can inform an adaptive management approach.

Our primary goal in this project is to provide a scientifically robust estimate of mountain lion status across the state, based on actual mountain lion locations derived from harvest data and GPS collared mountain lions. Our objectives were to: (1) Identify and map habitat quality, defined by probability of mountain lion occurrence, in five quality categories, excellent, good, moderate, fair, and poor; (2) quantify the total area of each category of habitat quality in square kilometers by game management unit and mountain lion management zone; (3) map the statewide distribution of each habitat type; and, (4) project a statewide mountain lion population estimate, broken down by hunt unit and mountain lion management zone, based on the area and extent of habitat categories and reasonable mountain lion densities derived from the scientific literature.

METHODS

Statistical Approach

We used an inductive model building approach, using mountain lion locations, and their associated habitat characteristics to make generalizations about mountain lion habitat preference and suitability. Specifically, we used a binary logistic regression to produce the linear combination of habitat variables that best distinguished between random locations and mountain lion locations across the state of New Mexico. We made this approach more rigorous by building the model with a subset of locations and then testing the accuracy of the model at identifying the remaining points as either random or mountain lion based on associated habitat characteristics. This linear combination of variables (the model) was then entered into ArcGIS Raster Calculator to produce habitat suitability maps. We actually constructed three models: we used a binary logistic regression to distinguish between harvest locations and random locations to produce one model. We used the same approach to distinguish between random locations and collared mountain Lion locations to produce a separate model. Finally, we combined these models by adding the 'excellent' and 'good' habitats from the collar model to the harvest model.

Data

In initial model building, we used two sources of mountain location data, (1) harvest and (2) GPS collar, and data on several habitat variables: (3) vegetation type, (4) topographic ruggedness, (5) slope, (6) elevation, (7) snow depth, (8) distance to paved roads, (9) distance to dirt roads, (10) elk distribution, and (11) mule deer distribution.

(1) New Mexico mountain lion harvest data was provided by the New Mexico Department of Game and Fish. Approximately, 1,684 total records from 2001 to 2009 were provided. We georeferenced 1,397 of these records for the model. There are inherent, but unavoidable, biases to harvest data in the construction of harvest data. For example, proximity to roads may seem to be an important quality for suitable mountain lion habitat. When, in fact, it is hunter access that drives the importance of this variable. A second potential source of error is the accuracy of the georeferencing. Caution is warranted in the use and interpretation of models based on harvest data.

(2) We obtained GPS collar data from 10 free roaming mountain lions between 2005 and 2010. GPS locations were taken at night and reflect active habitat use. We used approximately, 13,000 GPS locations for model building. A bias inherent to the use of these data is their restricted geographic application. As all of these mountain lions were in the southcentral portion of New Mexico, below 7,000 ft, the resulting model would not predict that habitat types outside of this region would be suitable mountain lion habitat. (eg mixed coniferous forest). The advantage of these data is that they show mountain lion habitat use outside of areas frequented by hunters.

(3) We simplified vegetation classifications provided by the Southwest Regional GAP Analysis, as described in "Landcover descriptions for the Southwestern Regional GAP Analysis project" compiled by NatureServe, 2004. The relationship between the vegetation categories used for the model and the original SWReGAP categories can be found in Appendix I. For use in the raster calculator, we created a separate raster for each vegetation type, giving pixels a value of either zero (not the specified vegetation type) or one.

(4) We created an index of topographic ruggedness by using the USGS 30 meter National Elevation Dataset for New Mexico available from the RGIS website. (<http://rgis.unm.edu/intro.cfm>). The following equation was applied: $TPI = \frac{SQR(FOCALSTD([DEM], CIRCLE, X))}{X}$, where X is the number of pixels in the radius of the circle. In this way we created four rasters of topographic ruggedness at four scales: 120, 240, 480, and 960 meters, respectively.

(5) Slope was derived from the USGS 30m DEM as percentage slope using ArcGIS Spatial Analyst.

(6) Elevation was taken from the USGS 30m DEM

(7) Snow depth was obtained from the National Climatic Data Center which is within the National Oceanic and Atmospheric Administration (NOAA)

(<http://hurricane.ncdc.noaa.gov/cgi-bin/climaps/climaps.pl>). National data representing average annual snowfall were used for this input.

(8) Distance to Paved Roads was calculated from the TIGER 2008 roads dataset. Roads were obtained from the U.S. Census 2008 TIGER shapefiles website (<http://www2.census.gov/cgi-bin/shapefiles/national-files>). Paved roads were extracted and distance to roads was calculated using the Euclidean Distance function in Spatial Analyst at a 30 m resolution.

(9) Distance to Dirt Roads was calculated from the TIGER 2008 roads dataset. Dirt roads were extracted and distance to roads was calculated using the Euclidean Distance function in Spatial Analyst at a 30 m resolution.

(10) We calculated a rough index of elk availability by dividing the total allowable harvest of elk for the 2010-2011 season by the area of each hunt unit.

(11) We calculated a rough index of mule deer availability by dividing the total allowable harvest of mule deer for the 2010-2011 season by the area of each hunt unit.

We entered the resulting binary logistic models (one for harvest data and one for collar data) into the ArcGIS Spatial Analyst, Raster Calculator to produce a raster in which each pixel was given a value that corresponded to the inverse odds of mountain lion occurrence. The range of pixel values in each of the resulting rasters was then simplified to 255 values using the Spatial Analyst Reclassify tool. These 255 values were then further simplified to 5 values by grouping the 255 values by quintiles and reclassifying a second time. The result, for each model, was a raster showing 5 categories of mountain lion habitat suitability (probability of mountain lion occurrence).

Next, we used Hawth's Tools, Raster Tools, Thematic Raster Summary by Polygon to calculate the area of each habitat class for each Game Management Unit (GMU). Then we multiplied each habitat type area for each GMU by a range of possible mountain lion densities, supplied by the New Mexico Department of Game and Fish (Table 1).

	Excellent	Good	Moderate	Fair
Density Range (per 100sqKm)	2-3	0.89-1.2	0.4-0.6	0.2-0.3

Table 1. Mountain lion density ranges by habitat category, provided by the New Mexico Department of Game and Fish used in the calculation of mountain lion populations.

RESULTS

In both the harvest and collar models the variables with the most significant predictive value were topographic ruggedness, at the scale of 480m, and vegetation type. The addition of other predictor variables did not significantly improve the models. In the models that follow, the lower the coefficient, the more this variable contributes to suitable mountain lion habitat. The binary logistic regression models were:

(1) for harvest data:

$$\begin{aligned} \text{Puma} = & -0.0001[\text{TRI480}] + 21.844 * [\text{acmesq1}] + 21.04 * [\text{acpsdg2}] + 21.127 * [\text{agric3}] \\ & + 22.019 * [\text{badland4}] + 21.616 * [\text{barren5}] + 22.54 * [\text{ccreosote7}] + 42.332 * \\ & [\text{cscrub8}] + 21.352 * [\text{canyon9}] + 22.277 * [\text{canmesa10}] + 42.322 * [\text{ccdunesd11}] + \\ & 20.547 * [\text{chaparral12}] + 19.583 * [\text{cliffrock13}] + 0.065 * [\text{cpshrub14}] + 42.399 * \\ & [\text{dgrasslnd15}] + 22.219 * [\text{dunes17}] + 21.857 * [\text{gpmesq18}] + \\ & 42.322 * [\text{gpsndshb19}] + 19.088 * [\text{gpfgrass20}] + 42.322 * [\text{gypgrass21}] + 21.907 * \\ & [\text{imgrass22}] + 21.9 * [\text{imbshrub23}] + 21.539 * [\text{junpgrass25}] + 42.332 * [\text{lava26}] + \\ & 19.9 * [\text{madoak29}] + 20.419 * [\text{mixconifer30}] + 20.261 * [\text{mongrass32}] + 19.962 * \\ & [\text{montshrub33}] + 42.337 * [\text{water35}] + 19.681 * [\text{pine36}] + 20.529 * [\text{pj37}] + 20.27 * \\ & [\text{playa38}] + 19.486 * [\text{ripwood42}] + 20.381 * [\text{sage44}] + 22.459 * [\text{sgprairie45}] + \\ & 21.051 * [\text{urban49}] \end{aligned}$$

Certain adjustments to coefficients were made: 0.065 coefficient for cpshrub (Colorado Plateau Shrubland) was unrealistic and resulted from small sample size. Also, the coefficients for [barren5], [playa38], and [urban49] were changed to 43 (meaning low probability of mountain lion occurrence), as breeding populations of mountain lions cannot reasonably be expected to occur in these areas.

This model correctly predicted 85% of test mountain lion harvest locations (Appendix II).

(2) for collar data:

$$\begin{aligned} \text{Puma} = & -0.0001 * [\text{TRI_480.img}] + 19.708 * [\text{acmesq1}] + 18.739 * [\text{acpsdg2}] + 20.998 \\ & * [\text{agric3}] + 43.049 * [\text{badland4}] + 43.654 * [\text{barren5}] + 20.002 * [\text{ccreosote7}] + \\ & 19.724 * [\text{cscrub8}] + 46.082 * [\text{canyon9}] + 22.311 * [\text{ccdunesd11}] + 18.515 * \\ & [\text{chaparral12}] + 17.559 * [\text{cliffrock13}] + 19.886 * [\text{dgrasslnd15}] + 20.735 * [\text{dunes17}] \\ & + 42.769 * [\text{gpmesq18}] + 42.412 * [\text{gpsndshb19}] + 42.409 * [\text{gypgrass21}] + 20.603 * \\ & [\text{imgrass22}] + 22.279 * [\text{imbshrub23}] + 46.184 * [\text{jungrass25}] + 42.46 * [\text{lava26}] + \\ & 21.677 * [\text{madoak29}] + 25.507 * [\text{mixconifer30}] + 43.691 * [\text{mongrass32}] + 44.049 * \\ & [\text{montshrub33}] + 42.489 * [\text{water35}] + 21.742 * [\text{pine36}] + 19.870 * [\text{pj37}] + 19.231 * \\ & [\text{playa38}] + 1.215 * [\text{ripherb39}] + 15.223 * [\text{ripwood42}] + 44.265 * [\text{sage44}] + 42.479 \\ & * [\text{sgprairie45}] + 42.496 * [\text{urban49}] \end{aligned}$$

This model correctly predicted 99% of test collared mountain lion locations. (Appendix III)

The three resulting models, from harvest data, collar data, and the combination of the two, predict successively larger statewide mountain lion populations respectively. The harvest data model is the most conservative, predicting a statewide population of mountain lions between 2,099 and 3,122 (Table 2, Figure 1). The collar model predicts a statewide population between 2,253 and 3,122 (Table 2, Figure 2). The combined models, in which excellent and good mountain lion habitat predicted by the collar model was added to the harvest model, predicts a statewide population between 3,197 and 4,732 (Table 2, Figure 3). The real number of mountain lions statewide likely lies between the harvest model and harvest + collar population estimates. As the harvest model is the most conservative, we suggest that it be used for management decisions.

Cougar Zone	harvest lo	harvest hi	collar lo	collar hi	harvcol lo	harvcol hi
A	139	207	117	167	169	249
B	96	142	38	56	98	146
C	193	289	58	84	195	291
D	52	76	21	31	56	82
E	168	251	120	171	187	275
F	104	156	45	65	108	161
G	166	247	155	223	209	308
H	54	78	216	318	206	302
I	123	183	146	215	198	295
J	298	445	294	429	436	646
K	151	225	177	262	232	347
L	43	64	137	203	145	216
M	98	146	362	537	376	557
N	51	76	8	12	52	78
O	70	103	51	71	75	109
P	33	49	13	19	33	49
Q	115	170	236	347	268	396
R	87	131	22	33	88	132
S	57	85	37	52	65	95
T						
Total	2099	3122	2253	3294	3197	4732

Table 2. This table compares mountain lion population estimates by mountain lion management unit across the three models, harvest, collar, and harvest and collar (Harvcol) combined. Note that mountain lion population estimates for the “T” (Tribal) areas of the state are not included in the estimate.

For detailed calculations of mountain lion population size by GMU across all three models see Appendix IV.

DISCUSSION

The harvest data model, the most conservative of the three models, predicts a statewide mountain lion population approximately 8% larger than the current NMDGF mountain lion population estimates. It is perhaps most notable, that the two estimates are so similar. The harvest model's higher statewide estimate is not the result of uniformly higher estimates across GMU's. Approximately, half of the units were predicted to have fewer mountain lions by the model than previously predicted by NMDGF. The fact that tribal areas were not included in the statewide population estimate makes the harvest model more conservative.

The accuracy of any model is only as good as the data used to construct the model. There are at least three points of potential issue with the data used for these models.

First, there are inherent biases in both harvest data and GPS collar data. Harvest data may be biased by hunter access (roads) or environmental factors that increase hunter success (snow). The result of this bias is that the model may underestimate the mountain lion population in areas where there are few roads or where there is infrequent, or no, snow fall. Likewise, favored hunting areas with high success may over-estimate mountain lion populations. The GPS collar data is biased in two ways. First, because there was not a statewide distribution of collared mountain lions, the habitat selection of collared lions was limited. For example, because all collared mountain lions were in southcentral New Mexico, below 7,000 ft, obviously suitable habitat types, such as mixed conifer, are not predicted to be suitable mountain lion habitat by this model. This also, would lead to a significant underestimate of statewide populations. Second, collared mountain lions may pass through unsuitable habitat, regularly, to access favored habitats. As a result, unfavorable habitat types, such as creosote flats, may be shown by the model to be moderately suitable to mountain lion populations, causing an overestimation of mountain lion numbers. A solution to the second bias may be addressed by using only prey cache sites from collared mountain lions. Evidence of mountain lions feeding in particular habitats is stronger evidence of habitat suitability than mere location data.

A second source of concern is the accuracy of georeferenced harvest data. Whereas collar data may be accurate to the scale of meters, harvest data may only be accurate to the scale of 100's of meters or even kilometers. The result may be that truly unfavored habitat types appear to be favored. The best remedy for these inaccuracies is sample size. With 1,400 georeferenced records, we can be relatively confident that this is not a significant source of error in these models.

A final area of potential inaccuracy, in calculating population size, is the choice of density ranges. The density of mountain lions has been accurately measured in a number of

intensive field studies. However, it is difficult to compare density estimates across studies due to differences in approach. Recently, Quigley and Hornocker (2010) provided a summary of density estimates across several studies, ranging from 0.32 to 7.3 per 100 sqKm. The density estimates used in these models are conservative, ranging from 0.2 to 3 per 100sqKm. Mountain lion densities in New Mexico might exceed this top range in productive habitats. Recently, four resident adult females and two resident adult males were observed frequenting a 100 sqKm camera study area in the eastern piedmont of the Black Range.

The primary utility of population estimate models is to serve as hypotheses to guide adaptive management practices. There are at least two methods for testing the accuracy of these model predictions: (1) remote camera mark-resight population estimates in select habitats and (2) monitoring the sex and age distribution of harvested lions as per the findings of Anderson and Lindzey (2005).

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LITERATURE CITED

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APPENDIX I

SWReGAP Original Vegetation Types	Our Model Vegetation Types
Apacherian-Chihuahuan Mesquite Upland Scrub	AC Mesquite
Apacherian-Chihuahuan Piedmont Semi-Desert Grassland and Steppe	ACPSD Grassland
Agriculture	Agriculture
Inter-Mountain Basins Shale Badland	Badland
North American Warm Desert Badland	Badland
Inter-Mountain Basins Playa	Barren
Barren Lands, Non-specific	Barren
Recently Burned	Barren
Inter-Mountain Basins Subalpine Limber-Bristlecone Pine Woodland	Bristle Cone
North American Warm Desert Pavement	C Creosote
Chihuahuan Creosotebush, Mixed Desert and Thorn Scrub	C Creosote
Chihuahuan Succulent Desert Scrub	C scrub
Chihuahuan Mixed Salt Desert Scrub	C scrub
Rocky Mountain Cliff and Canyon	Canyon
Sierra Nevada Cliff and Canyon	Canyon
Inter-Mountain Basins Cliff and Canyon	Canyon
Colorado Plateau Mixed Bedrock Canyon and Tableland	Canyon and Mesa
Chihuahuan Stabilized Coppice Dune and Sand Flat Scrub	CC Dune Sand
Great Basin Semi-Desert Chaparral	Chaparral
Mogollon Chaparral	Chaparral
Coahuilan Chaparral	Chaparral
Rocky Mountain Alpine Bedrock and Scree	Cliff and Rock
Mediterranean California Alpine Bedrock and Scree	Cliff and Rock
Western Great Plains Cliff and Outcrop	Cliff and Rock
North American Warm Desert Bedrock Cliff and Outcrop	Cliff and Rock
Recently Mined or Quarried	Cliff and Rock
Colorado Plateau Blackbrush-Mormon-tea Shrubland	CP Shrub
Southern Colorado Plateau Sand Shrubland	CP Shrub
Chihuahuan-Sonoran Desert Bottomland and Swale Grassland	D Grassland
Chihuahuan Sandy Plains Semi-Desert Grassland	D Grassland
Disturbed, Non-specific	Disburbed
Inter-Mountain Basins Active and Stabilized Dune	Dunes
North American Warm Desert Active and Stabilized Dune	Dunes
Western Great Plains Mesquite Woodland and Shrubland	GP Mesquite
Western Great Plains Sandhill Shrubland	GP sand Shrub

SWReGAP Original Vegetation Types	Our Model Vegetation Types
Western Great Plains Foothill and Piedmont Grassland	GPFP Grassland
Chihuahuan Gypsophilous Grassland and Steppe	Gyp Grassland
Inter-Mountain Basins Semi-Desert Grassland	IM Grassland
Inter-Mountain Basins Mat Saltbush Shrubland	IMB Shrub
Inter-Mountain Basins Mixed Salt Desert Scrub	IMB Shrub
Inter-Mountain Basins Semi-Desert Shrub Steppe	IMB Shrub
Inter-Mountain Basins Greasewood Flat	IMB Shrub
Inter-Mountain Basins Wash	IMB Wash
Southern Rocky Mountain Juniper Woodland and Savanna	Juniper Grassland
Inter-Mountain Basins Juniper Savanna	Juniper Grassland
Madrean Juniper Savanna	Juniper Grassland
Inter-Mountain Basins Volcanic Rock and Cinder Land	Lava
North American Warm Desert Volcanic Rockland	Lava
	Layer border
Recently Logged Areas	Logged
Madrean Pine-Oak Forest and Woodland	Madrean Oak
Madrean Encinal	Madrean Oak
Madrean Upper Montane Conifer-Oak Forest and Woodland	Madrean Oak
Rocky Mountain Aspen Forest and Woodland	Mixed Conifer
Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland	Mixed Conifer
Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	Mixed Conifer
Northern Pacific Mesic Subalpine Woodland	Mixed Conifer
Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland	Mixed Conifer
Rocky Mountain Montane Dry-Mesic Mixed Conifer Forest and Woodland	Mixed Conifer
Mediterranean California Dry-Mesic Mixed Conifer Forest and Woodland	Mixed Conifer
Rocky Mountain Montane Mesic Mixed Conifer Forest and Woodland	Mixed Conifer
Inter-Mountain West Aspen-Mixed Conifer Forest and Woodland Complex	Mixed Conifer
Mediterranean California Red Fir Forest and Woodland	Mixed Conifer
Mojave Mid-Elevation Mixed Desert Scrub	Mojave Scrub
Rocky Mountain Alpine Fell-Field	Montane Grass
Rocky Mountain Subalpine Mesic Meadow	Montane Grass
Southern Rocky Mountain Montane-Subalpine Grassland	Montane Grass
Rocky Mountain Alpine-Montane Wet Meadow	Montane Grass

SWReGAP Original Vegetation Types	Our Model Vegetation Types
Temperate Pacific Montane Wet Meadow	Montane Grass
Mediterranean California Subalpine-Montane Fen	Montane Grass
North Pacific Montane Grassland	Montane Grass
Rocky Mountain Bigtooth Maple Ravine Woodland	Mountain Shrub
Rocky Mountain Alpine Dwarf-Shrubland	Mountain Shrub
Rocky Mountain Gambel Oak-Mixed Montane Shrubland	Mountain Shrub
Rocky Mountain Lower Montane-Foothill Shrubland	Mountain Shrub
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland	Mountain Shrub
Central Mixedgrass Prairie	Odd grass
Invasive Perennial Grassland	Odd grass
Invasive Perennial Forbland	Odd grass
Invasive Annual Grassland	Odd grass
Invasive Annual and Biennial Forbland	Odd grass
Open Water	Open Water
Rocky Mountain Lodgepole Pine Forest	Pine forest
Rocky Mountain Ponderosa Pine Woodland	Pine forest
Sierra Nevada Subalpine Lodgepole Pine Forest and Woodland	Pine forest
Mediterranean California Ponderosa-Jeffrey Pine Forest and Woodland	Pine forest
Rocky Mountain Foothill Limber Pine-Juniper Woodland	Pine forest
Southern Rocky Mountain Pinyon-Juniper Woodland	Pinyon Juniper
Colorado Plateau Pinyon-Juniper Woodland	Pinyon Juniper
Great Basin Pinyon-Juniper Woodland	Pinyon Juniper
Colorado Plateau Pinyon-Juniper Shrubland	Pinyon Juniper
Madrean Pinyon-Juniper Woodland	Pinyon Juniper
Recently Chained Pinyon-Juniper Areas	Pinyon Juniper
North American Warm Desert Playa	Playa
North American Arid West Emergent Marsh	Riparian Herb
Western Great Plains Floodplain Herbaceous Wetland	Riparian Herb
Western Great Plains Saline Depression Wetland	Riparian salt
Rocky Mountain Subalpine-Montane Riparian Shrubland	Riparian Shrub
Rocky Mountain Subalpine-Montane Riparian Woodland	Riparian Woodland
Rocky Mountain Lower Montane Riparian Woodland and Shrubland	Riparian Woodland
North American Warm Desert Lower Montane Riparian Woodland and Shrubland	Riparian Woodland
Western Great Plains Riparian Woodland and Shrubland	Riparian

	Woodland
SWReGAP Original Vegetation Types	Our Model Vegetation Types
North American Warm Desert Riparian Woodland and Shrubland	Riparian Woodland
North American Warm Desert Riparian Mesquite Bosque	Riparian Woodland
Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland	Riparian Woodland
Invasive Southwest Riparian Woodland and Shrubland	Riparian Woodland
Sonoran Paloverde-Mixed Cacti Desert Scrub	S Shrub
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	S Shrub
Sonora-Mojave Mixed Salt Desert Scrub	S Shrub
Sonora-Mojave-Baja Semi-Desert Chaparral	S Shrub
Sonoran Mid-Elevation Desert Scrub	S Shrub
Inter-Mountain Basins Big Sagebrush Shrubland	Sagebrush
Great Basin Xeric Mixed Sagebrush Shrubland	Sagebrush
Colorado Plateau Mixed Low Sagebrush Shrubland	Sagebrush
Inter-Mountain Basins Montane Sagebrush Steppe	Sagebrush
Inter-Mountain Basins Big Sagebrush Steppe	Sagebrush
Wyoming Basins Low Sagebrush Shrubland	Sagebrush
Western Great Plains Shortgrass Prairie	SG Prarie
Western Great Plains Sandhill Prairie	SH Prarie
Western Great Plains Tallgrass Prairie	Tallgrass
North American Alpine Ice Field	Tundra
Rocky Mountain Dry Tundra	Tundra
Developed, Open Space - Low Intensity	Urban
Developed, Medium - High Intensity	Urban
North American Warm Desert Wash	WD Wash

APPENDIX II

SPSS Harvest Model Binary Logistic Regression Output

LOGISTIC REGRESSION VARIABLES Class

```

/SELECT=validate EQ 1
/METHOD=FSTEP(LR) TRI480 GAP_4
/CONTRAST (GAP_4)=Indicator
/SAVE=PRED COOK SRESID
/PRINT=GOODFIT
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

```

Logistic Regression

Notes

	Output Created	02-Jun-2010 17:49:27
	Comments	
Input	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PC' (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	2397
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Syntax	LOGISTIC REGRESSION VARIABLES Class /SELECT=validate EQ 1 /METHOD=FSTEP(LR) TRI480 GAP_4 /CONTRAST (GAP_4)=Indicator /SAVE=PRED COOK SRESID /PRINT=GOODFIT /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	0:00:00.515
	Elapsed Time	0:00:00.517
Variables Created or Modified	PRE_1	Predicted probability
	COO_1	Analog of Cook's influence statistics
	SRE_1	Standard residual

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	1684	70.3
	Missing Cases	0	.0
	Total	1684	70.3
Unselected Cases		713	29.7
Total		2397	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
PH	0
R	1

Categorical Variables Codings

		Frequency	Parameter coding					
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Categorical Variables Codings

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		Parameter coding					
		(28)	(29)	(30)	(31)	(32)	(33)
GAP_4	33	.000	.000	.000	.000	.000	.000
	35	1.000	.000	.000	.000	.000	.000
	36	.000	1.000	.000	.000	.000	.000
	37	.000	.000	1.000	.000	.000	.000
	38	.000	.000	.000	1.000	.000	.000
	42	.000	.000	.000	.000	1.000	.000
	44	.000	.000	.000	.000	.000	1.000
	45	.000	.000	.000	.000	.000	.000
	49	.000	.000	.000	.000	.000	.000
	50	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding	
		(34)	(35)
GAP_4	33	.000	.000
	35	.000	.000
	36	.000	.000
	37	.000	.000
	38	.000	.000
	42	.000	.000
	44	.000	.000
	45	1.000	.000
	49	.000	1.000
	50	.000	.000

Block 0: Beginning Block

Classification Table^{d,e}

			Predicted			
			Selected Cases ^a			Unselected Cases ^{b,c}
			Class			Class
			PH	R	Percentage Correct	PH
Observed						
Step 0	Class	PH	977	0	100.0	420

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. Constant is included in the model.

e. The cut value is .500

Classification Table^{d,e}

			Predicted	
			Unselected Cases ^{b,,c}	
			Class	
			R	Percentage Correct
Observed				
Step 0	Class	PH	0	100.0

- a. Selected cases validate EQ 1
- b. Unselected cases validate NE 1
- c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
- d. Constant is included in the model.
- e. The cut value is .500

Classification Table^{d,e}

					Predicted		
					Selected Cases ^a		Unselected Cases ^{b,,c}
					Class		Class
					PH	R	Percentage Correct
Observed							
Step 0	Class	R			707	0	.0
Overall Percentage							58.0

- a. Selected cases validate EQ 1
- b. Unselected cases validate NE 1
- c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
- d. Constant is included in the model.
- e. The cut value is .500

Classification Table^{d,e}

				Predicted	
				Unselected Cases ^{b,,c}	
				Class	
				R	Percentage Correct
Observed					
Step 0	Class	R		0	.0
Overall Percentage					59.0

- a. Selected cases validate EQ 1
- b. Unselected cases validate NE 1
- c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.
- d. Constant is included in the model.
- e. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-.323	.049	42.914	1	.000	.724

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	TRI480	128.563	1	.000
		GAP_4	420.926	35	.000
		GAP_4(1)	13.155	1	.000
		GAP_4(2)	.007	1	.932
		GAP_4(3)	.697	1	.404
		GAP_4(4)	.752	1	.386
		GAP_4(5)	.684	1	.408
		GAP_4(6)	48.530	1	.000
		GAP_4(7)	5.541	1	.019
		GAP_4(8)	.106	1	.745
		GAP_4(9)	1.794	1	.180
		GAP_4(10)	16.702	1	.000
		GAP_4(11)	1.913	1	.167
		GAP_4(12)	2.214	1	.137
		GAP_4(13)	.724	1	.395
		GAP_4(14)	2.767	1	.096
		GAP_4(15)	1.794	1	.180
		GAP_4(16)	2.263	1	.132
		GAP_4(17)	18.104	1	.000
		GAP_4(18)	4.225	1	.040
		GAP_4(19)	2.767	1	.096
		GAP_4(20)	14.128	1	.000
		GAP_4(21)	20.991	1	.000
		GAP_4(22)	4.854	1	.028
		GAP_4(23)	2.767	1	.096
		GAP_4(24)	14.044	1	.000
		GAP_4(25)	18.535	1	.000
		GAP_4(26)	2.883	1	.090
		GAP_4(27)	7.092	1	.008
		GAP_4(28)	4.153	1	.042
		GAP_4(29)	99.496	1	.000
		GAP_4(30)	25.735	1	.000
		GAP_4(31)	.475	1	.491
		GAP_4(32)	6.698	1	.010
GAP_4(33)	1.363	1	.243		

a. Residual Chi-Squares are not computed because of redundancies.

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	GAP_4(34)	110.429	1	.000
		GAP_4(35)	.055	1	.815

a. Residual Chi-Squares are not computed because of redundancies.

Block 1: Method = Forward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	456.703	35	.000
	Block	456.703	35	.000
	Model	456.703	35	.000
Step 2	Step	26.096	1	.000
	Block	482.799	36	.000
	Model	482.799	36	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1834.339 ^a	.238	.320
2	1808.244 ^a	.249	.335

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	7	1.000
2	19.988	8	.010

Contingency Table for Hosmer and Lemeshow Test

		Class = PH		Class = R		
		Observed	Expected	Observed	Expected	Total
Step 1	1	264	264.000	43	43.000	307
	2	154	154.000	39	39.000	193
	3	33	33.000	11	11.000	44
	4	241	241.000	103	103.000	344
	5	119	119.000	82	82.000	201
	6	71	71.000	99	99.000	170
	7	42	42.000	90	90.000	132
	8	37	37.000	139	139.000	176
	9	16	16.000	101	101.000	117

Contingency Table for Hosmer and Lemeshow Test

		Class = PH		Class = R		Total
		Observed	Expected	Observed	Expected	
Step 2	1	143	151.599	25	16.401	168
	2	140	140.266	27	26.734	167
	3	141	135.651	27	32.349	168
	4	135	123.956	33	44.044	168
	5	116	113.046	52	54.954	168
	6	112	106.290	60	65.710	172
	7	68	83.546	100	84.454	168
	8	62	56.473	106	111.527	168
	9	41	39.734	127	128.266	168
	10	19	26.437	150	142.563	169

Classification Table^d

			Predicted			
			Selected Cases ^a			Unselected Cases ^{b,c}
			Class			Class
					Percentage Correct	
			PH	R		PH
Step 1	Class	PH	817	160	83.6	350
		R	283	424	60.0	119
		Overall Percentage			73.7	
Step 2	Class	PH	830	147	85.0	358
		R	288	419	59.3	120
		Overall Percentage			74.2	

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. The cut value is .500

Classification Table^d

Observed			Predicted	
			Unselected Cases ^{b,,c}	
			Class	
			R	Percentage Correct
Step 1	Class	PH	70	83.3
		R	173	59.2
		Overall Percentage		73.5
Step 2	Class	PH	62	85.2
		R	172	58.9
		Overall Percentage		74.4

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GAP_4			311.527	35	.000	
	GAP_4(1)	21.899	28533.052	.000	1	.999	3.240E9
	GAP_4(2)	20.895	28533.052	.000	1	.999	1.187E9
	GAP_4(3)	21.206	28533.052	.000	1	.999	1.620E9
	GAP_4(4)	21.899	28533.052	.000	1	.999	3.240E9
	GAP_4(5)	21.429	28533.052	.000	1	.999	2.025E9
	GAP_4(6)	22.576	28533.052	.000	1	.999	6.379E9
	GAP_4(7)	42.409	34899.910	.000	1	.999	2.617E18
	GAP_4(8)	21.206	28533.052	.000	1	.999	1.620E9
	GAP_4(9)	22.304	28533.052	.000	1	.999	4.860E9
	GAP_4(10)	42.409	30801.915	.000	1	.999	2.617E18
	GAP_4(11)	20.107	28533.052	.000	1	.999	5.400E8
	GAP_4(12)	19.414	28533.052	.000	1	.999	2.700E8
	GAP_4(13)	.003	49291.073	.000	1	1.000	1.003
	GAP_4(14)	42.409	40272.478	.000	1	.999	2.617E18
	GAP_4(15)	22.304	28533.052	.000	1	.999	4.860E9
	GAP_4(16)	21.899	28533.052	.000	1	.999	3.240E9
	GAP_4(17)	42.409	30633.353	.000	1	.999	2.617E18
	GAP_4(18)	19.008	28533.052	.000	1	.999	1.800E8
	GAP_4(19)	42.409	40272.478	.000	1	.999	2.617E18
	GAP_4(20)	21.928	28533.052	.000	1	.999	3.335E9

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GAP_4(21)	21.962	28533.052	.000	1	.999	3.451E9
	GAP_4(22)	21.453	28533.052	.000	1	.999	2.074E9
	GAP_4(23)	42.409	40272.478	.000	1	.999	2.617E18
	GAP_4(24)	19.619	28533.052	.000	1	.999	3.314E8
	GAP_4(25)	19.934	28533.052	.000	1	.999	4.544E8
	GAP_4(26)	20.107	28533.052	.000	1	.999	5.400E8
	GAP_4(27)	19.819	28533.052	.000	1	.999	4.050E8
	GAP_4(28)	42.409	36778.073	.000	1	.999	2.617E18
	GAP_4(29)	19.414	28533.052	.000	1	.999	2.700E8
	GAP_4(30)	20.356	28533.052	.000	1	.999	6.924E8
	GAP_4(31)	20.107	28533.052	.000	1	.999	5.400E8
	GAP_4(32)	19.414	28533.052	.000	1	.999	2.700E8
	GAP_4(33)	20.395	28533.052	.000	1	.999	7.200E8
	GAP_4(34)	22.529	28533.052	.000	1	.999	6.086E9
	GAP_4(35)	21.023	28533.052	.000	1	.999	1.350E9
	Constant	-21.206	28533.052	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 2 ^a	TRI480	.000	.000	20.419	1	.000	1.000
	GAP_4			213.860	35	.000	
	GAP_4(1)	21.844	28402.674	.000	1	.999	3.067E9
	GAP_4(2)	21.040	28402.674	.000	1	.999	1.373E9
	GAP_4(3)	21.127	28402.674	.000	1	.999	1.498E9
	GAP_4(4)	22.019	28402.674	.000	1	.999	3.653E9
	GAP_4(5)	21.616	28402.674	.000	1	.999	2.441E9
	GAP_4(6)	22.540	28402.674	.000	1	.999	6.154E9
	GAP_4(7)	42.332	34793.135	.000	1	.999	2.424E18
	GAP_4(8)	21.352	28402.674	.000	1	.999	1.875E9
	GAP_4(9)	22.277	28402.674	.000	1	.999	4.730E9
	GAP_4(10)	42.322	30681.180	.000	1	.999	2.400E18
	GAP_4(11)	20.547	28402.674	.000	1	.999	8.383E8
	GAP_4(12)	19.583	28402.674	.000	1	.999	3.197E8
	GAP_4(13)	.065	49215.716	.000	1	1.000	1.068
	GAP_4(14)	42.399	40171.974	.000	1	.999	2.593E18
	GAP_4(15)	22.219	28402.674	.000	1	.999	4.461E9
	GAP_4(16)	21.857	28402.674	.000	1	.999	3.107E9
	GAP_4(17)	42.322	30511.951	.000	1	.999	2.400E18
	GAP_4(18)	19.088	28402.674	.000	1	.999	1.948E8
	GAP_4(19)	42.322	40180.210	.000	1	.999	2.399E18
	GAP_4(20)	21.907	28402.674	.000	1	.999	3.267E9
	GAP_4(21)	21.900	28402.674	.000	1	.999	3.245E9
	GAP_4(22)	21.539	28402.674	.000	1	.999	2.260E9
	GAP_4(23)	42.332	40180.175	.000	1	.999	2.423E18
	GAP_4(24)	19.900	28402.674	.000	1	.999	4.389E8
	GAP_4(25)	20.419	28402.674	.000	1	.999	7.373E8
	GAP_4(26)	20.261	28402.674	.000	1	.999	6.301E8
	GAP_4(27)	19.962	28402.674	.000	1	.999	4.670E8
	GAP_4(28)	42.337	36676.628	.000	1	.999	2.435E18
	GAP_4(29)	19.681	28402.674	.000	1	.999	3.528E8
	GAP_4(30)	20.529	28402.674	.000	1	.999	8.230E8
	GAP_4(31)	20.270	28402.674	.000	1	.999	6.354E8
	GAP_4(32)	19.486	28402.674	.000	1	.999	2.902E8
	GAP_4(33)	20.381	28402.674	.000	1	.999	7.102E8
	GAP_4(34)	22.459	28402.674	.000	1	.999	5.675E9
	GAP_4(35)	21.051	28402.674	.000	1	.999	1.387E9
	Constant	-21.118	28402.674	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

b. Variable(s) entered on step 2: TRI480.

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	GAP_4	-1145.521	456.703	35	.000
Step 2	TRI480	-917.170	26.096	1	.000
	GAP_4	-1055.662	303.081	35	.000

Variables not in the Equation

			Score	df	Sig.
Step 1	Variables	TRI480	21.763	1	.000
		Overall Statistics	21.763	1	.000

COMPUTE chgdev=SRE_1 ** 2.

EXECUTE.

* Chart Builder.

GGRAPH

/GRAPHDATASET NAME="graphdataset" VARIABLES=PRE_1 chgdev MISSING=LISTWISE REPORTMISSING=NO

/GRAPHSPEC SOURCE=INLINE.

BEGIN GPL

SOURCE: s=userSource(id("graphdataset"))

DATA: PRE_1=col(source(s), name("PRE_1"))

DATA: chgdev=col(source(s), name("chgdev"))

GUIDE: axis(dim(1), label("Predicted probability"))

GUIDE: axis(dim(2), label("chgdev"))

ELEMENT: point(position(PRE_1*chgdev))

END GPL.

GGraph

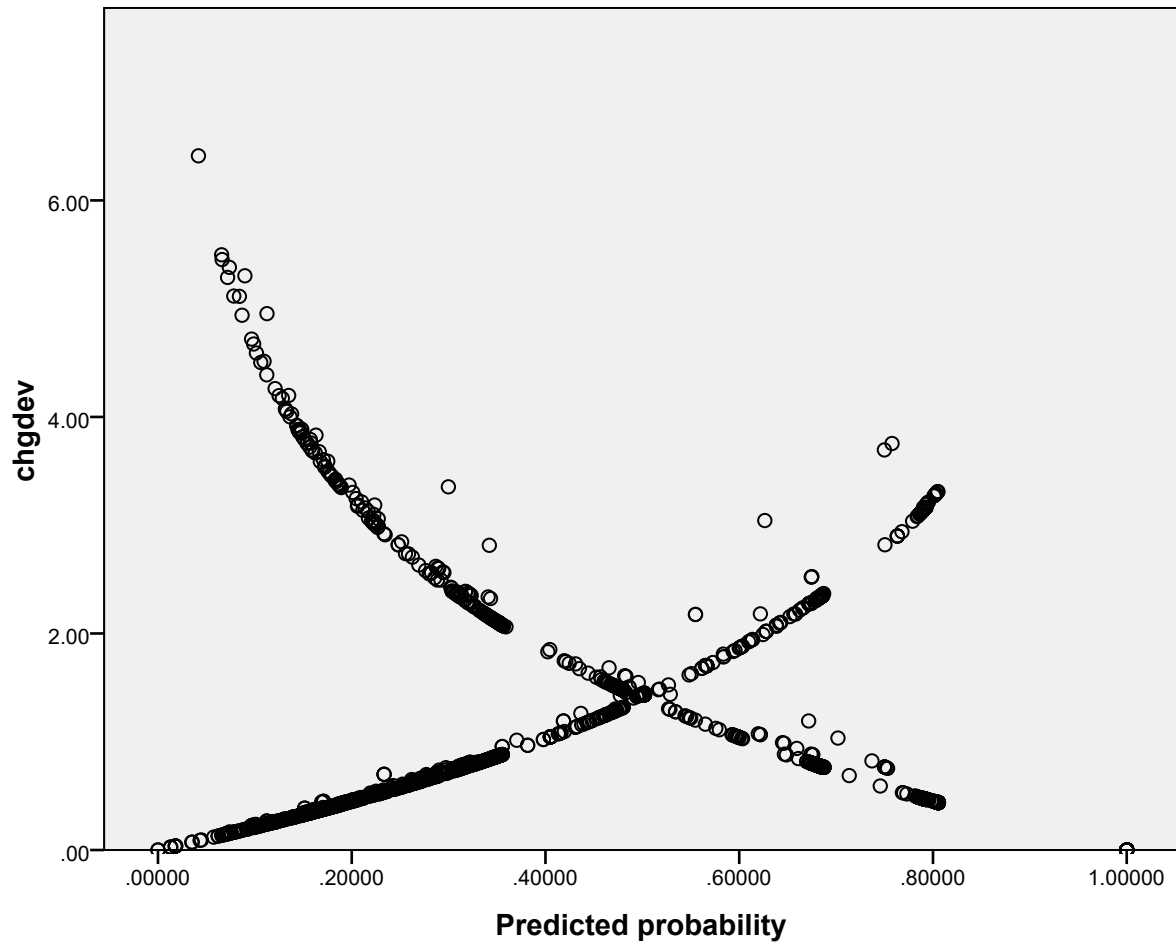
Notes

	Output Created	02-Jun-2010 17:52:24
	Comments	
Input	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PC' (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	2397

Notes

Syntax	<pre>GGRAPH /GRAPHDATASET NAME=" graphdataset" VARIABLES=PRE_1 chgdev MISSING=LISTWISE REPORTMISSING=NO /GRAPHSPEC SOURCE=INLINE. BEGIN GPL SOURCE: s=userSource(id ("graphdataset")) DATA: PRE_1=col(source(s), name("PRE_1")) DATA: chgdev=col(source(s), name("chgdev")) GUIDE: axis(dim(1), label ("Predicted probability")) GUIDE: axis(dim(2), label ("chgdev")) ELEMENT: point(position (PRE_1*chgdev)) END GPL.</pre>				
Resources	<table> <tr> <td>Processor Time</td><td>0:00:00.266</td></tr> <tr> <td>Elapsed Time</td><td>0:00:00.281</td></tr> </table>	Processor Time	0:00:00.266	Elapsed Time	0:00:00.281
Processor Time	0:00:00.266				
Elapsed Time	0:00:00.281				

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NM
DGFhabitatmodel\Data2010\modeldata2b.sav



* Chart Builder.

GGRAPH

```
/GRAPHDATASET NAME="graphdataset" VARIABLES=PRE_1 COO_1 Class MISSING=LISTWISE REPORTMISSING=NO
```

```
/GRAPHSPEC SOURCE=INLINE.
```

BEGIN GPL

```
SOURCE: s=userSource(id("graphdataset"))
```

```
DATA: PRE_1=col(source(s), name("PRE_1"))
```

```
DATA: COO_1=col(source(s), name("COO_1"))
```

```
DATA: Class=col(source(s), name("Class"), unit.category())
```

```
GUIDE: axis(dim(1), label("Predicted probability"))
```

```
GUIDE: axis(dim(2), label("Analog of Cook's influence statistics"))
```

```
GUIDE: legend(aesthetic(aesthetic.color.exterior), label("Class"))
```

```
ELEMENT: point(position(PRE_1*COO_1), color.exterior(Class))
```

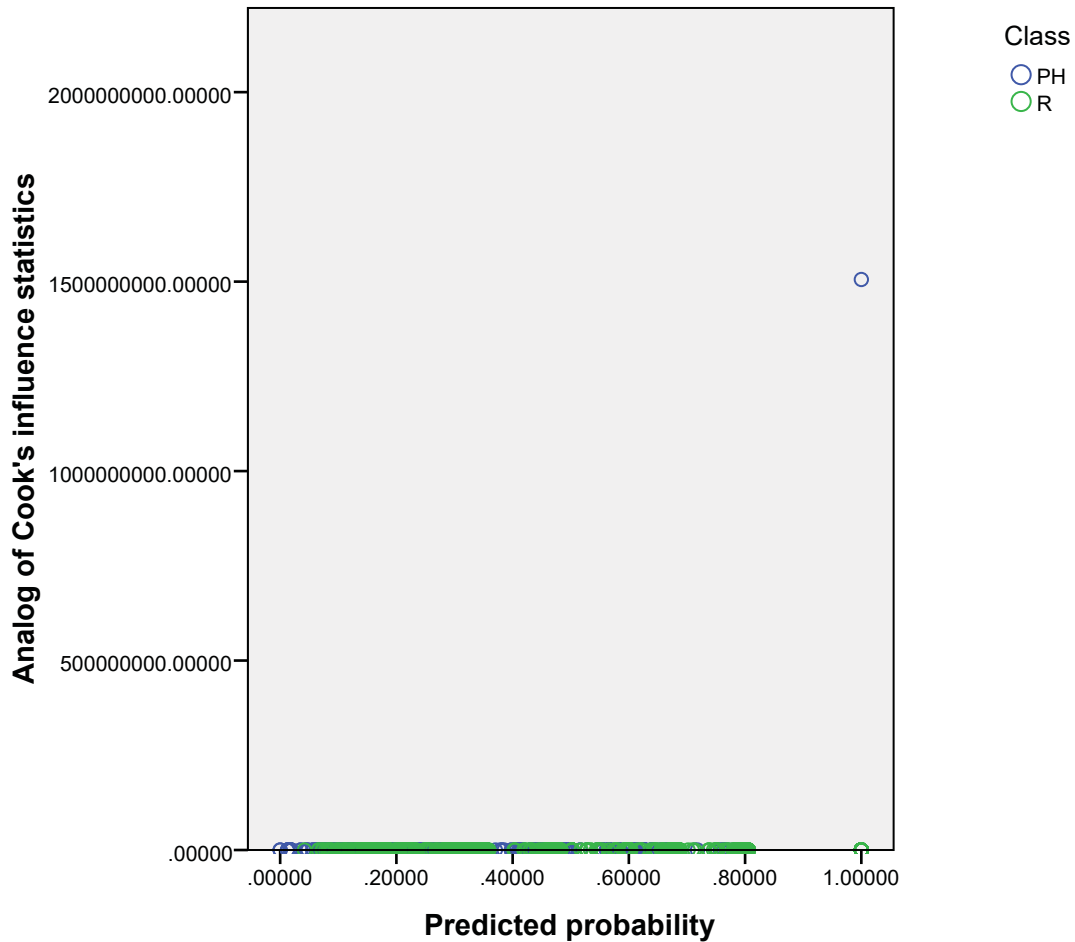
END GPL.

GGraph

Notes

	Output Created	02-Jun-2010 17:54:44
	Comments	
Input	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PC' (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	2397
	Syntax	<pre> GGRAPH /GRAPHDATASET NAME=" graphdataset" VARIABLES=PRE_1 COO_1 Class MISSING=LISTWISE REPORTMISSING=NO /GRAPHSPEC SOURCE=INLINE. BEGIN GPL SOURCE: s=userSource(id ("graphdataset")) DATA: PRE_1=col(source(s), name("PRE_1")) DATA: COO_1=col(source(s), name("COO_1")) DATA: Class=col(source(s), name ("Class"), unit.category()) GUIDE: axis(dim(1), label ("Predicted probability")) GUIDE: axis(dim(2), label("Analog of Cook's influence statistics")) GUIDE: legend(aesthetic (aesthetic.color.exterior), label ("Class")) ELEMENT: point(position (PRE_1*COO_1), color.exterior (Class)) END GPL. </pre>
Resources	Processor Time	0:00:00.312
	Elapsed Time	0:00:00.296

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav



```

SORT CASES BY COO_1 (D).
USE ALL.
COMPUTE filter_$=(Model_ID > 4000 & Class ne 'PC' & COO_1 < 2.0).
VARIABLE LABEL filter_$ "Model_ID > 4000 & Class ne 'PC' & COO_1 < 2.0 (FILTE
R)".
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
LOGISTIC REGRESSION VARIABLES Class
  /SELECT=validate EQ 1
  /METHOD=FSTEP(LR) TRI480 GAP_4
  /CONTRAST (GAP_4)=Indicator
  /SAVE=PRED COOK SRESID
  /PRINT=GOODFIT
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

```

Logistic Regression

Notes

Input	Output Created	02-Jun-2010 17:57:31
	Comments	
	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PC' & COO_1 < 2.0 (FILTER)
	Weight	<none>
	Split File	<none>
Missing Value Handling	N of Rows in Working Data File	2394
	Definition of Missing	User-defined missing values are treated as missing
	Syntax	LOGISTIC REGRESSION VARIABLES Class /SELECT=validate EQ 1 /METHOD=FSTEP(LR) TRI480 GAP_4 /CONTRAST (GAP_4)=Indicator /SAVE=PRED COOK SRESID /PRINT=GOODFIT /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	0:00:00.453
	Elapsed Time	0:00:00.452
Variables Created or Modified	PRE_2	Predicted probability
	COO_2	Analog of Cook's influence statistics
	SRE_2	Standard residual

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	1683	70.3
	Missing Cases	0	.0
	Total	1683	70.3
Unselected Cases		711	29.7
	Total	2394	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
PH	0
R	1

Categorical Variables Codings

		Frequency	Parameter coding					
			(1)	(2)	(3)	(4)	(5)	(6)
GAP_4	1	51	1.000	.000	.000	.000	.000	.000
	2	175	.000	1.000	.000	.000	.000	.000
	3	26	.000	.000	1.000	.000	.000	.000
	4	3	.000	.000	.000	1.000	.000	.000
	5	9	.000	.000	.000	.000	1.000	.000
	7	79	.000	.000	.000	.000	.000	1.000
	8	4	.000	.000	.000	.000	.000	.000
	9	4	.000	.000	.000	.000	.000	.000
	10	4	.000	.000	.000	.000	.000	.000
	11	12	.000	.000	.000	.000	.000	.000
	12	16	.000	.000	.000	.000	.000	.000
	13	7	.000	.000	.000	.000	.000	.000
	15	2	.000	.000	.000	.000	.000	.000
	17	4	.000	.000	.000	.000	.000	.000
	18	9	.000	.000	.000	.000	.000	.000
	19	13	.000	.000	.000	.000	.000	.000
	20	10	.000	.000	.000	.000	.000	.000
	21	2	.000	.000	.000	.000	.000	.000
	22	52	.000	.000	.000	.000	.000	.000
	23	72	.000	.000	.000	.000	.000	.000
	25	57	.000	.000	.000	.000	.000	.000
	26	2	.000	.000	.000	.000	.000	.000
	29	53	.000	.000	.000	.000	.000	.000
	30	105	.000	.000	.000	.000	.000	.000
	32	24	.000	.000	.000	.000	.000	.000
	33	35	.000	.000	.000	.000	.000	.000
	35	3	.000	.000	.000	.000	.000	.000
	36	266	.000	.000	.000	.000	.000	.000
	37	344	.000	.000	.000	.000	.000	.000
	38	4	.000	.000	.000	.000	.000	.000
	42	21	.000	.000	.000	.000	.000	.000
	44	26	.000	.000	.000	.000	.000	.000
	45	176	.000	.000	.000	.000	.000	.000
	49	11	.000	.000	.000	.000	.000	.000
	50	2	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(7)	(8)	(9)	(10)	(11)	(12)	(13)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	1.000	.000	.000	.000	.000	.000	.000
	9	.000	1.000	.000	.000	.000	.000	.000
	10	.000	.000	1.000	.000	.000	.000	.000
	11	.000	.000	.000	1.000	.000	.000	.000
	12	.000	.000	.000	.000	1.000	.000	.000
	13	.000	.000	.000	.000	.000	1.000	.000
	15	.000	.000	.000	.000	.000	.000	1.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	20	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000
	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
42	.000	.000	.000	.000	.000	.000	.000	
44	.000	.000	.000	.000	.000	.000	.000	
45	.000	.000	.000	.000	.000	.000	.000	
49	.000	.000	.000	.000	.000	.000	.000	
50	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

		Parameter coding						
		(14)	(15)	(16)	(17)	(18)	(19)	(20)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	1.000	.000	.000	.000	.000	.000	.000
	18	.000	1.000	.000	.000	.000	.000	.000
	19	.000	.000	1.000	.000	.000	.000	.000
	20	.000	.000	.000	1.000	.000	.000	.000
	21	.000	.000	.000	.000	1.000	.000	.000
	22	.000	.000	.000	.000	.000	1.000	.000
	23	.000	.000	.000	.000	.000	.000	1.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000
	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
42	.000	.000	.000	.000	.000	.000	.000	
44	.000	.000	.000	.000	.000	.000	.000	
45	.000	.000	.000	.000	.000	.000	.000	
49	.000	.000	.000	.000	.000	.000	.000	
50	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

		Parameter coding						
		(21)	(22)	(23)	(24)	(25)	(26)	(27)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	20	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	1.000	.000	.000	.000	.000	.000	.000
	26	.000	1.000	.000	.000	.000	.000	.000
	29	.000	.000	1.000	.000	.000	.000	.000
	30	.000	.000	.000	1.000	.000	.000	.000
	32	.000	.000	.000	.000	1.000	.000	.000
	33	.000	.000	.000	.000	.000	1.000	.000
	35	.000	.000	.000	.000	.000	.000	1.000
	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
42	.000	.000	.000	.000	.000	.000	.000	
44	.000	.000	.000	.000	.000	.000	.000	
45	.000	.000	.000	.000	.000	.000	.000	
49	.000	.000	.000	.000	.000	.000	.000	
50	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

		Parameter coding						
		(28)	(29)	(30)	(31)	(32)	(33)	(34)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	20	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000
	36	1.000	.000	.000	.000	.000	.000	.000
	37	.000	1.000	.000	.000	.000	.000	.000
	38	.000	.000	1.000	.000	.000	.000	.000
42	.000	.000	.000	1.000	.000	.000	.000	
44	.000	.000	.000	.000	1.000	.000	.000	
45	.000	.000	.000	.000	.000	1.000	.000	
49	.000	.000	.000	.000	.000	.000	1.000	
50	.000	.000	.000	.000	.000	.000	.000	

Block 0: Beginning Block

Classification Table^{c,d}

Observed			Predicted			
			Selected Cases ^a			Unselected Cases ^b
			Class			Class
			PH	R	Percentage Correct	PH
Step 0	Class	PH	976	0	100.0	419
		R	707	0	.0	292
		Overall Percentage			58.0	

- a. Selected cases validate EQ 1
b. Unselected cases validate NE 1
c. Constant is included in the model.
d. The cut value is .500

Classification Table^{c,d}

Observed			Predicted	
			Unselected Cases ^b	
			Class	
			R	Percentage Correct
Step 0	Class	PH	0	100.0
		R	0	.0
		Overall Percentage		58.9

- a. Selected cases validate EQ 1
b. Unselected cases validate NE 1
c. Constant is included in the model.
d. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-.322	.049	42.625	1	.000	.724

Variables not in the Equation^a

	Score	df	Sig.
Step 0 Variables TRI480	128.660	1	.000
GAP_4	420.133	34	.000
GAP_4(1)	13.127	1	.000
GAP_4(2)	.006	1	.937
GAP_4(3)	.692	1	.405
GAP_4(4)	.750	1	.386
GAP_4(5)	.682	1	.409

- a. Residual Chi-Squares are not computed because of redundancies.

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	GAP_4(6)	48.459	1	.000
		GAP_4(7)	5.535	1	.019
		GAP_4(8)	.105	1	.746
		GAP_4(9)	1.791	1	.181
		GAP_4(10)	16.685	1	.000
		GAP_4(11)	1.918	1	.166
		GAP_4(12)	2.218	1	.136
		GAP_4(13)	2.764	1	.096
		GAP_4(14)	1.791	1	.181
		GAP_4(15)	2.258	1	.133
		GAP_4(16)	18.086	1	.000
		GAP_4(17)	4.231	1	.040
		GAP_4(18)	2.764	1	.096
		GAP_4(19)	14.098	1	.000
		GAP_4(20)	20.948	1	.000
		GAP_4(21)	4.837	1	.028
		GAP_4(22)	2.764	1	.096
		GAP_4(23)	14.070	1	.000
		GAP_4(24)	18.579	1	.000
		GAP_4(25)	2.891	1	.089
		GAP_4(26)	7.107	1	.008
		GAP_4(27)	4.149	1	.042
		GAP_4(28)	99.670	1	.000
		GAP_4(29)	25.842	1	.000
		GAP_4(30)	.476	1	.490
		GAP_4(31)	6.709	1	.010
		GAP_4(32)	1.369	1	.242
		GAP_4(33)	110.270	1	.000
		GAP_4(34)	.054	1	.816

a. Residual Chi-Squares are not computed because of redundancies.

Block 1: Method = Forward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	455.614	34	.000
	Block	455.614	34	.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Model	455.614	34	.000
Step 2	Step	26.096	1	.000
	Block	481.710	35	.000
	Model	481.710	35	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1834.339 ^a	.237	.319
2	1808.244 ^a	.249	.335

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	8	1.000
2	20.939	8	.007

Contingency Table for Hosmer and Lemeshow Test

		Class = PH		Class = R		Total
		Observed	Expected	Observed	Expected	
Step 1	1	35	35.000	5	5.000	40
	2	228	228.000	38	38.000	266
	3	154	154.000	39	39.000	193
	4	33	33.000	11	11.000	44
	5	241	241.000	103	103.000	344
	6	119	119.000	82	82.000	201
	7	71	71.000	99	99.000	170
	8	42	42.000	90	90.000	132
	9	37	37.000	139	139.000	176
	10	16	16.000	101	101.000	117
Step 2	1	143	151.457	25	16.543	168
	2	143	142.709	27	27.291	170
	3	137	135.459	31	32.541	168
	4	137	123.632	31	44.368	168
	5	115	112.883	53	55.117	168
	6	111	103.671	57	64.329	168
	7	68	83.546	100	84.454	168
	8	62	56.473	106	111.527	168
	9	41	39.734	127	128.266	168
	10	19	26.437	150	142.563	169

Classification Table^c

Observed			Predicted			
			Selected Cases ^a			Unselected Cases
			Class			Class
			PH	R	Percentage Correct	PH
Step 1	Class	PH	816	160	83.6	350
		R	283	424	60.0	119
		Overall Percentage			73.7	
Step 2	Class	PH	829	147	84.9	358
		R	288	419	59.3	120
		Overall Percentage			74.2	

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. The cut value is .500

Classification Table^c

Observed			Predicted	
			Unselected Cases ^b	
			Class	
			R	Percentage Correct
Step 1	Class	PH	69	83.5
		R	173	59.2
		Overall Percentage		73.6
Step 2	Class	PH	61	85.4
		R	172	58.9
		Overall Percentage		74.5

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
GAP_4			311.527	34	.000	
GAP_4(1)	21.899	28538.768	.000	1	.999	3.241E9
GAP_4(2)	20.895	28538.768	.000	1	.999	1.187E9
GAP_4(3)	21.206	28538.768	.000	1	.999	1.620E9
GAP_4(4)	21.899	28538.768	.000	1	.999	3.241E9
GAP_4(5)	21.429	28538.768	.000	1	.999	2.026E9

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GAP_4(6)	22.577	28538.768	.000	1	.999	6.381E9
	GAP_4(7)	42.409	34904.585	.000	1	.999	2.618E18
	GAP_4(8)	21.206	28538.768	.000	1	.999	1.620E9
	GAP_4(9)	22.305	28538.768	.000	1	.999	4.861E9
	GAP_4(10)	42.409	30807.210	.000	1	.999	2.618E18
	GAP_4(11)	20.107	28538.768	.000	1	.999	5.402E8
	GAP_4(12)	19.414	28538.768	.000	1	.999	2.701E8
	GAP_4(13)	42.409	40276.528	.000	1	.999	2.618E18
	GAP_4(14)	22.305	28538.768	.000	1	.999	4.861E9
	GAP_4(15)	21.899	28538.768	.000	1	.999	3.241E9
	GAP_4(16)	42.409	30638.678	.000	1	.999	2.618E18
	GAP_4(17)	19.009	28538.768	.000	1	.999	1.801E8
	GAP_4(18)	42.409	40276.528	.000	1	.999	2.618E18
	GAP_4(19)	21.928	28538.768	.000	1	.999	3.336E9
	GAP_4(20)	21.962	28538.768	.000	1	.999	3.452E9
	GAP_4(21)	21.453	28538.768	.000	1	.999	2.074E9
	GAP_4(22)	42.409	40276.528	.000	1	.999	2.618E18
	GAP_4(23)	19.619	28538.768	.000	1	.999	3.315E8
	GAP_4(24)	19.935	28538.768	.000	1	.999	4.545E8
	GAP_4(25)	20.107	28538.768	.000	1	.999	5.402E8
	GAP_4(26)	19.820	28538.768	.000	1	.999	4.051E8
	GAP_4(27)	42.409	36782.508	.000	1	.999	2.618E18
	GAP_4(28)	19.414	28538.768	.000	1	.999	2.701E8
	GAP_4(29)	20.356	28538.768	.000	1	.999	6.926E8
	GAP_4(30)	20.107	28538.768	.000	1	.999	5.402E8
	GAP_4(31)	19.414	28538.768	.000	1	.999	2.701E8
	GAP_4(32)	20.395	28538.768	.000	1	.999	7.202E8
	GAP_4(33)	22.530	28538.768	.000	1	.999	6.088E9
	GAP_4(34)	21.024	28538.768	.000	1	.999	1.350E9
	Constant	-21.206	28538.768	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 2 ^b	TRI480	.000	.000	20.419	1	.000	1.000
	GAP_4			213.861	34	.000	
	GAP_4(1)	21.844	28397.882	.000	1	.999	3.066E9
	GAP_4(2)	21.040	28397.882	.000	1	.999	1.373E9
	GAP_4(3)	21.127	28397.882	.000	1	.999	1.497E9
	GAP_4(4)	22.019	28397.882	.000	1	.999	3.653E9
	GAP_4(5)	21.616	28397.882	.000	1	.999	2.441E9
	GAP_4(6)	22.540	28397.882	.000	1	.999	6.153E9
	GAP_4(7)	42.332	34789.224	.000	1	.999	2.423E18
	GAP_4(8)	21.352	28397.882	.000	1	.999	1.875E9
	GAP_4(9)	22.277	28397.882	.000	1	.999	4.729E9
	GAP_4(10)	42.322	30676.744	.000	1	.999	2.400E18
	GAP_4(11)	20.547	28397.882	.000	1	.999	8.381E8
	GAP_4(12)	19.583	28397.882	.000	1	.999	3.196E8
	GAP_4(13)	42.399	40168.587	.000	1	.999	2.592E18
	GAP_4(14)	22.218	28397.882	.000	1	.999	4.460E9
	GAP_4(15)	21.857	28397.882	.000	1	.999	3.107E9
	GAP_4(16)	42.322	30507.491	.000	1	.999	2.400E18
	GAP_4(17)	19.088	28397.882	.000	1	.999	1.948E8
	GAP_4(18)	42.321	40176.823	.000	1	.999	2.399E18
	GAP_4(19)	21.907	28397.882	.000	1	.999	3.267E9
	GAP_4(20)	21.900	28397.882	.000	1	.999	3.245E9
	GAP_4(21)	21.538	28397.882	.000	1	.999	2.260E9
	GAP_4(22)	42.331	40176.788	.000	1	.999	2.423E18
	GAP_4(23)	19.900	28397.882	.000	1	.999	4.388E8
	GAP_4(24)	20.418	28397.882	.000	1	.999	7.372E8
	GAP_4(25)	20.261	28397.882	.000	1	.999	6.300E8
	GAP_4(26)	19.962	28397.882	.000	1	.999	4.669E8
	GAP_4(27)	42.336	36672.918	.000	1	.999	2.435E18
	GAP_4(28)	19.681	28397.882	.000	1	.999	3.528E8
	GAP_4(29)	20.528	28397.882	.000	1	.999	8.229E8
	GAP_4(30)	20.270	28397.882	.000	1	.999	6.353E8
	GAP_4(31)	19.486	28397.882	.000	1	.999	2.902E8
	GAP_4(32)	20.381	28397.882	.000	1	.999	7.101E8
	GAP_4(33)	22.459	28397.882	.000	1	.999	5.674E9
	GAP_4(34)	21.050	28397.882	.000	1	.999	1.387E9
	Constant	-21.118	28397.882	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

b. Variable(s) entered on step 2: TRI480.

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	GAP_4	-1144.977	455.614	34	.000
Step 2	TRI480	-917.170	26.096	1	.000
	GAP_4	-1055.070	301.897	34	.000

Variables not in the Equation

			Score	df	Sig.
Step 1	Variables	TRI480	21.763	1	.000
		Overall Statistics	21.763	1	.000

APPENDIX III

SPSS Collar Model Binary Logistic Regression Output

LOGISTIC REGRESSION VARIABLES Class

```

/SELECT=validate EQ 1
/METHOD=FSTEP(LR) TRI480 GAP_4
/CONTRAST (GAP_4)=Indicator
/SAVE=PRED COOK SRESID
/PRINT=GOODFIT
/CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

```

Logistic Regression

Notes

	Output Created	02-Jun-2010 17:32:46
	Comments	
Input	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PH' & COO_1 < 2.0 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11076
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing
	Syntax	LOGISTIC REGRESSION VARIABLES Class /SELECT=validate EQ 1 /METHOD=FSTEP(LR) TRI480 GAP_4 /CONTRAST (GAP_4)=Indicator /SAVE=PRED COOK SRESID /PRINT=GOODFIT /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	0:00:01.578
	Elapsed Time	0:00:01.578
Variables Created or Modified	PRE_1	Predicted probability
	COO_1	Analog of Cook's influence statistics
	SRE_1	Standard residual

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	7684	69.4
	Missing Cases	0	.0
	Total	7684	69.4
	Unselected Cases	3392	30.6
Total		11076	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
PC	0
R	1

Categorical Variables Codings

			Parameter coding					
		Frequency	(1)	(2)	(3)	(4)	(5)	(6)
GAP_4	1	274	1.000	.000	.000	.000	.000	.000
	2	2476	.000	1.000	.000	.000	.000	.000
	3	29	.000	.000	1.000	.000	.000	.000
	4	2	.000	.000	.000	1.000	.000	.000
	5	5	.000	.000	.000	.000	1.000	.000
	7	308	.000	.000	.000	.000	.000	1.000
	8	23	.000	.000	.000	.000	.000	.000
	9	2	.000	.000	.000	.000	.000	.000
	10	3	.000	.000	.000	.000	.000	.000
	11	16	.000	.000	.000	.000	.000	.000
	12	315	.000	.000	.000	.000	.000	.000
	13	206	.000	.000	.000	.000	.000	.000
	15	11	.000	.000	.000	.000	.000	.000
	17	8	.000	.000	.000	.000	.000	.000
	18	6	.000	.000	.000	.000	.000	.000
	19	13	.000	.000	.000	.000	.000	.000
	21	2	.000	.000	.000	.000	.000	.000
	22	191	.000	.000	.000	.000	.000	.000
	23	75	.000	.000	.000	.000	.000	.000
	25	31	.000	.000	.000	.000	.000	.000
	26	2	.000	.000	.000	.000	.000	.000
	29	67	.000	.000	.000	.000	.000	.000
	30	39	.000	.000	.000	.000	.000	.000
	32	5	.000	.000	.000	.000	.000	.000
	33	6	.000	.000	.000	.000	.000	.000
	35	3	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(7)	(8)	(9)	(10)	(11)	(12)	(13)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	1.000	.000	.000	.000	.000	.000	.000
	9	.000	1.000	.000	.000	.000	.000	.000
	10	.000	.000	1.000	.000	.000	.000	.000
	11	.000	.000	.000	1.000	.000	.000	.000
	12	.000	.000	.000	.000	1.000	.000	.000
	13	.000	.000	.000	.000	.000	1.000	.000
	15	.000	.000	.000	.000	.000	.000	1.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(14)	(15)	(16)	(17)	(18)	(19)	(20)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	1.000	.000	.000	.000	.000	.000	.000
	18	.000	1.000	.000	.000	.000	.000	.000
	19	.000	.000	1.000	.000	.000	.000	.000
	21	.000	.000	.000	1.000	.000	.000	.000
	22	.000	.000	.000	.000	1.000	.000	.000
	23	.000	.000	.000	.000	.000	1.000	.000
	25	.000	.000	.000	.000	.000	.000	1.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(21)	(22)	(23)	(24)	(25)	(26)	(27)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
26	1.000	.000	.000	.000	.000	.000	.000	
29	.000	1.000	.000	.000	.000	.000	.000	
30	.000	.000	1.000	.000	.000	.000	.000	
32	.000	.000	.000	1.000	.000	.000	.000	
33	.000	.000	.000	.000	1.000	.000	.000	
35	.000	.000	.000	.000	.000	1.000	.000	

Categorical Variables Codings

		Parameter coding						
		(28)	(29)	(30)	(31)	(32)	(33)	(34)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
26	.000	.000	.000	.000	.000	.000	.000	
29	.000	.000	.000	.000	.000	.000	.000	
30	.000	.000	.000	.000	.000	.000	.000	
32	.000	.000	.000	.000	.000	.000	.000	
33	.000	.000	.000	.000	.000	.000	.000	
35	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

			Parameter coding					
		Frequency	(1)	(2)	(3)	(4)	(5)	(6)
GAP_4	36	231	.000	.000	.000	.000	.000	.000
	37	1562	.000	.000	.000	.000	.000	.000
	38	9	.000	.000	.000	.000	.000	.000
	39	11	.000	.000	.000	.000	.000	.000
	42	1591	.000	.000	.000	.000	.000	.000
	44	8	.000	.000	.000	.000	.000	.000
	45	139	.000	.000	.000	.000	.000	.000
	49	5	.000	.000	.000	.000	.000	.000
	50	10	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(7)	(8)	(9)	(10)	(11)	(12)	(13)
GAP_4	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
	39	.000	.000	.000	.000	.000	.000	.000
	42	.000	.000	.000	.000	.000	.000	.000
	44	.000	.000	.000	.000	.000	.000	.000
	45	.000	.000	.000	.000	.000	.000	.000
	49	.000	.000	.000	.000	.000	.000	.000
	50	.000	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(14)	(15)	(16)	(17)	(18)	(19)	(20)
GAP_4	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
	39	.000	.000	.000	.000	.000	.000	.000
	42	.000	.000	.000	.000	.000	.000	.000
	44	.000	.000	.000	.000	.000	.000	.000
	45	.000	.000	.000	.000	.000	.000	.000
	49	.000	.000	.000	.000	.000	.000	.000
	50	.000	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(21)	(22)	(23)	(24)	(25)	(26)	(27)
GAP_4	36	.000	.000	.000	.000	.000	.000	1.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
	39	.000	.000	.000	.000	.000	.000	.000
	42	.000	.000	.000	.000	.000	.000	.000
	44	.000	.000	.000	.000	.000	.000	.000
	45	.000	.000	.000	.000	.000	.000	.000
	49	.000	.000	.000	.000	.000	.000	.000
	50	.000	.000	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(28)	(29)	(30)	(31)	(32)	(33)	(34)
GAP_4	36	.000	.000	.000	.000	.000	.000	.000
	37	1.000	.000	.000	.000	.000	.000	.000
	38	.000	1.000	.000	.000	.000	.000	.000
	39	.000	.000	1.000	.000	.000	.000	.000
	42	.000	.000	.000	1.000	.000	.000	.000
	44	.000	.000	.000	.000	1.000	.000	.000
	45	.000	.000	.000	.000	.000	1.000	.000
	49	.000	.000	.000	.000	.000	.000	1.000
	50	.000	.000	.000	.000	.000	.000	.000

Block 0: Beginning Block

Classification Table^{d,e}

			Predicted			
			Selected Cases ^a			Unselected Cases ^{b,c}
			Class			Class
			PC	R	Percentage Correct	PC
Observed	Step 0	Class	PC			
			6983	0	100.0	3105
		R	701	0	.0	286
Overall Percentage					90.9	

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. Constant is included in the model.

e. The cut value is .500

Classification Table^{d,e}

Observed			Predicted	
			Unselected Cases ^{b,,c}	
			Class	
			R	Percentage Correct
Step 0	Class	PC	0	100.0
		R	0	.0
		Overall Percentage		91.6

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. Constant is included in the model.

e. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-2.299	.040	3366.256	1	.000	.100

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	TRI480	193.467	1	.000
		GAP_4	3249.293	34	.000
		GAP_4(1)	3.700	1	.054
		GAP_4(2)	165.803	1	.000
		GAP_4(3)	44.762	1	.000
		GAP_4(4)	19.928	1	.000
		GAP_4(5)	49.840	1	.000
		GAP_4(6)	49.696	1	.000
		GAP_4(7)	1.902	1	.168
		GAP_4(8)	19.928	1	.000
		GAP_4(9)	29.896	1	.000
		GAP_4(10)	83.928	1	.000
		GAP_4(11)	24.433	1	.000
		GAP_4(12)	19.048	1	.000
		GAP_4(13)	1.090	1	.296
		GAP_4(14)	7.778	1	.005
		GAP_4(15)	59.816	1	.000
		GAP_4(16)	129.719	1	.000
		GAP_4(17)	19.928	1	.000
		GAP_4(18)	20.004	1	.000

a. Residual Chi-Squares are not computed because of redundancies.

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	GAP_4(19)	288.649	1	.000
		GAP_4(20)	310.057	1	.000
		GAP_4(21)	19.928	1	.000
		GAP_4(22)	.647	1	.421
		GAP_4(23)	105.726	1	.000
		GAP_4(24)	49.840	1	.000
		GAP_4(25)	59.816	1	.000
		GAP_4(26)	29.896	1	.000
		GAP_4(27)	15.423	1	.000
		GAP_4(28)	15.122	1	.000
		GAP_4(29)	.043	1	.836
		GAP_4(30)	1.106	1	.293
		GAP_4(31)	193.180	1	.000
		GAP_4(32)	79.775	1	.000
		GAP_4(33)	1410.155	1	.000
		GAP_4(34)	49.840	1	.000

a. Residual Chi-Squares are not computed because of redundancies.

Block 1: Method = Forward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	1957.578	34	.000
	Block	1957.578	34	.000
	Model	1957.578	34	.000
Step 2	Step	248.424	1	.000
	Block	2206.003	35	.000
	Model	2206.003	35	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	2735.363 ^a	.225	.492
2	2486.939 ^a	.250	.546

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	5	1.000
2	412.175	8	.000

Contingency Table for Hosmer and Lemeshow Test

		Class = PC		Class = R		Total
		Observed	Expected	Observed	Expected	
Step 1	1	21	21.000	0	.000	21
	2	1588	1588.000	3	3.000	1591
	3	516	516.000	5	5.000	521
	4	2402	2402.000	74	74.000	2476
	5	1459	1459.000	103	103.000	1562
	6	684	684.000	122	122.000	806
	7	313	313.000	394	394.000	707
Step 2	1	759	767.789	9	.211	768
	2	766	767.508	3	1.492	769
	3	766	766.038	2	1.962	768
	4	756	762.823	12	5.177	768
	5	760	753.635	7	13.365	767
	6	759	741.582	8	25.418	767
	7	753	729.472	15	38.528	768
	8	695	707.731	74	61.269	769
	9	637	646.101	131	121.899	768
	10	332	340.319	440	431.681	772

Classification Table^d

			Predicted			
			Selected Cases ^a			Unselected Cases ^{b,c}
			Class			Class
			PC	R	Percentage Correct	PC
Step 1	Class	PC	6936	47	99.3	3091
		R	386	315	44.9	171
		Overall Percentage			94.4	
Step 2	Class	PC	6957	26	99.6	3098
		R	379	322	45.9	167
		Overall Percentage			94.7	

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. The cut value is .500

Classification Table^d

			Predicted	
			Unselected Cases ^{b,,c}	
			Class	
			R	Percentage Correct
Step 1	Class	PC	14	99.5
		R	115	40.2
	Overall Percentage			94.5
Step 2	Class	PC	7	99.8
		R	119	41.6
	Overall Percentage			94.9

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. Some of the unselected cases are not classified due to either missing values in the independent variables or categorical variables with values out of the range of the selected cases.

d. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GAP_4			537.205	34	.000	
	GAP_4(1)	19.249	12716.568	.000	1	.999	2.290E8
	GAP_4(2)	17.724	12716.568	.000	1	.999	4.980E7
	GAP_4(3)	20.996	12716.568	.000	1	.999	1.313E9
	GAP_4(4)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(5)	42.406	22018.312	.000	1	.998	2.611E18
	GAP_4(6)	19.845	12716.568	.000	1	.999	4.157E8
	GAP_4(7)	19.645	12716.568	.000	1	.999	3.403E8
	GAP_4(8)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(9)	42.406	26461.344	.000	1	.999	2.611E18
	GAP_4(10)	22.302	12716.568	.000	1	.999	4.849E9
	GAP_4(11)	16.850	12716.568	.000	1	.999	2.079E7
	GAP_4(12)	15.881	12716.568	.000	1	.999	7885299.240
	GAP_4(13)	19.699	12716.568	.000	1	.999	3.592E8
	GAP_4(14)	20.693	12716.568	.000	1	.999	9.699E8
	GAP_4(15)	42.406	20759.502	.000	1	.998	2.611E18
	GAP_4(16)	42.406	16910.896	.000	1	.998	2.611E18
	GAP_4(17)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(18)	19.709	12716.568	.000	1	.999	3.627E8
	GAP_4(19)	21.837	12716.568	.000	1	.999	3.046E9
	GAP_4(20)	42.406	14622.694	.000	1	.998	2.611E18

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GAP_4(21)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(22)	19.205	12716.568	.000	1	.999	2.192E8
	GAP_4(23)	21.461	12716.568	.000	1	.999	2.092E9
	GAP_4(24)	42.406	22018.312	.000	1	.998	2.611E18
	GAP_4(25)	42.406	20759.502	.000	1	.998	2.611E18
	GAP_4(26)	42.406	26461.344	.000	1	.999	2.611E18
	GAP_4(27)	19.578	12716.568	.000	1	.999	3.183E8
	GAP_4(28)	18.553	12716.568	.000	1	.999	1.141E8
	GAP_4(29)	19.124	12716.568	.000	1	.999	2.021E8
	GAP_4(30)	.001	17566.230	.000	1	1.000	1.001
	GAP_4(31)	14.932	12716.568	.000	1	.999	3053815.512
	GAP_4(32)	42.406	19069.490	.000	1	.998	2.611E18
	GAP_4(33)	42.406	13165.607	.000	1	.997	2.611E18
	GAP_4(34)	42.406	22018.312	.000	1	.998	2.611E18
	Constant	-21.204	12716.568	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 2 ^b	TRI480	-.001	.000	132.154	1	.000	.999
	GAP_4			497.452	34	.000	
	GAP_4(1)	19.708	12711.790	.000	1	.999	3.622E8
	GAP_4(2)	18.739	12711.790	.000	1	.999	1.375E8
	GAP_4(3)	20.998	12711.790	.000	1	.999	1.317E9
	GAP_4(4)	43.049	30959.496	.000	1	.999	4.964E18
	GAP_4(5)	43.654	21297.512	.000	1	.998	9.094E18
	GAP_4(6)	20.002	12711.790	.000	1	.999	4.859E8
	GAP_4(7)	19.724	12711.790	.000	1	.999	3.681E8
	GAP_4(8)	46.082	28382.916	.000	1	.999	1.030E20
	GAP_4(9)	42.803	26413.176	.000	1	.999	3.883E18
	GAP_4(10)	22.311	12711.790	.000	1	.999	4.894E9
	GAP_4(11)	18.515	12711.790	.000	1	.999	1.099E8
	GAP_4(12)	17.559	12711.790	.000	1	.999	4.223E7
	GAP_4(13)	19.886	12711.790	.000	1	.999	4.327E8
	GAP_4(14)	20.735	12711.790	.000	1	.999	1.011E9
	GAP_4(15)	42.769	20689.731	.000	1	.998	3.754E18
	GAP_4(16)	42.412	16907.280	.000	1	.998	2.625E18
	GAP_4(17)	42.409	31134.003	.000	1	.999	2.618E18
	GAP_4(18)	20.603	12711.790	.000	1	.999	8.868E8
	GAP_4(19)	22.279	12711.790	.000	1	.999	4.741E9
	GAP_4(20)	46.184	13732.247	.000	1	.997	1.142E20
	GAP_4(21)	42.460	31133.154	.000	1	.999	2.756E18
	GAP_4(22)	21.677	12711.790	.000	1	.999	2.596E9
	GAP_4(23)	25.507	12711.790	.000	1	.998	1.195E11
	GAP_4(24)	43.691	20829.787	.000	1	.998	9.436E18
	GAP_4(25)	44.049	20211.892	.000	1	.998	1.349E19
	GAP_4(26)	42.489	26448.596	.000	1	.999	2.836E18
	GAP_4(27)	21.742	12711.790	.000	1	.999	2.770E9
	GAP_4(28)	19.870	12711.790	.000	1	.999	4.262E8
	GAP_4(29)	19.231	12711.790	.000	1	.999	2.248E8
	GAP_4(30)	1.215	16833.775	.000	1	1.000	3.369
	GAP_4(31)	15.223	12711.790	.000	1	.999	4084781.105
	GAP_4(32)	44.265	17393.544	.000	1	.998	1.675E19
	GAP_4(33)	42.479	13159.203	.000	1	.997	2.807E18
	GAP_4(34)	42.496	21998.765	.000	1	.998	2.856E18
	Constant	-21.202	12711.790	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

b. Variable(s) entered on step 2: TRI480.

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	GAP_4	-2346.471	1957.578	34	.000
Step 2	TRI480	-1367.682	248.424	1	.000
	GAP_4	-2179.597	1872.256	34	.000

Variables not in the Equation

			Score	df	Sig.
Step 1	Variables	TRI480	133.652	1	.000
		Overall Statistics	133.652	1	.000

```

COMPUTE chgdev=SRE_1 ** 2.
EXECUTE.
* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=PRE_1 chgdev MISSING=LISTWISE R
EPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
  SOURCE: s=userSource(id("graphdataset"))
  DATA: PRE_1=col(source(s), name("PRE_1"))
  DATA: chgdev=col(source(s), name("chgdev"))
  GUIDE: axis(dim(1), label("Predicted probability"))
  GUIDE: axis(dim(2), label("chgdev"))
  ELEMENT: point(position(PRE_1*chgdev))
END GPL.

```

GGraph

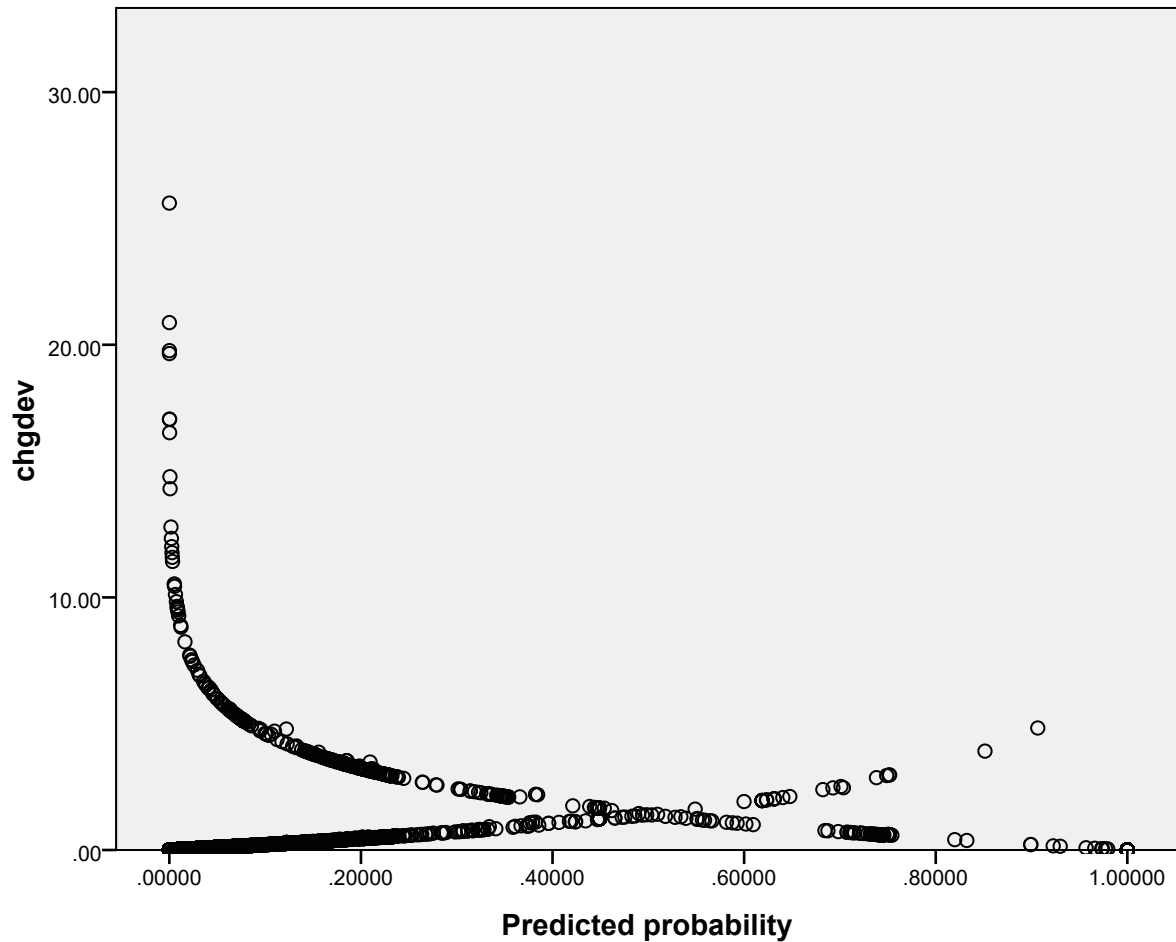
Notes

	Output Created	02-Jun-2010 17:35:29
	Comments	
Input	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PH' & COO_1 < 2.0 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11076

Notes

Syntax	<pre> GGRAPH /GRAPHDATASET NAME=" graphdataset" VARIABLES=PRE_1 chgdev MISSING=LISTWISE REPORTMISSING=NO /GRAPHSPEC SOURCE=INLINE. BEGIN GPL SOURCE: s=userSource(id ("graphdataset")) DATA: PRE_1=col(source(s), name("PRE_1")) DATA: chgdev=col(source(s), name("chgdev")) GUIDE: axis(dim(1), label ("Predicted probability")) GUIDE: axis(dim(2), label ("chgdev")) ELEMENT: point(position (PRE_1*chgdev)) END GPL. </pre>
Resources	
Processor Time	0:00:00.281
Elapsed Time	0:00:00.296

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NM
DGFhabitatmodel\Data2010\modeldata2b.sav



* Chart Builder.

GGRAPH

```
/GRAPHDATASET NAME="graphdataset" VARIABLES=PRE_1 COO_1 Class MISSING=LISTW
ISE REPORTMISSING=NO
```

```
/GRAPHSPEC SOURCE=INLINE.
```

BEGIN GPL

```
SOURCE: s=userSource(id("graphdataset"))
DATA: PRE_1=col(source(s), name("PRE_1"))
DATA: COO_1=col(source(s), name("COO_1"))
DATA: Class=col(source(s), name("Class"), unit.category())
GUIDE: axis(dim(1), label("Predicted probability"))
GUIDE: axis(dim(2), label("Analog of Cook's influence statistics"))
GUIDE: legend(aesthetic(aesthetic.color.exterior), label("Class"))
ELEMENT: point(position(PRE_1*COO_1), color.exterior(Class))
```

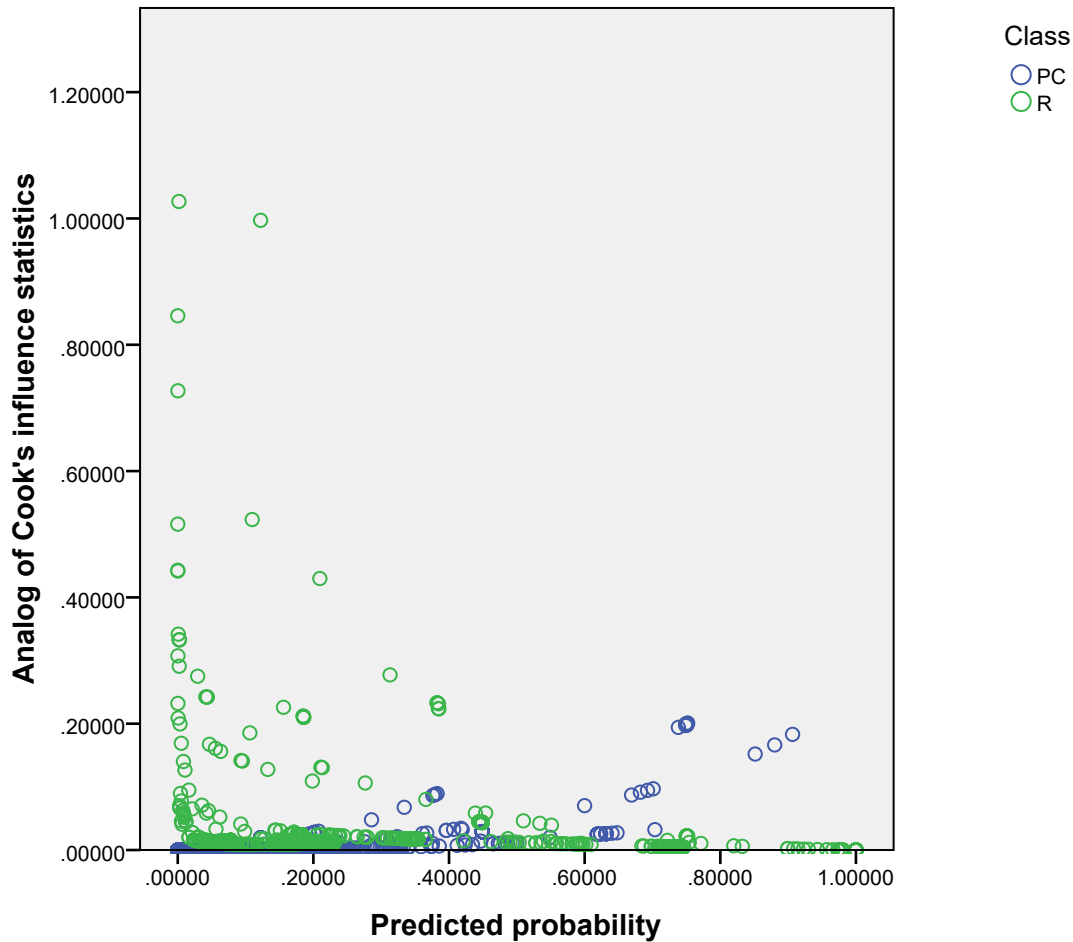
END GPL.

GGraph

Notes

Input	Output Created	02-Jun-2010 17:36:13
	Comments	
	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PH' & COO_1 < 2.0 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	11076
Resources	Syntax	<pre> GGRAPH /GRAPHDATASET NAME=" graphdataset" VARIABLES=PRE_1 COO_1 Class MISSING=LISTWISE REPORTMISSING=NO /GRAPHSPEC SOURCE=INLINE. BEGIN GPL SOURCE: s=userSource(id ("graphdataset")) DATA: PRE_1=col(source(s), name("PRE_1")) DATA: COO_1=col(source(s), name("COO_1")) DATA: Class=col(source(s), name ("Class"), unit.category()) GUIDE: axis(dim(1), label ("Predicted probability")) GUIDE: axis(dim(2), label("Analog of Cook's influence statistics")) GUIDE: legend(aesthetic (aesthetic.color.exterior), label ("Class")) ELEMENT: point(position (PRE_1*COO_1), color.exterior (Class)) END GPL. </pre>
	Processor Time	0:00:00.375
	Elapsed Time	0:00:00.390

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav



```

USE ALL.
COMPUTE filter_$=(Model_ID > 4000 & Class ne 'PH' & COO_1 < 2.0).
VARIABLE LABEL filter_$ "Model_ID > 4000 & Class ne 'PH' & COO_1 < 2.0 (FI
LTER)".
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
LOGISTIC REGRESSION VARIABLES Class
  /SELECT=validate EQ 1
  /METHOD=FSTEP(LR) TRI480 GAP_4
  /CONTRAST (GAP_4)=Indicator
  /SAVE=PRED COOK SRESID
  /PRINT=GOODFIT
  /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).

```


Logistic Regression

Notes

Input	Output Created	02-Jun-2010 17:37:37
	Comments	
	Data	C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav
	Active Dataset	DataSet1
	Filter	Model_ID > 4000 & Class ne 'PH' & COO_1 < 2.0 (FILTER)
	Weight	<none>
	Split File	<none>
Missing Value Handling	N of Rows in Working Data File	11075
	Definition of Missing	User-defined missing values are treated as missing
	Syntax	LOGISTIC REGRESSION VARIABLES Class /SELECT=validate EQ 1 /METHOD=FSSTEP(LR) TRI480 GAP_4 /CONTRAST (GAP_4)=Indicator /SAVE=PRED COOK SRESID /PRINT=GOODFIT /CRITERIA=PIN(0.05) POUT(0.10) ITERATE(20) CUT(0.5).
Resources	Processor Time	0:00:01.547
	Elapsed Time	0:00:01.548
Variables Created or Modified	PRE_2	Predicted probability
	COO_2	Analog of Cook's influence statistics
	SRE_2	Standard residual

[DataSet1] C:\Documents and Settings\tperry\My Documents\My Dropbox\Cougar\NMDGFhabitatmodel\Data2010\modeldata2b.sav

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	7684	69.4
	Missing Cases	0	.0
	Total	7684	69.4
	Unselected Cases	3391	30.6
	Total	11075	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
PC	0
R	1

Categorical Variables Codings

		Parameter coding					
		Frequency	(1)	(2)	(3)	(4)	(5)
GAP_4	1	274	1.000	.000	.000	.000	.000
	2	2476	.000	1.000	.000	.000	.000
	3	29	.000	.000	1.000	.000	.000
	4	2	.000	.000	.000	1.000	.000
	5	5	.000	.000	.000	.000	1.000
	7	308	.000	.000	.000	.000	1.000
	8	23	.000	.000	.000	.000	.000
	9	2	.000	.000	.000	.000	.000
	10	3	.000	.000	.000	.000	.000
	11	16	.000	.000	.000	.000	.000
	12	315	.000	.000	.000	.000	.000
	13	206	.000	.000	.000	.000	.000
	15	11	.000	.000	.000	.000	.000
	17	8	.000	.000	.000	.000	.000
	18	6	.000	.000	.000	.000	.000
	19	13	.000	.000	.000	.000	.000
	21	2	.000	.000	.000	.000	.000
	22	191	.000	.000	.000	.000	.000
	23	75	.000	.000	.000	.000	.000
	25	31	.000	.000	.000	.000	.000
	26	2	.000	.000	.000	.000	.000
	29	67	.000	.000	.000	.000	.000
	30	39	.000	.000	.000	.000	.000
	32	5	.000	.000	.000	.000	.000
	33	6	.000	.000	.000	.000	.000
	35	3	.000	.000	.000	.000	.000
	36	231	.000	.000	.000	.000	.000
	37	1562	.000	.000	.000	.000	.000
	38	9	.000	.000	.000	.000	.000
	39	11	.000	.000	.000	.000	.000
	42	1591	.000	.000	.000	.000	.000
	44	8	.000	.000	.000	.000	.000
	45	139	.000	.000	.000	.000	.000
	49	5	.000	.000	.000	.000	.000
	50	10	.000	.000	.000	.000	.000

Categorical Variables Codings

		Parameter coding						
		(7)	(8)	(9)	(10)	(11)	(12)	(13)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	1.000	.000	.000	.000	.000	.000	.000
	9	.000	1.000	.000	.000	.000	.000	.000
	10	.000	.000	1.000	.000	.000	.000	.000
	11	.000	.000	.000	1.000	.000	.000	.000
	12	.000	.000	.000	.000	1.000	.000	.000
	13	.000	.000	.000	.000	.000	1.000	.000
	15	.000	.000	.000	.000	.000	.000	1.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000
	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
	39	.000	.000	.000	.000	.000	.000	.000
42	.000	.000	.000	.000	.000	.000	.000	
44	.000	.000	.000	.000	.000	.000	.000	
45	.000	.000	.000	.000	.000	.000	.000	
49	.000	.000	.000	.000	.000	.000	.000	
50	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

		Parameter coding						
		(14)	(15)	(16)	(17)	(18)	(19)	(20)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	1.000	.000	.000	.000	.000	.000	.000
	18	.000	1.000	.000	.000	.000	.000	.000
	19	.000	.000	1.000	.000	.000	.000	.000
	21	.000	.000	.000	1.000	.000	.000	.000
	22	.000	.000	.000	.000	1.000	.000	.000
	23	.000	.000	.000	.000	.000	1.000	.000
	25	.000	.000	.000	.000	.000	.000	1.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000
	36	.000	.000	.000	.000	.000	.000	.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
	39	.000	.000	.000	.000	.000	.000	.000
42	.000	.000	.000	.000	.000	.000	.000	
44	.000	.000	.000	.000	.000	.000	.000	
45	.000	.000	.000	.000	.000	.000	.000	
49	.000	.000	.000	.000	.000	.000	.000	
50	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

		Parameter coding						
		(21)	(22)	(23)	(24)	(25)	(26)	(27)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	1.000	.000	.000	.000	.000	.000	.000
	29	.000	1.000	.000	.000	.000	.000	.000
	30	.000	.000	1.000	.000	.000	.000	.000
	32	.000	.000	.000	1.000	.000	.000	.000
	33	.000	.000	.000	.000	1.000	.000	.000
	35	.000	.000	.000	.000	.000	1.000	.000
	36	.000	.000	.000	.000	.000	.000	1.000
	37	.000	.000	.000	.000	.000	.000	.000
	38	.000	.000	.000	.000	.000	.000	.000
	39	.000	.000	.000	.000	.000	.000	.000
42	.000	.000	.000	.000	.000	.000	.000	
44	.000	.000	.000	.000	.000	.000	.000	
45	.000	.000	.000	.000	.000	.000	.000	
49	.000	.000	.000	.000	.000	.000	.000	
50	.000	.000	.000	.000	.000	.000	.000	

Categorical Variables Codings

		Parameter coding						
		(28)	(29)	(30)	(31)	(32)	(33)	(34)
GAP_4	1	.000	.000	.000	.000	.000	.000	.000
	2	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000
	17	.000	.000	.000	.000	.000	.000	.000
	18	.000	.000	.000	.000	.000	.000	.000
	19	.000	.000	.000	.000	.000	.000	.000
	21	.000	.000	.000	.000	.000	.000	.000
	22	.000	.000	.000	.000	.000	.000	.000
	23	.000	.000	.000	.000	.000	.000	.000
	25	.000	.000	.000	.000	.000	.000	.000
	26	.000	.000	.000	.000	.000	.000	.000
	29	.000	.000	.000	.000	.000	.000	.000
	30	.000	.000	.000	.000	.000	.000	.000
	32	.000	.000	.000	.000	.000	.000	.000
	33	.000	.000	.000	.000	.000	.000	.000
	35	.000	.000	.000	.000	.000	.000	.000
	36	.000	.000	.000	.000	.000	.000	.000
	37	1.000	.000	.000	.000	.000	.000	.000
	38	.000	1.000	.000	.000	.000	.000	.000
	39	.000	.000	1.000	.000	.000	.000	.000
42	.000	.000	.000	1.000	.000	.000	.000	
44	.000	.000	.000	.000	1.000	.000	.000	
45	.000	.000	.000	.000	.000	1.000	.000	
49	.000	.000	.000	.000	.000	.000	1.000	
50	.000	.000	.000	.000	.000	.000	.000	

Block 0: Beginning Block

Classification Table^{c,d}

Observed			Predicted			
			Selected Cases ^a			Unselected Cases
			Class			Class
			PC	R	Percentage Correct	PC
Step 0	Class	PC	6983	0	100.0	3105
		R	701	0	.0	286
		Overall Percentage			90.9	

- a. Selected cases validate EQ 1
b. Unselected cases validate NE 1
c. Constant is included in the model.
d. The cut value is .500

Classification Table^{c,d}

Observed			Predicted	
			Unselected Cases ^b	
			Class	
			R	Percentage Correct
Step 0	Class	PC	0	100.0
		R	0	.0
		Overall Percentage		91.6

- a. Selected cases validate EQ 1
b. Unselected cases validate NE 1
c. Constant is included in the model.
d. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-2.299	.040	3366.256	1	.000	.100

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	TRI480	193.467	1	.000
		GAP_4	3249.293	34	.000
		GAP_4(1)	3.700	1	.054
		GAP_4(2)	165.803	1	.000
		GAP_4(3)	44.762	1	.000
		GAP_4(4)	19.928	1	.000
		GAP_4(5)	49.840	1	.000

- a. Residual Chi-Squares are not computed because of redundancies.

Variables not in the Equation^a

			Score	df	Sig.
Step 0	Variables	GAP_4(6)	49.696	1	.000
		GAP_4(7)	1.902	1	.168
		GAP_4(8)	19.928	1	.000
		GAP_4(9)	29.896	1	.000
		GAP_4(10)	83.928	1	.000
		GAP_4(11)	24.433	1	.000
		GAP_4(12)	19.048	1	.000
		GAP_4(13)	1.090	1	.296
		GAP_4(14)	7.778	1	.005
		GAP_4(15)	59.816	1	.000
		GAP_4(16)	129.719	1	.000
		GAP_4(17)	19.928	1	.000
		GAP_4(18)	20.004	1	.000
		GAP_4(19)	288.649	1	.000
		GAP_4(20)	310.057	1	.000
		GAP_4(21)	19.928	1	.000
		GAP_4(22)	.647	1	.421
		GAP_4(23)	105.726	1	.000
		GAP_4(24)	49.840	1	.000
		GAP_4(25)	59.816	1	.000
		GAP_4(26)	29.896	1	.000
		GAP_4(27)	15.423	1	.000
		GAP_4(28)	15.122	1	.000
		GAP_4(29)	.043	1	.836
		GAP_4(30)	1.106	1	.293
		GAP_4(31)	193.180	1	.000
		GAP_4(32)	79.775	1	.000
		GAP_4(33)	1410.155	1	.000
		GAP_4(34)	49.840	1	.000

a. Residual Chi-Squares are not computed because of redundancies.

Block 1: Method = Forward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	1957.578	34	.000
	Block	1957.578	34	.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Model	1957.578	34	.000
Step 2	Step	248.424	1	.000
	Block	2206.003	35	.000
	Model	2206.003	35	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	2735.363 ^a	.225	.492
2	2486.939 ^a	.250	.546

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	5	1.000
2	412.175	8	.000

Contingency Table for Hosmer and Lemeshow Test

		Class = PC		Class = R		Total
		Observed	Expected	Observed	Expected	
Step 1	1	21	21.000	0	.000	21
	2	1588	1588.000	3	3.000	1591
	3	516	516.000	5	5.000	521
	4	2402	2402.000	74	74.000	2476
	5	1459	1459.000	103	103.000	1562
	6	684	684.000	122	122.000	806
	7	313	313.000	394	394.000	707
Step 2	1	759	767.789	9	.211	768
	2	766	767.508	3	1.492	769
	3	766	766.038	2	1.962	768
	4	756	762.823	12	5.177	768
	5	760	753.635	7	13.365	767
	6	759	741.582	8	25.418	767
	7	753	729.472	15	38.528	768
	8	695	707.731	74	61.269	769
	9	637	646.101	131	121.899	768
	10	332	340.319	440	431.681	772

Classification Table^c

Observed			Predicted			
			Selected Cases ^a			Unselected Cases ^b
			Class			Class
			PC	R	Percentage Correct	PC
Step 1	Class	PC	6936	47	99.3	3091
		R	386	315	44.9	171
		Overall Percentage			94.4	
Step 2	Class	PC	6957	26	99.6	3098
		R	379	322	45.9	167
		Overall Percentage			94.7	

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. The cut value is .500

Classification Table^c

Observed			Predicted	
			Unselected Cases ^b	
			Class	
			R	Percentage Correct
Step 1	Class	PC	14	99.5
		R	115	40.2
		Overall Percentage		94.5
Step 2	Class	PC	7	99.8
		R	119	41.6
		Overall Percentage		94.9

a. Selected cases validate EQ 1

b. Unselected cases validate NE 1

c. The cut value is .500

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a						
GAP_4			537.205	34	.000	
GAP_4(1)	19.249	12716.568	.000	1	.999	2.290E8
GAP_4(2)	17.724	12716.568	.000	1	.999	4.980E7
GAP_4(3)	20.996	12716.568	.000	1	.999	1.313E9
GAP_4(4)	42.406	31135.968	.000	1	.999	2.611E18
GAP_4(5)	42.406	22018.312	.000	1	.998	2.611E18

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	GAP_4(6)	19.845	12716.568	.000	1	.999	4.157E8
	GAP_4(7)	19.645	12716.568	.000	1	.999	3.403E8
	GAP_4(8)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(9)	42.406	26461.344	.000	1	.999	2.611E18
	GAP_4(10)	22.302	12716.568	.000	1	.999	4.849E9
	GAP_4(11)	16.850	12716.568	.000	1	.999	2.079E7
	GAP_4(12)	15.881	12716.568	.000	1	.999	7885299.240
	GAP_4(13)	19.699	12716.568	.000	1	.999	3.592E8
	GAP_4(14)	20.693	12716.568	.000	1	.999	9.699E8
	GAP_4(15)	42.406	20759.502	.000	1	.998	2.611E18
	GAP_4(16)	42.406	16910.896	.000	1	.998	2.611E18
	GAP_4(17)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(18)	19.709	12716.568	.000	1	.999	3.627E8
	GAP_4(19)	21.837	12716.568	.000	1	.999	3.046E9
	GAP_4(20)	42.406	14622.694	.000	1	.998	2.611E18
	GAP_4(21)	42.406	31135.968	.000	1	.999	2.611E18
	GAP_4(22)	19.205	12716.568	.000	1	.999	2.192E8
	GAP_4(23)	21.461	12716.568	.000	1	.999	2.092E9
	GAP_4(24)	42.406	22018.312	.000	1	.998	2.611E18
	GAP_4(25)	42.406	20759.502	.000	1	.998	2.611E18
	GAP_4(26)	42.406	26461.344	.000	1	.999	2.611E18
	GAP_4(27)	19.578	12716.568	.000	1	.999	3.183E8
	GAP_4(28)	18.553	12716.568	.000	1	.999	1.141E8
	GAP_4(29)	19.124	12716.568	.000	1	.999	2.021E8
	GAP_4(30)	.001	17566.230	.000	1	1.000	1.001
	GAP_4(31)	14.932	12716.568	.000	1	.999	3053815.512
	GAP_4(32)	42.406	19069.490	.000	1	.998	2.611E18
	GAP_4(33)	42.406	13165.607	.000	1	.997	2.611E18
	GAP_4(34)	42.406	22018.312	.000	1	.998	2.611E18
	Constant	-21.204	12716.568	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 2 ^b	TRI480	-.001	.000	132.154	1	.000	.999
	GAP_4			497.452	34	.000	
	GAP_4(1)	19.708	12711.790	.000	1	.999	3.622E8
	GAP_4(2)	18.739	12711.790	.000	1	.999	1.375E8
	GAP_4(3)	20.998	12711.790	.000	1	.999	1.317E9
	GAP_4(4)	43.049	30959.496	.000	1	.999	4.964E18
	GAP_4(5)	43.654	21297.512	.000	1	.998	9.094E18
	GAP_4(6)	20.002	12711.790	.000	1	.999	4.859E8
	GAP_4(7)	19.724	12711.790	.000	1	.999	3.681E8
	GAP_4(8)	46.082	28382.916	.000	1	.999	1.030E20
	GAP_4(9)	42.803	26413.176	.000	1	.999	3.883E18
	GAP_4(10)	22.311	12711.790	.000	1	.999	4.894E9
	GAP_4(11)	18.515	12711.790	.000	1	.999	1.099E8
	GAP_4(12)	17.559	12711.790	.000	1	.999	4.223E7
	GAP_4(13)	19.886	12711.790	.000	1	.999	4.327E8
	GAP_4(14)	20.735	12711.790	.000	1	.999	1.011E9
	GAP_4(15)	42.769	20689.731	.000	1	.998	3.754E18
	GAP_4(16)	42.412	16907.280	.000	1	.998	2.625E18
	GAP_4(17)	42.409	31134.003	.000	1	.999	2.618E18
	GAP_4(18)	20.603	12711.790	.000	1	.999	8.868E8
	GAP_4(19)	22.279	12711.790	.000	1	.999	4.741E9
	GAP_4(20)	46.184	13732.247	.000	1	.997	1.142E20
	GAP_4(21)	42.460	31133.154	.000	1	.999	2.756E18
	GAP_4(22)	21.677	12711.790	.000	1	.999	2.596E9
	GAP_4(23)	25.507	12711.790	.000	1	.998	1.195E11
	GAP_4(24)	43.691	20829.787	.000	1	.998	9.436E18
	GAP_4(25)	44.049	20211.892	.000	1	.998	1.349E19
	GAP_4(26)	42.489	26448.596	.000	1	.999	2.836E18
	GAP_4(27)	21.742	12711.790	.000	1	.999	2.770E9
	GAP_4(28)	19.870	12711.790	.000	1	.999	4.262E8
	GAP_4(29)	19.231	12711.790	.000	1	.999	2.248E8
	GAP_4(30)	1.215	16833.775	.000	1	1.000	3.369
	GAP_4(31)	15.223	12711.790	.000	1	.999	4084781.105
	GAP_4(32)	44.265	17393.544	.000	1	.998	1.675E19
	GAP_4(33)	42.479	13159.203	.000	1	.997	2.807E18
	GAP_4(34)	42.496	21998.765	.000	1	.998	2.856E18
	Constant	-21.202	12711.790	.000	1	.999	.000

a. Variable(s) entered on step 1: GAP_4.

b. Variable(s) entered on step 2: TRI480.

Model if Term Removed

Variable		Model Log Likelihood	Change in -2 Log Likelihood	df	Sig. of the Change
Step 1	GAP_4	-2346.471	1957.578	34	.000
Step 2	TRI480	-1367.682	248.424	1	.000
	GAP_4	-2179.597	1872.256	34	.000

Variables not in the Equation

			Score	df	Sig.
Step 1	Variables	TRI480	133.652	1	.000
		Overall Statistics	133.652	1	.000

APPENDIX IV

Detailed calculations of mountain lion population size by GMU. H, C, and HC are abbreviations for harvest model, collar model, and harvest and collar models combined, respectively. Numbers in columns with “Excellent”, “Good”, “Moderate”, “Fair”, and “Poor” represent units of 100 sq Km area of that habitat quality category predicted by each model. These are then arranged by row for each GMU. For example, the harvest model predicts 960 sq Km of excellent mountain lion habitat in GMU 2C. The numbers in the columns with “hi” and “lo” represent the total of hi and lo density estimates for each habitat quality category multiplied by the area of that habitat quality category for each GMU. For example, the harvest model predicts between 24 and 36 resident adult mountain lions in GMU 2C.

GMU	Cougar_Zone	Havest lo	Harvest hi	Collar lo	Collar hi	Harvcol lo	Harvcol hi	H Excellent	H Good	H Moderate	H Fair	H Poor	C Excellent	C Good	C Moderate	C Fair	C Poor	HC Excellent	HC Good	HC Moderate	HC Fair	HC Poor
2C	A	24	36	20	29	28	41	9.607	2.106	6.770	0.952	1.476	5.671	7.019	6.623	0.012	1.587	11.366	3.286	5.590	0.335	0.334
7	A	56	83	58	83	75	109	11.874	7.915	62.350	0.946	5.436	5.431	35.608	39.720	0.014	7.747	15.859	31.554	38.711	0.309	2.088
2B	A	34	52	18	26	35	52	16.661	0.823	0.994	0.209	0.649	5.503	6.579	3.426	0.124	3.705	16.889	0.896	0.921	0.076	0.554
2A	A	25	37	20	28	31	46	11.101	1.237	3.531	0.204	4.240	5.013	9.339	3.086	0.014	2.860	14.076	1.931	2.837	0.021	1.447
5A	B	8	12	4	5	8	12	3.315	0.829	1.528	0.042	0.203	0.290	2.691	2.029	0.001	0.905	3.468	0.973	1.384	0.020	0.071
50	B	24	35	11	15	25	36	6.660	8.540	8.407	0.014	0.257	1.897	4.779	6.159	0.031	11.011	6.685	10.286	6.670	0.004	0.233
51	B	45	68	17	24	46	69	21.388	1.929	1.989	0.152	0.229	3.691	5.679	8.845	3.137	4.333	21.648	2.516	1.400	0.036	0.087
5B	B	18	27	7	11	19	28	8.675	0.488	1.101	0.207	0.237	1.762	1.847	5.542	0.579	0.979	8.867	0.947	0.633	0.063	0.198
48	C	8	12	2	3	8	12	3.845	0.187	0.149	0.193	5.421	0.417	0.151	2.321	0.664	6.240	3.847	0.200	0.136	0.193	5.419
49	C	21	32	4	7	21	32	10.516	0.259	0.113	0.005	0.073	0.840	0.423	3.303	5.300	1.099	10.544	0.262	0.110	0.003	0.047
53	C	29	42	6	8	29	43	12.337	3.748	1.441	0.000	0.191	1.031	1.224	3.464	0.072	5.928	12.423	3.780	1.409	0.000	0.105
43	C	30	44	16	22	31	45	10.961	4.299	9.395	0.268	24.340	2.539	10.612	2.462	0.075	33.575	11.023	6.158	7.543	0.245	24.295
46	C	36	54	11	17	36	54	17.714	0.443	1.003	0.068	13.309	2.531	2.024	10.408	2.045	15.729	17.717	0.465	0.982	0.268	13.306
45	C	70	104	19	27	70	105	33.792	1.017	2.805	0.058	1.741	3.546	5.569	8.899	15.020	6.379	33.851	2.017	1.805	0.050	1.690
42	D	33	48	13	18	36	53	8.167	10.252	17.804	3.117	71.809	3.532	4.432	3.739	0.995	98.451	8.531	12.884	17.748	2.748	69.237
47	D	9	14	3	4	9	14	2.190	3.861	3.689	0.558	20.919	0.940	0.465	1.089	0.336	28.387	2.201	3.873	3.689	0.547	20.907
41	D	4	6	4	6	6	8	0.538	0.124	7.189	0.035	39.591	0.550	1.460	4.017	0.005	41.444	0.622	1.566	7.189	0.031	38.068
59	D	5	7	2	3	5	8	0.831	2.113	3.746	0.468	41.564	0.390	0.354	1.718	0.106	46.155	0.845	2.156	3.746	0.455	41.521
9	E	80	119	69	99	96	139	27.819	6.890	45.505	0.271	5.773	12.808	38.553	22.983	0.817	11.096	29.629	32.448	19.315	0.024	4.842
10	E	88	131	50	72	91	136	39.478	4.999	11.485	0.290	1.528	9.136	27.463	18.802	0.601	1.777	40.699	6.582	9.900	0.008	0.590
6B	F	7	10	1	1	7	10	3.395	0.196	0.001	0.000	0.001	0.011	0.005	0.625	1.932	1.020	3.395	0.198	0.000	0.000	0.000
6A	F	47	70	22	31	50	74	20.854	1.989	8.910	0.127	0.619	4.982	7.359	10.153	4.930	5.074	21.447	5.239	5.367	0.056	0.390
6C	F	50	75	23	33	51	76	22.680	2.991	5.429	0.016	2.061	5.871	8.936	5.303	5.272	7.795	22.728	5.308	3.086	0.003	2.052
17	G	53	79	51	74	72	106	22.408	4.174	11.604	0.097	4.304	16.919	14.497	9.144	1.126	0.902	31.733	7.815	2.901	0.001	0.136
13	G	113	168	105	149	138	201	39.644	15.380	50.615	0.301	9.371	20.995	58.600	26.599	0.117	9.000	47.152	39.061	21.757	0.021	7.322
19	H	36	52	131	193	122	180	8.340	12.938	19.225	1.101	68.492	48.979	24.760	26.608	0.068	9.680	50.581	23.461	0.195	0.001	35.858
20	H	18	26	86	126	84	122	1.996	4.018	25.111	0.403	34.723	31.097	23.612	6.471	0.013	5.056	31.326	23.416	0.394	0.007	11.106
36	I	35	52	32	47	47	71	14.927	3.297	5.130	0.200	3.478	11.326	8.205	4.432	0.257	2.802	21.933	3.730	0.527	0.106	0.727
37	I	32	48	36	53	50	75	12.497	2.284	12.173	0.154	15.498	14.131	6.725	3.373	0.409	17.968	23.598	2.040	2.074	0.111	14.783
18	I	42	62	68	99	81	120	13.251	4.668	27.657	0.073	17.658	24.350	19.866	3.939	0.052	15.100	34.370	10.869	6.089	0.005	11.975
38	I	14	21	11	16	20	30	3.249	1.859	15.464	0.152	63.537	4.005	2.261	2.418	0.106	75.470	6.617	1.952	12.249	0.152	63.292
25	J	17	26	96	141	90	131	1.293	1.384	33.431	0.552	45.329	32.876	22.950	23.975	0.003	2.186	33.746	23.133	4.083	0.000	21.026
16B	J	48	72	17	25	48	72	23.816	0.272	0.126	0.133	0.085	4.228	2.051	14.512	3.313	0.328	23.985	0.354	0.009	0.000	0.084
21A	J	24	36	10	15	24	36	11.968	0.118	0.039	0.023	0.005	3.278	1.002	6.311	1.478	0.083	12.013	0.128	0.012	0.000	0.000
16C	J	22	33	8	12	22	33	10.463	0.417	1.438	0.001	0.113	1.029	3.943	7.097	0.201	0.162	10.483	1.381	0.470	0.000	0.098
16A	J	31	46	12	18	32	47	15.105	0.280	1.185	0.038	0.110	2.858	2.496	9.631	1.487	0.245	15.340	1.176	0.102	0.000	0.099
21B	J	42	62	93	137	101	148	12.532	7.517	24.864	0.875	20.286	34.422	25.354	5.143	0.011	1.142	40.239	21.652	2.409	0.008	1.766
16D	J	22	33	9	13	23	34	10.711	0.354	1.042	0.010	0.089	1.798	2.745	6.790	0.708	0.164	10.768	1.025	0.348	0.000	0.064
16E	J	25	37	20	28	28	41	8.690	1.568	14.571	0.003	0.045	2.583	12.014	9.928	0.118	0.233	8.736	8.402	7.737	0.000	0.001
15	J	67	100	28	41	68	102	30.413	3.169	8.741	0.005	0.063	3.560	13.351	22.879	0.807	1.794	30.507	5.494	6.353	0.000	0.037
24	K	56	84	50	74	74	110	25.699	1.265	8.549	0.234	3.432	18.949	9.429	9.490	0.891	0.421	35.324	3.214	0.161	0.000	0.481
22	K	17	26	12	17	20	30	7.955	0.667	1.449	0.072	0.049	4.117	2.265	1.887	1.299	0.239	9.730	0.427	0.015	0.000	0.021
23	K	78	116	115	171	139	208	30.343	4.817	31.500	0.441	8.817	48.887	14.008	11.830	0.249	0.944	66.770	5.877	0.278	0.000	2.994
26	L	29	42	93	138	98	146	5.579	4.642	32.698	0.763	16.059	39.670	12.307	7.175	0.012	0.577	43.637	12.255	0.336	0.000	3.514
27	L	15	22	44	65	47	70	3.165	2.897	14.289	0.530	6.019	19.128	4.742	2.723	0.046	0.261	21.885	4.612	0.179	0.000	0.725
33	M	11	17	57	85	57	85	0.188	0.034	26.963	0.064	31.527	26.727	3.397	1.575	0.000	27.076	26.745	3.402	1.299	0.057	27.273
31	M	35	53	163	241	164	242	0.625	0.030	85.266	0.000	130.064	65.378	27.178	20.060	0.000	103.369	65.400	27.207	21.819	0.000	101.559
32	M	31	46	126	186	129	191	2.785	2.627	56.787	0.164	94.919	53.761	17.500	6.401	0.020	79.600	55.516	17.186	7.047	0.130	77.404
39	M	8	12	7	11	11	17	1.229	1.547	9.900	0.297	55.290	2.274	1.233	3.965	0.041	60.750	3.228	1.708	8.209	0.273	54.845
40	M	13	19	9	14	15	22	1.195	1.757	21.569	0.917	72.265	1.106	0.912	16.025	0.320	79.338	1.897	2.510	21.001	0.826	71.468
52	N	19	28	2	4	19	28	8.759	0.679	1.377	0.000	0.080	0.218	0.185	2.972	3.077	4.444	8.838	0.735	1.321	0.000	0.001
4	N	32	48	6	8	33	49	15.685	0.824	0.660	0.022	0.771	0.958	1.684	3.119	4.889	7.313	15.965	1.162	0.322	0.015	0.498
12	O	70	103	51	71	75	109	21.888	17.099	27.574	0.072	0.573	3.606	41.735	16.589	0.033	5.244	22.465	24.140	20.533	0.000	0.069
56	P	8	12	5	7	8	12	3.524	0.568	1.267	0.609	40.100	1.449	1.686	0.966	0.159	41.809	3.526	0.571	1.267	0.609	40.095
57	P	13	19	4	6	13	19	6.059	0.570	0.482	0.408	3.468	1.658	0.682	0.830	0.174	7.644	6.060	0.570	0.481	0.408	3.467
58	P	12	17	4	5	12	17	2.645	4.746	5.218	0.900	26.116	1.118	1.022	0.977	0.244	36.264	2.708	4.861	5.218	0.794	26.044

SINK POPULATIONS IN CARNIVORE MANAGEMENT: COUGAR DEMOGRAPHY AND IMMIGRATION IN A HUNTED POPULATION

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Abstract. Carnivores are widely hunted for both sport and population control, especially where they conflict with human interests. It is widely believed that sport hunting is effective in reducing carnivore populations and related human–carnivore conflicts, while maintaining viable populations. However, the way in which carnivore populations respond to harvest can vary greatly depending on their social structure, reproductive strategies, and dispersal patterns. For example, hunted cougar (*Puma concolor*) populations have shown a great degree of resiliency. Although hunting cougars on a broad geographic scale ($>2000\text{ km}^2$) has reduced densities, hunting of smaller areas (i.e., game management units, $<1000\text{ km}^2$), could conceivably fail because of increased immigration from adjacent source areas. We monitored a heavily hunted population from 2001 to 2006 to test for the effects of hunting at a small scale ($<1000\text{ km}^2$) and to gauge whether population control was achieved ($\lambda \leq 1.0$) or if hunting losses were negated by increased immigration allowing the population to remain stable or increase ($\lambda \geq 1.0$). The observed growth rate of 1.00 was significantly higher than our predicted survival/fecundity growth rates (using a Leslie matrix) of 0.89 (deterministic) and 0.84 (stochastic), with the difference representing an 11–16% annual immigration rate. We observed no decline in density of the total population or the adult population, but a significant decrease in the average age of independent males. We found that the male component of the population was increasing (observed male population growth rate, $\lambda_{\text{OM}} = 1.09$), masking a decrease in the female component ($\lambda_{\text{OF}} = 0.91$). Our data support the compensatory immigration sink hypothesis; cougar removal in small game management areas ($<1000\text{ km}^2$) increased immigration and recruitment of younger animals from adjacent areas, resulting in little or no reduction in local cougar densities and a shift in population structure toward younger animals. Hunting in high-quality habitats may create an attractive sink, leading to misinterpretation of population trends and masking population declines in the sink and surrounding source areas.

Key words: attractive sink; carnivore; cougar; hunting; immigration; mortality; population dynamics; *Puma concolor*; source–sink; survival.

INTRODUCTION

Carnivores are widely hunted for sport and population control, in part to reduce their effect on prey and to reduce conflicts with humans and their property (Treves and Karanth 2003). It is widely believed that sport hunting can be effective to reduce carnivore populations and related human–carnivore conflicts while maintaining viable populations (Strickland et al. 1994). How carnivore populations respond to harvest can vary greatly depending on their social structure, reproductive strategies, and dispersal patterns (Frank and Woodroffe 2001). Dispersal, in particular, can have significant ramifications (both stabilizing and destabilizing) on

population dynamics (Hanski 2001). Density-dependent dispersal may stabilize populations as immigration and emigration counterbalance between hunted (sink) and nonhunted (source) populations. However, many carnivore species display high levels of intrinsic dispersal of predominantly juvenile males, regardless of natal population density (Chepko-Sade and Halpin 1987, Zimmermann et al. 2005). Such intrinsic dispersal may mimic mortality if emigration is not reciprocated by immigration from neighboring populations, thereby greatly increasing the risk of sudden and dramatic decline in both source and sink populations (Howe et al. 1991). If carnivore management plans do not take into account the specific response of individual species and geographic scale of harvest, they may be more detrimental to the greater population than intended, or ineffective for local population control (Reynolds and Tapper 1996, Frank and Woodroffe 2001, Baker and Harris 2006).

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Cougars (*Puma concolor*) are widely hunted for both sport and population reduction in western North America (Cougar Management Guidelines Working Group 2005:71). Although high harvest during the 18th and 19th centuries caused local extinctions and reduced the species' range (Nowak 1976), some extant populations have sustained annual harvest levels of 15–30% of resident adults (Murphy 1983, Ross and Jalkotzy 1992). Other populations have rebounded quickly following single perturbations (Lindzey et al. 1992, Logan and Sweanor 2001:171) or after harvest rates were lowered (Anderson and Lindzey 2005).

The resiliency of cougar populations is thought to depend on high levels of juvenile immigration from neighboring areas and philopatric recruitment of female offspring (Lindzey et al. 1992, Sweanor et al. 2000). If such replacement or compensatory immigration occurs, localized hunting pressure may actually be ineffective or even counterproductive for population control. Although hunting cougars on a broad geographic scale ($>2000 \text{ km}^2$) can reduce cougar densities (Lambert et al. 2006), hunting of small areas ($<1000 \text{ km}^2$), as currently prescribed by many government agencies to reduce local populations and cougar–human conflicts (e.g., Oregon Department of Fish and Wildlife 2006:39, Wyoming Game and Fish Department 2006:19), may simply create a localized “sink,” a population characterized by its dependence on immigration to maintain stability (Pulliam 1988, Thomas and Kunin 1999). In cougar populations, younger individuals are most often involved in conflicts with humans (Beier 1991). High immigration and recruitment in sinks may shift the population structure toward younger animals, perhaps confounding the stated management goal of reducing cougar–human conflicts.

We tested the following hypotheses relative to the effects of hunting at a small scale ($<1000 \text{ km}^2$) to determine if hunting reduced population size, or simply created a sink with increased immigration. The hunting control (closed-population) hypothesis predicts that emigration and immigration are equal, that cougar harvest is an additive mortality source, and that harvest will reduce cougar densities in a given area. The compensatory immigration (metapopulation source–sink) hypothesis predicts that cougar removal in small areas will result in high levels of immigration and recruitment, resulting in little or no reduction in cougar densities and a shift in population structure toward younger animals. We intensively monitored a hunted cougar population in northeastern Washington State, USA from late 2001 to 2006 to determine overall population growth, male and female population growth, density, and age structure. To determine immigration rate, we compared the growth rates predicted by a standard closed-population survival/fecundity model (calculated from a Leslie matrix) based on radio-collar data, with growth rates determined from the total known/real open population.

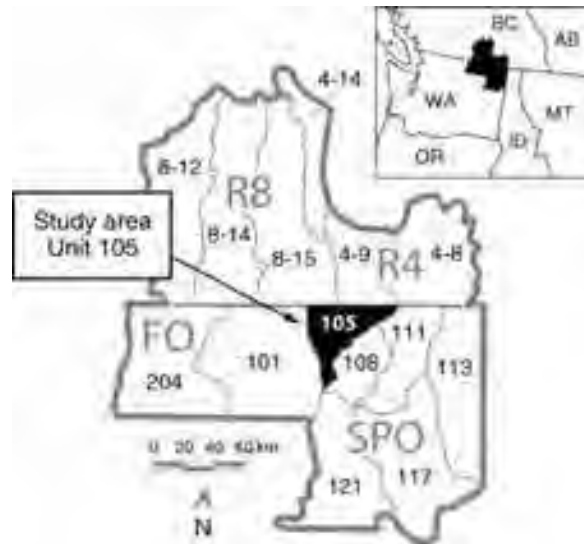


FIG. 1. Study area (Game Management Unit 105) surrounded by the Ferry-Okanogan (FO) and Stevens-Pend Orielle (SPO) cougar management zones of Washington State, USA, and by Region 4 (R4) and Region 8 (R8) of British Columbia (BC), Canada. Cougar management zones and Wildlife Regions are composed of smaller Game Management Units (i.e., 105, 8-15).

STUDY AREA

Our study was conducted in Washington State's Game Management Unit 105, an area of 735 km^2 . This triangular-shaped mix of public (Colville National Forest) and private land is bounded to the north by the Canadian border, and to the east and west by the Columbia and Kettle rivers, respectively (Fig. 1). The area is located in the Northern Rocky Mountain (USA) Ecoprovince (Bailey 1995) and is characterized by rugged terrain with numerous ridges (1500–2000 m) interspersed by low valleys (500 m). Average winter temperature (November–March) is 4.2°C and average summer temperature (April–October) is 23.8°C . Precipitation averages 439 mm/yr , with the majority falling in winter. Between November and March there is an average of 8.6 cm of snow on the ground at an elevation of 500 m .

Mixed evergreen–deciduous forest dominates the landscape. Upland overstory species include Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), ponderosa pine (*Pinus ponderosa*), and subalpine fir (*Abies lasiocarpa*). At the lowest elevations and driest south-facing slopes, grasslands dominate, with some areas cleared and irrigated for alfalfa (*Medicago sativa*) production.

White-tailed deer (*Odocoileus virginianus*) are the most abundant ungulate, but mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and moose (*Alces alces*) are also present. Populations of both species of deer, the main prey for cougars in the area, remained constant during the study period (Cooley et al. 2008). Common

predator species besides cougar include coyote (*Canis latrans*), black bear (*Ursus americanus*), and bobcat (*Lynx rufus*).

In 1996 the use of hounds to hunt cougars was banned in Washington State by public initiative. State wildlife officials tried to maintain hunting pressure on the population by increasing the “bag limit” from one to two animals for non-hound hunters and by making cougar hunting tags more accessible to the public. In 2000, in part because of increased public concern over cougar–human conflicts, Washington reinstated a limited hunt using hounds (Washington Substitute Senate Bill 5001). This “public safety cougar removal” targeted cougars in specific areas with numerous public complaints (Beausoleil et al. 2003). In 2004, an additional limited hound season was introduced in five counties in northern Washington (Washington Substitute Senate Bill 6118). Our study area was included in this new hound season as part of the Stevens-Pend Oreille cougar management zone that had a quota of 38 total cougars or 15 females. During the 2004–2005 season, 33 cougars were harvested before the female quota was reached and the season was closed. Cougar populations and harvest levels, including neighboring portions of British Columbia, have declined across the region since a peak between 1999 and 2001 (Lambert et al. 2006); see Fig. 2.

METHODS

Cougar capture

From December 2001 to April 2006, we attempted to radio-collar all cougars in the study area that were at least one year old, following the method first described by Hornocker (1970). Immobilized cougars were sexed, aged, and examined to gauge general health. Animals were fitted with numbered ear tags and either a VHF (Advanced Telemetry Systems, Isanti, Minnesota, USA) or GPS (Lotek Wireless, Newmarket, Ontario, Canada) radio collar equipped with mortality sensor on a 7-h delay. Age of adults was based on gum recession (Laundre et al. 2000). Young animals that did not show any gum recession were aged based on known birth date, size, pelage, movements, and social status. Cougar dispersal occurs between 10 and 33 months (Sweaner et al. 2000); therefore, animals still traveling with their mothers when first encountered were assigned an age of between 3 and 18 months based on their size. Animals traveling with siblings when collared, and independent animals that continued to disperse after being collared (establishing a home range distinct from their capture location), were assumed to be juveniles in the early stages of dispersal and were ascribed an age of 21 months. Independent animals that established a home range that included their capture location were assumed to have completed dispersal and were classified as subadults, assigned an age of 25 months.

All animals (collared and uncollared) that were shot in the study area as part of the sport harvest or as problem wildlife were sexed and aged during a

compulsory inspection by Washington Department of Fish and Wildlife staff. Hunters were required to provide intact proof of sex (genitalia) on cougar pelts no later than 5 days post harvest. A premolar was extracted as part of this compulsory inspection and was sent to the Matson Lab (Milltown, Montana, USA) for aging by analysis of cementum annuli. We performed a paired *t* test (estimated age of collared cougars by gum recession and by cementum annuli following harvest) to test for agreement between the two aging methods. Simple linear regression was used to examine the trend in age structure (Zar 1999:324).

Based on their age when collared or first observed, as in the case of kittens and juveniles, study animals were placed in one of the following four age categories: kittens (1–12 months), juveniles (13–24 months), subadults (25–36 months), and adults (≥ 37 months). Maximum age was set at 10 years or 120 months (see *Results*).

Survival

Cougars give birth year-round (Murphy et al. 1999:80, Logan and Sweaner 2001:88) and therefore do not fit the normal “birth pulse” method of calculating age-specific annual survival based on a calendar (e.g., January–January), or biological (e.g., June–June) year. We calculated age-specific radio-days and survival for each collared animal, based on a dynamic year determined by their age at capture. For example, an animal collared in January at an age of 21 months contributed four months of radio-days to juvenile (13–24 months) survival and was assumed to become a subadult (25–36 months) in May, becoming an adult (37–48 months) the following May, and so on.

Annual age-specific survival rates were calculated based on daily survival rates (Heisey and Fuller 1985) by grouping all animals in each age category across the entire study period (December 2001 to August 2006). Radio-days of adult males were grouped from adult 4 years to adult 10 years, whereas female adult survival was divided into two categories, adult 4–5 years and adult 6+ years. This grouping was based on mortality sources and was used to reduce variance within groups. In a hunted population, males have an equal probability of mortality across their adult life (i.e., a 3-year-old male is as large, and therefore as desirable a trophy, as an 8-year-old male). Females, on the other hand, experience mortality causes beyond hunting that vary with age and reproductive status. Females with kittens suffer from intraspecific mortality in defense of their kittens and may sustain higher natural mortality rates as they mature (Logan and Sweaner 2001:129, Stoner et al. 2006). We used one-tailed, known-variance *z* tests to test if female survival was significantly higher than male survival and mortality rates.

No kittens were radio-collared during our study. Therefore kitten survival was based on the total number of kittens that survived divided by the total number born

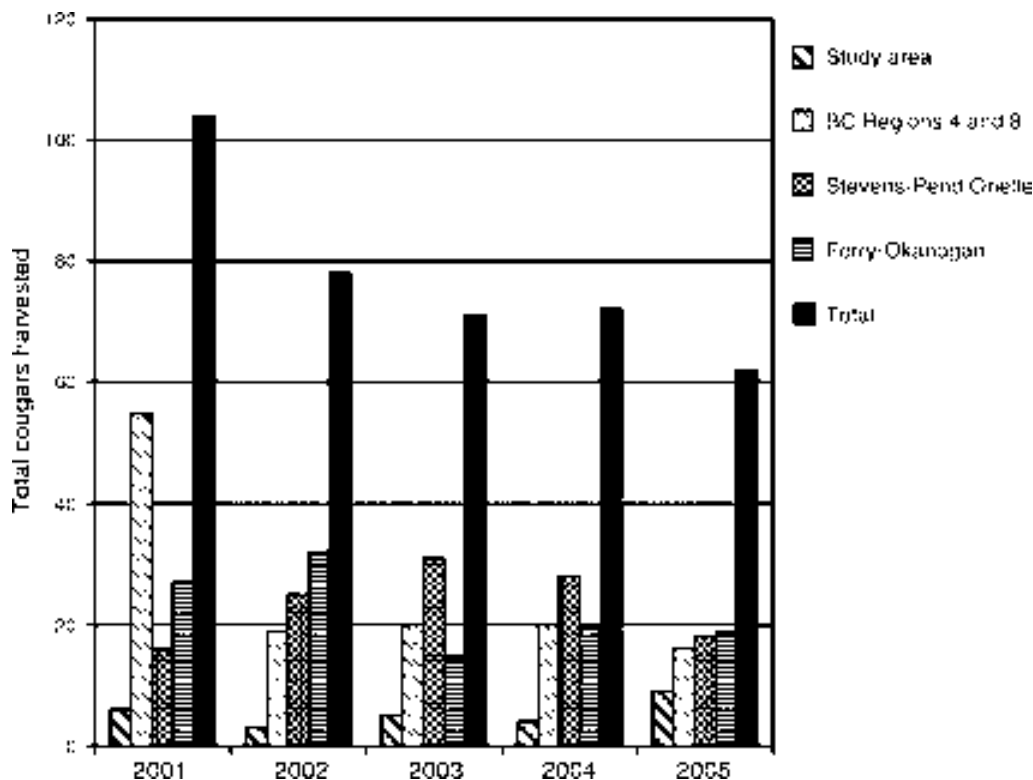


FIG. 2. Total cougar harvest (all ages and both sexes) for the years 2001–2005 in the study area and neighboring region, including Washington State's Ferry-Okanogan and Stevens-Pend Orielle Cougar Management Units and portions of British Columbia's Regions 4 and 8 (see also Fig. 1).

each year. A low estimate was based solely on den visits where the number of kittens born was known. Their survival rates were based on tracks observed traveling with collared females within one year of birth. This first estimate was considered to be biased low because of the small sample obtained ($n = 12$ kittens from five dens). The high estimate was based on kittens ≤ 1 year old observed traveling with collared females ($n = 19$ kittens). This second estimate is considered biased upward because the actual number of kittens born was not known and animals that died within 3–6 months of birth (before being detected) would not have been documented. We calculated the mean of the low and high estimates to obtain what we believe to be the least biased estimate of kitten survival.

Maternity and fecundity

Maternity (mean litter size per female per year) was the mean number of kittens observed, through both den visits and tracking, divided by the total number of females observed that year (Case 2000). Fecundity rates were calculated using the average maternity rates and average adult female survival (>24 months) $F = S_F \times M_{x+1}$ (the number of females that survive in year x multiplied by their mean maternity rate the following year) (Ebert 1999).

Deterministic and stochastic growth rates

We constructed a survival/fecundity dual-sex Leslie matrix (Leslie 1945) in RAMAS GIS (Akçakaya 2002) using the calculated survival and fecundity parameters. This closed-population model assumes that immigration and emigration balance and do not affect growth rate. Females were assumed to first breed as subadults (>24 months), and fecundity was kept constant for females aged 25 months and older (Anderson 1983). We used an equal sex ratio in kittens (Logan and Sweanor 2001:69) and all animals were assumed to die before reaching age class 11 years. Beier (1996) believed that cougars become senescent at age 12 and Lambert et al. (2006) also used this age in their cougar dual-sex matrix. Furthermore, in a heavily hunted population in Wyoming, Logan et al. (1986) found few cougars ≥ 7 years old and we found no adults >9 years old in our study area (see *Results*). Deterministic population growth rate (λ_D) was derived from the Leslie matrix.

To calculate a stochastic growth rate, we used annual environmental variation in population parameters (standard deviation of survival and fecundity). Rates were calculated for each year of the study based on an August–August year. Because of small sample sizes for each sex and age class (not all age classes were present in each year), standard deviations of survival rates were calculated by pooling all age classes for each sex in each

TABLE 1. Radio-days, total mortality, and survival rate (mean \pm SD) by sex and age class for 34 radio-collared cougars (*Puma concolor*) in northeast Washington State, USA, 2002–2006.

Age class	Females			Males		
	No. radio-days	No. dead	Survival rate	No. radio-days	No. dead	Survival rate
Juvenile (13–24 months)	698	1	0.5926 \pm 0.31	785	1	0.6280 \pm 0.29
Subadult (25–36 months)	2039	1	0.8360 \pm 0.15	1083	2	0.5093 \pm 0.24
Male adult 4+ (37–108 months)				1018	3	0.3405 \pm 0.21
Female adult 4–6 (37–60 months)	3530	3	0.7332 \pm 0.13			
Female adult 6+ (61–108 months)	1883	2	0.6785 \pm 0.19			
Total (all ages)	8150	7	0.7308 \pm 0.09	2886	6	0.4678 \pm 0.15

year. Annual variation in survival, and therefore fecundity, was assumed to affect each age class equally.

An average stochastic growth rate was obtained by running 300 four-year (three-transition) population trials based on the same population parameters used in the deterministic model, but with annual environmental and demographic variation represented in a standard deviation matrix (Akçakaya 2002).

Observed growth rate

We back-calculated the life span of all cougars known to have spent time in the study area from August 2001 to August 2005 using methods described by Logan and Sweeney (2001:66) and Stoner et al. (2006). This form of census includes all population constituents, including immigrants.

Males and females were backdated differently based on their distinct dispersal patterns; males disperse a long distance from their natal home ranges, whereas females display much shorter dispersal distances, often establishing philopatric home ranges within or adjacent to their mother's range (Sweeney et al. 2000, Logan and Sweeney 2001:236, Stoner et al. 2006). Males were assumed to have immigrated into the study area at 21 months of age. Therefore, independent males that were older than 21 months when first encountered were assumed to have been present in the study area from 21 months of age. Independent females older than 21 months were assumed to have been born in the study area or to have resided in it since August 2001, whichever came first. Kittens were assumed to be present at one month of age. Juveniles and kittens traveling with adult females that were not decisively sexed or collared were divided equally between sexes (Logan and Sweeney 2001:69).

Independent animals that were treed but not collared or only had their tracks observed were not included in the population estimate because of the risk of double-counting individuals. For example, an animal that was treed but never marked may have been later harvested or captured in the study area and therefore included in the population estimate twice. This method therefore yields a minimum population estimate.

The observed population growth rate (λ_O) and sex-specific female and male growth rates (λ_F and λ_M) were determined based on the total number of cougars (adults

and kittens) each year using the formula $\lambda_x = (n_t/n_0)^{1/t}$, where λ_x is the annual finite growth rate, n_0 is the starting population, n_t is the final population, and t is the number of transitions between the start and end of the population projection (Case 2000:3).

Comparison of population growth rates

A one-tailed, one-sample t test was used to test if deterministic (λ_D) and stochastic (λ_S) growth rates were lower than the average four-year observed (λ_O) growth rate (Zar 1999:96). Immigration rate (i) was estimated by comparing the survival/fecundity model growth rates to the observed/real growth rate using the equations $i = \lambda_O - \lambda_D$ and $i = \lambda_O - \lambda_S$ (Peery et al. 2006).

Population density

We calculated density based on the total number of cougars present in the study area over the course of each year (Ross and Jalkotzy 1992, Spreadbury et al. 1996). This method may not be extrapolated to areas outside the study area, but provides a consistent measure of density among years. Simple linear regression was used to test for significant changes in density over the study period (Zar 1999:324).

RESULTS

Cougar capture

Seventy-nine animals were observed in the study area between August 2001 and August 2005. We collared 34 cougars: 19 juveniles (12 males, seven females), four subadults (two males, two females), and 11 adults (two males, nine females); see Table 1. Nineteen uncollared cougars were shot in the study area: eight females (two juveniles, three subadults, and three adults) and 11 males (two juveniles, five subadults, and four adults). Twenty-four kittens (six males, nine females, and nine unknowns) and two juveniles (one male and one female) were observed traveling with collared females but were never collared. Age determined by gum recession was not significantly different than age determined by cementum annuli in 14 samples for which both methods were used on a single animal ($t = 0.39$, $df = 13$, $P = 0.70$).

Survival and mortality

Hunting was the main cause of mortality within the population, accounting for nine of 13 deaths of study

TABLE 2. Sources and rates of mortality (mean \pm SD) and number of dead animals (in parentheses) by sex and age class for 34 radio-collared cougars in northeast Washington, 2001–2006.

Sex and age class	Mortality source		
	Depredation	Hunting	Natural
Female			
Juvenile (12–24 months)			0.4074 \pm 0.31 (1)
Subadult (25–36 months)		0.1639 \pm 0.15 (1)	
Adult 4–6 (37–60 months)		0.1778 \pm 0.11 (2)	0.0889 \pm 0.08 (1)
Adult 6+ (61–120 months)		0.1607 \pm 0.14 (1)	0.1607 \pm 0.14 (1)
Female total		0.1538 \pm 0.07 (4)	0.1153 \pm 0.06 (3)
Male			
Juvenile (12–24 months)		0.3720 \pm 0.29 (1)	
Subadult (25–36 months)		0.4906 \pm 0.24 (2)	
Adult 4+ (37–120 months)	0.2198 \pm 0.19 (1)	0.4396 \pm 0.23 (2)	
Male total	0.0887 \pm 0.08 (1)	0.4434 \pm 0.14 (5)	
Population total	0.0268 \pm 0.02 (1)	0.2420 \pm 0.07 (9)	0.0806 \pm 0.04 (3)

animals (hunting mortality rate = 0.24; Table 2). Three cougars died of natural causes (natural mortality rate = 0.08), and one adult was killed in a depredation hunt when he was found to be killing domestic sheep (annual depredation mortality rate = 0.02). Four males emigrated and were censored to their last known date in the study area. Three females either shed their collars or went missing after being collared; two adults died during capture and were censored from the data.

Thirty-one cougars were first encountered as kittens (18 were assumed or known to survive to dispersal). Combining high (0.74) and low (0.44) survival estimates for each year produced an annual kitten survival rate of 0.59 ± 0.21 (mean \pm SD). When age classes were pooled for each sex, females had a higher probability of survival than males ($S_F = 0.73$ vs. $S_M = 0.47$, $Z = 1.55$; $df = 1$, $P = 0.06$), mostly the result of higher hunting mortality (female hunting mortality rate = 0.15 vs. male hunting mortality rate = 0.44, $Z = 1.79$; $df = 1$, $P = 0.04$) (Tables 1 and 2).

Maternity and fecundity

Mean maternity was 1.20 kittens per female per year. Annual survival of reproducing-aged females (25+ months) was 0.74 ± 0.09 (mean \pm SD). These combined rates create an annual fecundity rate of 0.45 ± 0.35 for each sex of kitten.

Population growth rates

The deterministic annual growth rate (λ_D) based on our survival and fecundity model was 0.89. The stochastic annual growth rate (λ_S) including the standard deviations of survival and fecundity was 0.84 ± 0.21 (mean \pm SD). The observed growth rate (λ_O) based on the actual number of cougars in the study area was 1.00 ± 0.07 . Both of our modeled growth rates were significantly lower than the observed rate (for λ_D , $t = 2.42$, $df = 2$, $P = 0.07$; for λ_S , $t = 3.68$, $df = 2$, $P = 0.03$).

The observed male component of the population grew at 9% annually, ($\lambda_{OM} = 1.09$), whereas the observed

female component declined at the same rate ($\lambda_{OF} = 0.91$). The observed female growth rate was very similar to the population's deterministic annual growth rate ($\lambda_D = 0.89$).

Population density

Total cougar density averaged 5.03 animals/100 km² and did not change significantly over the study period (see Fig. 3; $F = 0.06$, $P = 0.82$, $R^2 = 0.03$; for all regressions, MS regression $df = 1$; MS residual $df = 2$). Density of adult (>24 months) males appeared to increase, although not significantly, from five individuals in 2001 or 0.68/100 km² to nine individuals in 2005 or 1.22/100 km² ($F = 1.66$, $P = 0.33$, $R^2 = 0.45$), while adult female density remained constant between 13 individuals or 1.77/100 km² and 10 individuals or 1.36/100 km² ($F = 0.71$, $P = 0.49$, $R^2 = 0.26$). The total adult density (males and females >24 months) also remained constant ranging from 17 individuals or 2.32/100 km² in 2001–2002 to 19 individuals or 2.58/100 km² in 2004–2005 ($F = 1.11$, $P = 0.40$, $R^2 = 0.36$).

Age structure

The mean age of the total population was 26 months, adult males 41 months, and adult females 46 months. The average age of independent adult males (>24 months) declined significantly from 47.8 months in 2001 to 36 months in 2005 (see Fig. 4; $F = 37.81$, $P = 0.02$, $R^2 = 0.95$; for all regressions, MS regression $df = 1$; MS residual $df = 2$). The average age of independent females increased, although not significantly, from 42.5 to 54.3 months over the study period ($F = 7.99$, $P = 0.11$, $R^2 = 0.80$).

DISCUSSION

Our closed population survival/fecundity models predicted a rapidly declining cougar population within the study area ($\lambda_D = 0.89$, $\lambda_S = 0.84$), whereas the observed/real population remained stable ($\lambda_O = 1.00$). The real growth rate of 1.00 was significantly higher

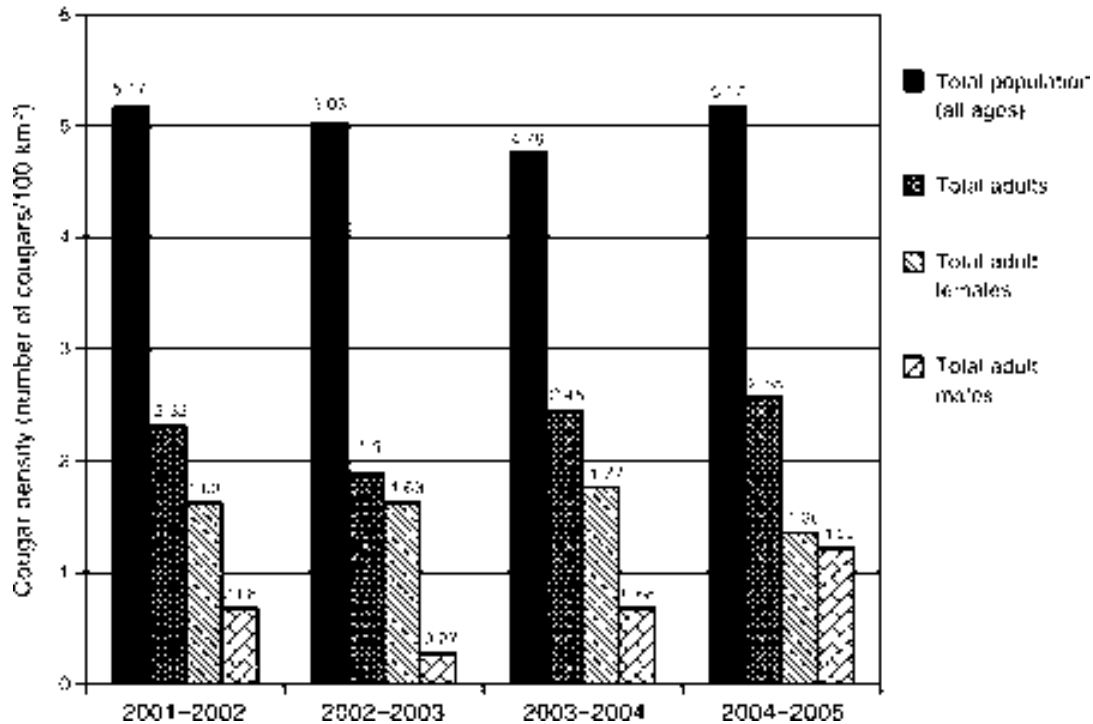


FIG. 3. Total and adult cougar (>24 months old) densities (density values given above bars) within the study area in northeastern Washington State, August to August 2001–2005.

than both the modeled deterministic growth rate λ_D and the stochastic growth rate λ_S , the difference representing an 11–16% annual immigration rate. Immigration was also evidenced by no decline in the total or adult population densities, a shift toward males in the adult population (the adult male component of the population was increasing at 9% per year while the female component was declining), and a significant decrease in the average age of independent males. Our results reject the closed-population hunting control hypothesis and support the open-population compensatory/sink immigration hypothesis, which holds that cougar removal in small areas (<1000 km²) will produce high levels of immigration, resulting in little or no reduction in cougar density and a shift in population structure toward younger animals.

The high immigration rates (11–16%), and the disparate growth rates of the male and female components of the population (0.91 female and 1.09 male) suggest that our study area is acting as a sink for the surrounding area. Without immigration of a large number of mostly male cougars, the population would be declining close to the rate predicted by our population models. Immigration into our study area is occurring despite declines in the surrounding area (Fig. 2), due to the intrinsic nature of dispersal in cougar populations.

How far a dispersing animal will travel before establishing a home range is reliant on the quality of

habitat and the number of available mates (Waser 1996:289). Carnivore densities are positively correlated with prey biomass (Hanby et al. 1995, Carbone and Gittleman 2002). High levels of prey availability will cause an increase in the presence of transient or immigrant animals, and may also increase reproduction and survival of neonates and juveniles from within the population (Fuller and Sievert 2001:170). Although male cougars disperse long distances to avoid inbreeding, females disperse to avoid intraspecific competition (Logan and Sweanor 2001:242). As a result, males disperse, on average, twice the distance of females, independent of natal home range density (intrinsic dispersal). High prey availability may be resulting in high immigration of transient animals. We believe that both males and females are immigrating into the study area, although males immigrate on a more constant annual basis, as reflected in the increasing ratio of males to females in the adult population. Data from collared animals suggest that immigrant females have a higher survival rate than males and thus are propagated through the population, whereas males are hunted as juveniles and subadults (Table 2).

Hunting pressure that is not evenly distributed across the landscape has been shown to induce source-sink dynamics in carnivore populations (Doak 1995, Slough and Mowat 1996, Novaro et al. 2005). Hunting is a form of habitat degradation that cannot be perceived by dispersing animals, leading to what Delibes et al. (2001)

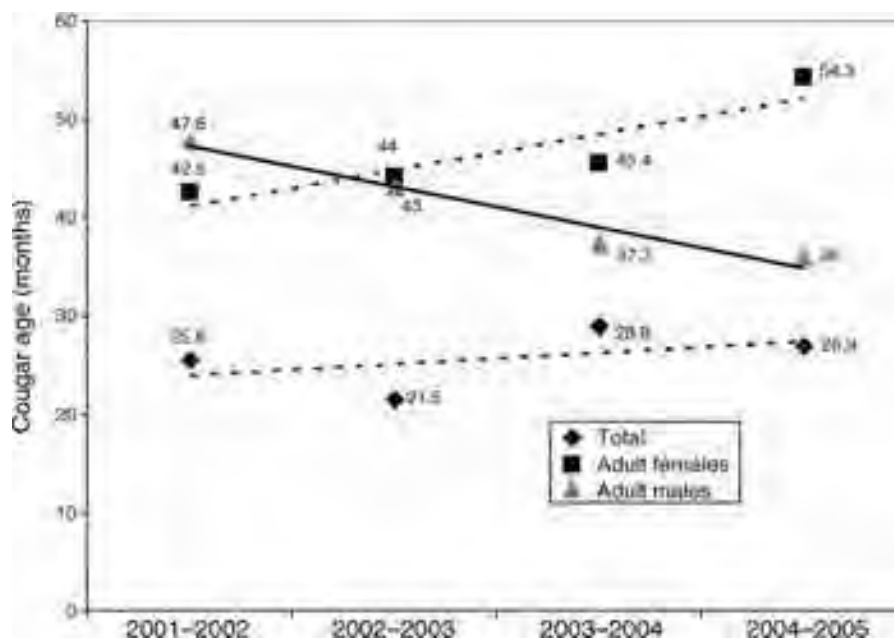


FIG. 4. Mean age (values given next to symbols) of the total population, independent adult females (>24 months old), and independent adult males (>24 months old) of a cougar population in northeastern Washington State, 2001–2005 (a solid line denotes a significant [$P < 0.05$] regression for adult males; dashed lines are nonsignificant). Age is based on each animal's average age from August to August of each year.

termed “attractive sinks”; habitat patches of disparate mortality that would otherwise provide abundant resources and high reproduction. When attractive sinks are the preferred habitat, their effect on the greater population is dramatic. The ratio of sink to source habitat sets a threshold above which the total population declines sharply. This threshold is lowered with a decline in sink growth rate. For example, a decline in λ_{sink} from 0.9 to 0.7 results in the lowering of the threshold from 50% to 25% of the greater landscape needing to consist of sink habitat in order for the greater population to decline (Delibes et al. 2001). Depending on other demographic parameters (i.e., initial densities), declines in population may not affect sources and sinks simultaneously. In fact, sink populations may increase while source populations decline (Delibes et al. 2001).

Our study area was a single game management unit (GMU 105, total area 735 km²) within part of the larger Stevens-Pend Orielle cougar management zone (total area 9131 km²) (Fig. 1). Although the harvest quotas are set for the entire management zone, not all areas within that zone are hunted equally due to cougar densities, road access, and snow conditions (Barnhurst 1986, Diefenbach et al. 2004). Total harvest has declined since 2003 in the Stevens-Pend Orielle cougar management zone and earlier (2001) in the greater area (Fig. 2). Although harvest has declined outside the study area, possibly denoting a decline in the greater population (see also Lambert et al. 2006), it has remained constant or increased within the study area while the population has

remained stable. It would appear that metapopulation source-sink population dynamics are functioning within the scale of this single cougar management zone, with some local populations declining while others remain stable. Because males disperse regardless of natal home range density, the surrounding areas need not contain growing or even stable populations to act as a source. An increase in the male cougar population within our study area in response to heavy hunting pressure may be masking a decline in females in the same area and contributing to an overall decline in the greater population. Regardless of the effect on the greater population, it is clear that targeted reductions in small areas will be ineffective as long as habitat quality remains high and source populations exist.

Management implications of carnivore immigration into sink populations

Our findings have two management implications: (1) immigration from neighboring areas may counter management goals of carnivore reduction in small areas, and (2) even within large management zones, population reductions are unlikely to affect the entire region equally, with local immigration possibly masking a declining female population in the target area and an overall decline in the greater area. A similar phenomenon was observed in a heavily hunted brown bear (*Ursus arctos*) population, whereby an apparently increasing population was actually declining toward extirpation (Wielgus and Bunnell 1994).

Making informed management decisions regarding carnivore populations requires that we accurately assess their abundance and population growth rates. Like many other carnivore species, cougar populations are difficult to quantify; therefore, management is often based as much on public perception as on scientifically gathered census data (Minnis 1998). However, the public's perception of wildlife populations often runs counter to that of the scientific community (Freddy et al. 2004). Hunting pressure is often concentrated in areas that have the highest habitat quality and therefore the highest cougar densities. Our findings show that these same areas probably act as sinks, maintaining stable populations through increased immigration from surrounding source areas. If population estimates are based on these heavily hunted sink populations, off-take of recent immigrants could produce the illusion of a growing population in the greater region. However, pre- and post-hunting population densities vary greatly (Anderson and Lindzey 2005) as cougars are quickly replaced by high recruitment. High recruitment, in turn, could lead to public perception of strong population growth and pressure to increase harvest levels. This scenario quickly leads to what Logan and Sweanor (2001:373) describe as the "sledgehammer approach," in which cougar harvest rates are set by crude population indices such as hunter testimony, and populations are well into decline before hunting pressure is reduced.

Targeted reductions of cougar populations in small areas are currently a popular management strategy; however, our data suggest that these reductions may be ineffective if habitat quality remains high or if a source population exists. Reductions employed toward the management goals of reducing predation pressure may be confounded by high recruitment, while cougar-human conflicts may be exacerbated by the influx of younger animals. Ultimately, management aimed at population reduction must address the level of mobility and immigration of the target species. If hunting pressure can be employed uniformly across the landscape, immigration may be lowered by reducing the total population and therefore the number of source populations. This would require much more intense management of carnivores than is presently prescribed by many jurisdictions. Conversely, reducing habitat quality in the smaller targeted area may remove the appeal of an attractive sink, thereby reducing immigration. Sinclair and Krebs (2003) conclude "Food supply is the primary factor determining growth rate in animal populations, and we postulate bottom-up control as the universal primary standard." Others have suggested that prey reduction may provide a viable strategy in carnivore management (e.g., Robinson et al. 2002, Packer et al. 2005). The efficacy of "bottom-up" approaches to cougar management (alternate strategies aimed at reducing prey numbers) remains largely unexplored. We encourage others to study whether such methods may prove viable and appropriate for small management areas.

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Research Article

A Test of the Compensatory Mortality Hypothesis in Mountain Lions: A Management Experiment in West-Central Montana

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ABSTRACT Mountain lions (*Puma concolor*) are widely hunted for recreation, population control, and to reduce conflict with humans, but much is still unknown regarding the effects of harvest on mountain lion population dynamics. Whether human hunting mortality on mountain lions is additive or compensatory is debated. Our primary objective was to investigate population effects of harvest on mountain lions. We addressed this objective with a management experiment of 3 years of intensive harvest followed by a 6-year recovery period. In December 2000, after 3 years of hunting, approximately 66% of a single game management unit within the Blackfoot River watershed in Montana was closed to lion hunting, effectively creating a refuge representing approximately 12% (915 km²) of the total study area (7,908 km²). Hunting continued in the remainder of the study area, but harvest levels declined from approximately 9/1,000 km² in 2001 to 2/1,000 km² in 2006 as a result of the protected area and reduced quotas outside. We radiocollared 117 mountain lions from 1998 to 2006. We recorded known fates for 63 animals, and right-censored the remainder. Although hunting directly reduced survival, parameters such as litter size, birth interval, maternity, age at dispersal, and age of first reproduction were not significantly affected. Sensitivity analysis showed that female survival and maternity were most influential on population growth. Life-stage simulation analysis (LSA) demonstrated the effect of hunting on the population dynamics of mountain lions. In our non-hunted population, reproduction (kitten survival and maternity) accounted for approximately 62% of the variation in growth rate, whereas adult female survival accounted for 30%. Hunting reversed this, increasing the reliance of population growth on adult female survival (45% of the variation in population growth), and away from reproduction (12%). Our research showed that harvest at the levels implemented in this study did not affect population productivity (i.e., maternity), but had an additive effect on mountain lion mortality, and therefore population growth. Through harvest, wildlife managers have the ability to control mountain lion populations. Published 2014. This article is a U.S. Government work and is in the public domain in the USA.

KEY WORDS additive mortality, carnivore, compensatory mortality, cougar, hunting, life-stage simulation analysis, Montana, population dynamics, *Puma concolor*, survival.

Errington (1956) coined the term “doomed surplus” to describe animals that would die by other natural causes if not killed by predators. Many hunting programs assume a similar relationship to human harvest, namely, density-dependent compensatory mortality. Modern wildlife management and hunting programs are premised on the idea of sustainable yield, and the concept of a harvestable surplus

due to compensatory mortality (Larkin 1977). Under the compensatory mortality hypothesis, harvest mortalities are compensated by reductions in non-harvest mortality (compensatory mortality), increases in reproduction (compensatory natality), or immigration (Boyce et al. 1999, Williams et al. 2002, Turgeon and Kramer 2012). Evidence of compensation has been shown in a variety of species including game birds (Burnham and Anderson 1984, Sandercock et al. 2011), ungulates (Bartmann et al. 1992, Simard et al. 2013), and carnivores (Sterling et al. 1983, Sparkman et al. 2011). All mortality is not compensatory, however, as evidenced by the numerous populations that

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have been threatened or driven to extinction by overharvest (e.g., Baker and Clapham 2004, McGlone 2012). Managers would benefit from a better understanding of the life-history traits and harvest levels where mortality moves from compensatory to additive in many exploited populations (Sandercock et al. 2011, Peron 2013).

Carnivores are hunted for both sport, where population stability is desired, and population control, where mortality must be additive to achieve reduced population levels. In North America, perhaps because of their conflict with humans, a great deal of early research into the effect of harvest on a carnivore species focused on coyotes (*Canis latrans*). This work suggested that harvest mortality was largely compensatory through immigration and density-dependent or compensatory natality (Knowlton 1972, Todd and Keith 1983, Knowlton et al. 1999). These early findings, combined with a reluctance to study other disturbed or hunted populations of large carnivores, shaped management perceptions through the 1970s and 1980s (Frank and Woodroffe 2001). Recent research has suggested that hunting mortality in other carnivores may be almost perfectly additive (Creel and Rotella 2010, Murray et al. 2010).

Evidence of the additive nature of hunting to mountain lion mortality and population growth has been shown in past studies where populations were reduced through hunting, and/or increased once harvest level was reduced (Lindzey et al. 1992, Ross and Jalkotzy 1992, Lambert et al. 2006). Conversely, non-hunted populations often show high levels of intraspecific strife and mortality, leading some to speculate that hunting may be compensatory (Quigley and Hornocker 2010). The effect of harvest on a population is dependent on total harvest rate, age, and sex classes being harvested, and compensation for harvest by increases in survival or other vital rates such as maternity and immigration (Mills 2007).

The combined effects of harvest and dispersal include changes to age and social structure that may cascade through a hunted population, magnifying or reducing the effects of harvest. Mountain lions display high levels of juvenile dispersal (Chepko-Sade et al. 1987, Sweanor et al. 2000, Zimmermann et al. 2005). Males disperse to avoid inbreeding regardless of population density (intrinsic dispersal), whereas females disperse, albeit at much lower levels than males, to avoid intraspecific competition (Greenwood 1980, Logan and Sweanor 2001). Hunting can therefore skew the sex and age ratio of a population towards younger males as harvested males are quickly replaced through juvenile immigration (Robinson et al. 2008). Vertebrate species have adapted to specific age and sex population structures. Males, in general, reach sexual maturity more quickly than females because of reduced life spans (Jones et al. 2008, Ricklefs 2008). Deviations from "natural" population age and demographic structure could reduce productivity (Nussey et al. 2009). Reproductive senescence is common in mammalian females as they age (Packer et al. 1998, Berube et al. 1999). Hostetler et al. (2012) found reduced litter production in female mountain lions (Florida panthers) >9 years. Maternity of

mountain lions may be reduced in hunted populations if younger males do not breed successfully, or if female recruitment is restricted and kitten production is reduced as females senesce (Berube et al. 1999), both additive effects. Conversely, harvest may reduce direct resource competition among females, resulting in increased litter sizes or maternity rates (Ordiz et al. 2008), a compensatory effect.

Logan et al. (1986) and Logan and Sweanor (2001) suggested that removal of male mountain lions from a population may decrease survival of remaining resident males by disrupting social organization and increasing direct or exploitative competition for mates and territory. Also, the loss of dominant, territorial males may increase instances of infanticide, an unexpected additive form of mortality (Logan and Sweanor 2001). Male mountain lions may kill kittens to induce their mothers into estrous, thus increasing breeding opportunities (Packer et al. 2009). However, the role played by infanticide in shaping kitten survival remains unclear. Harvest programs can induce immigration of new males, thereby increasing infanticide rates and limiting population growth (Swenson et al. 1997). A high level of male turnover resulted in increased levels of infanticide in African felids (Whitman et al. 2004, Balme et al. 2010).

Unlike ungulate species that give birth in a single "birth pulse" in early spring, mountain lions give birth year-round. In the United States, mountain lions are most heavily hunted from September to March (Cooléy et al. 2011), which exposes dependent kittens to the risk of starvation due to abandonment following harvest of their mothers, perhaps increasing their naturally high mortality (Logan and Sweanor 2001). Similar to the effects of hunting on adult mortality, however, how this source of mortality is compensated for by decreases in other natural mortality is not well understood.

Ultimately, the compensatory or additive effects of harvest are best measured at the population level in terms of population growth. Matrix population models are a widely used tool for exploring the relationship of various population parameters, or vital rates, on population growth (Getz and Haight 1989, Caswell 2001). Ecologists have used matrix models and the quantifiable properties of sensitivity and elasticity to mathematically describe the consequences of varying vital rates of several species with differing life strategies. Evolutionary theory suggests that natural selection will favor low levels of variation in population parameters that contribute most to population growth (Pfister 1998). In long-lived vertebrates, and other K-selected species, adult female survival normally has the highest demographic elasticity (Gaillard et al. 1998, 2000); that is, small changes in female survival will result in the largest proportional changes in population growth rate.

Although sensitivity analysis will reveal which vital rates have the greatest effect on population growth, those same vital rates may have such low natural variability that they functionally account for little variation in population growth between years. If K-selected species have adapted life strategies where the most important vital rates have the lowest degree of variability, hunting may disrupt this adaptive

Table 1. Predictions of how mountain lion population vital rates should respond to harvest under the compensatory and additive mortality hypothesis.

Vital rate	Compensatory mortality hypothesis	Additive mortality hypothesis
Reproduction		
Litter size	Increase	No effect or reduce
Maternity	Increase	No effect or reduce
Survival	No effect	Reduce
Dispersal		
Male emigration	Reduce	No effect
Female emigration	Reduce	No effect
Male immigration	Increase	No effect
Female immigration	Increase	No effect
Population growth	No effect	Reduce

strategy by increasing their variance. Wisdom et al. (2000) developed an extension of elasticity analysis called life-stage simulation analysis (LSA), which measures the direct effects of annual variance in vital rates on population growth.

We used temporal and spatial variation in harvest structure to test the compensatory mortality hypothesis by directly comparing population parameters (i.e., survival, maternity, etc.), population structure (i.e., mean age of independent males), and population growth between hunted and non-hunted segments of a mountain lion population. Specifically, if harvest mortality was compensatory, we expected population growth to tend toward stability regardless of harvest level because of compensatory reductions in other mortality sources, or through increases in reproduction and recruitment (Table 1). If harvest mortality was additive, we

expected population growth to decline with increased harvest because of reduced survival accompanied by no change in reproduction or recruitment (Table 1). We also used matrix population modeling, sensitivity analysis, and LSA to quantify how harvest affects the natural variability of vital rates, and how those changes are reflected in annual population growth.

STUDY AREA

We conducted the study in the Blackfoot River watershed (7,908 km²) in Powell, Granite, Lewis and Clark, and Missoula counties in West-Central Montana. Hunting district 292 served as our refuge area, hereafter referred to as the Garnet study area (915 km²). This area was protected from hunting for 6 years of the 9-year study (Fig. 1). The entire watershed is characterized by relatively moderate rolling topography, with gentle to moderate slopes dissected by steep limestone canyon areas along drainages (Brainerd 1985). This area is representative of much of western Montana, a mountainous mix of private (i.e., Plum Creek Timber Company and private land owners) and public lands (i.e., Bureau of Land Management, Helena and Lolo National Forests) with elevations ranging from 1,160 m to 2,156 m (Montana Department of Fish, Wildlife and Parks 2004). Daily mean temperatures range from -8.7°C in January to 16.5°C in July with annual precipitation ranging from 19 cm to 33 cm, occurring primarily from December to June (Western Regional Climate Center, Ovando, MT).

Dominant land cover varies from high-elevation mixed lodgepole pine (*Pinus contorta*)-subalpine fir (*Abies lasiocarpa*)

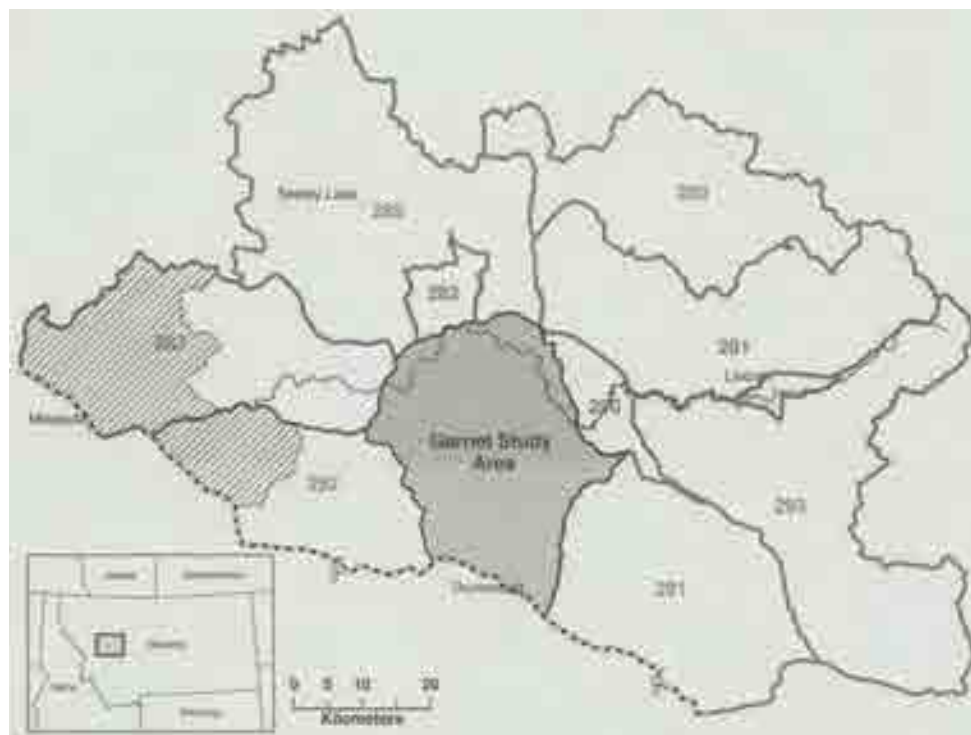


Figure 1. The Garnet study area (915 km²), and greater Blackfoot River watershed (7,908 km²) in western Montana. Numbers (i.e., 292) represent Montana Fish, Wildlife and Parks regional mountain lion management unit designations.

stands, to more mesic Douglas-fir (*Pseudotsuga menziesii*)-western larch (*Larix occidentalis*) stands at mid-elevations, and Douglas fir, ponderosa pine (*P. ponderosa*), and aspen (*Populus tremuloides*) at low elevations. Valley bottoms consist of a mixture of irrigated and dry land agriculture, cattle rangelands, and native bunchgrass-sagebrush (*Artemisia* spp.)-juniper (*Juniperus scopulorum*) communities (Lehmkuhl 1981). The majority of the low to mid-elevation forests have been logged in the past 50 years (Raithel 2005).

Ungulate prey species present in the area included elk (*Cervus elaphus*), white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), and moose (*Alces alces*). Elk populations were stable over the course of the study (Montana Department of Fish, Wildlife and Parks 2004), whereas deer populations may have been recovering from the El Nino-induced severe winter of 1996–1997 (Montana Department of Fish, Wildlife and Parks 2006). Cattle grazing occurred on private and public lands, however, cattle and other livestock depredations by mountain lions were rare. Carnivores besides mountain lions included black bear (*Ursus americanus*) and grizzly bear (*Ursus arctos*). Smaller predators included bobcat (*Lynx rufus*), Canada lynx (*Lynx canadensis*), coyote (*C. latrans*), wolverine (*Gulo gulo*), pine marten (*Martes americana*), and long-tailed weasel (*Mustela frenata*). Wolf (*Canis lupus*) had not recovered during the study period; the first confirmed pack established in 2006, the last year of our study (Montana Department of Fish, Wildlife and Parks 2006).

METHODS

In December 2000, following 3 years of heavy harvest, approximately 66% of a single hunting district was closed to mountain lion hunting, effectively creating a refuge representing approximately 12% (915 km²) of the greater Blackfoot watershed (7,908 km²) in West-Central Montana (Fig. 1). Hunting continued in the remainder of the watershed, but harvest levels declined between 2001 and 2006 as quotas were reduced (Table 2).

Capture and Monitoring

From 1997 to 2000, we applied capture efforts approximately equally across the entire watershed (Fig. 1). Following protection of the Garnet study area, we focused most capture efforts there, towards the goal of capturing all resident individuals (i.e., census). In the remainder of the Blackfoot,

we continued to monitor radioed lions marked during the first 3 years of the study including re-instrumenting individuals when their radiocollar's battery life was spent. In addition, we monitored animals that either dispersed from the Garnet or had home ranges overlapping the boundary between the 2 areas.

We used trained hounds to tree mountain lions when we located fresh tracks in the snow. We darted treed animals and drugged them with a 0.06 ml/kg estimated weight mixture of ketamine hydrochloride and xylazine hydrochloride (1.45 ml xylazine to 10 ml ketamine) delivered using a Pneu-Dart Model 193SS cartridge fired rifle with disposable darts (Pneu-Dart, Inc., Williamsport, PA). We gave animals the antagonist yohimbine hydrochloride to counteract the xylazine before release.

We estimated age of captured mountain lions by tooth replacement, wear, gum recession, and cementum age analysis (Ashman et al. 1983, Laundre et al. 2000). We fitted radiocollars (Telonics, Mesa, AZ) depending on the size and age of the individual: an expandable (20–34 cm) kitten collar equipped with either a Mod-073 or Mod-305 transmitter, or an adult collar equipped with a Mod-500 transmitter. We located collared animals from fixed-wing aircraft approximately twice per week. Beginning in 2001, we fitted Telonics global positioning system (GPS) collars programmed to acquire a location every 5 hours to newly collared animals and replaced very high frequency (VHF) collars on already marked animals as opportunity allowed.

We collared both newborn kittens at the den, and those traveling with newly collared adult females. We collared newborn kittens without chemical immobilization approximately 1 month from the time the mother localized at a den site. When we located kittens outside the den (from 3 to 12 months) we treed and immobilized them as with adults. Expandable Mod-073 collars remained on kittens up to 7 months of age; mod-305 collars remained on kittens up to 10 months of age; and a mod-500 adult collar was worn by the animal through adulthood. Capture and handling protocols were approved by Montana Fish, Wildlife and Parks and conducted by their staff (Montana Department of Fish, Wildlife and Parks 2007).

Population Characteristics

Sex and age structure.—We calculated a minimum population for the Garnet study area each year by back-

Table 2. Mountain lion harvest, quotas (harvest/quota), and harvest density (animals/1,000 km²) for the Blackfoot River watershed in West-Central Montana, 1998–2006. Beginning in December 2000, the Garnet was managed separately from the remainder of the Blackfoot watershed.

Area	Sex	1998	1999	2000	2001	2002	2003	2004	2005	2006
Garnet	Female	8 ^a	8 ^a	8 ^a	0	0	0	0/1 ^b	0	0
	Harvest density	8.74	8.74	8.74						
	Male	5 ^a	6 ^a	6 ^a	0	0	0	1/1 ^b	1/1	1/1
	Harvest density	5.46	6.55	6.55				1.09	1.09	1.09
Black-foot	Female	35/30	42/41	30/30	15/15	10/9	4/3	4/3	0/0	1/0
	Harvest density	4.42	5.31	3.79	1.89	1.26	0.5	0.5	0	0.12
	Male	41/40	30/33	27/29	19/21	12/9	8/7	7/7	6/7	8/7
	Harvest density	9.61	9.10	7.20	4.29	2.78	1.51	1.39	0.75	1.13

^a Garnet managed as part of the Blackfoot watershed.

^b One either-sex permit issued in 2004.

calculating the lifespan of all mountain lions known to have been present in the study area including collared and harvested animals (Logan and Sweanor 2001, Stoner et al. 2006, Robinson et al. 2008). This technique assumes that animals collared or harvested without being collared at time t were present within the watershed but undetected at time $t - 1$ (specific to each animal's age and sex); as such, this method may underestimate population levels towards the end of the study period because of fewer sampling occasions. We assumed that all males were immigrants, whereas all females were recruited from within the population. Therefore, we backdated males to 24 months of age, immigrating into the population after their second birthday. We assumed females were philopatric and were likely born inside the Blackfoot watershed; however, we could not be sure if they were born inside or outside the protected Garnet study area. Therefore, we backdated females to 12 months, accounting for our philopatric assumption without biasing further any total population estimate of the Garnet study area. We used a Z-test to compare mean ages and proportion of the population consisting of adults of each sex between the hunted and non-hunted populations (Zar 1999). We hypothesized that harvest would reduce the mean age of males while increasing their proportion in the population because of a compensatory immigration response to harvest, whereas harvest would increase the mean age of adult females in the population while reducing their proportion in the population because of reduced recruitment (i.e., high juvenile mortality and/or low immigration) as resident animals aged.

Reproduction.—We estimated maternity, the mean number of young born per reproductive female per year (Caswell 2001), and its component, litter size, based on females of reproductive age within the Garnet study area only. We felt monitoring effort was sufficient within the Garnet that no litters born to, or traveling with, collared females would be missed, but logistical constraints prevented this level of monitoring in the larger watershed. We estimated average litter size based on kittens observed at den sites (i.e., <7 weeks), which assumes no kitten mortality had occurred prior to observation. The compensatory mortality hypothesis predicts that litter size will increase in a hunted population because of increased available resources (Table 1). The additive mortality hypothesis predicts that litter size will be unaffected or decline with harvest because of the age structure of females (Table 1). We tested the effect of harvest on litter size (as observed at den sites when kittens were <7 weeks) using a repeated-measures analysis of variance (ANOVA) comparing litter size within the Garnet study area during hunting and non-hunting periods. We used a repeated-measures ANOVA as the sample consisted of females with multiple litters (Zar 1999).

We observed age at dispersal and, for animals that did not leave the study area, first reproduction by radiocollaring dependent kittens and juveniles. As some hunted populations have a population skewed towards older females, we also tested how or if female age affected litter size. Using a repeated-measures ANOVA, we tested for an age effect on litter size in the females that we monitored (Zar 1999).

Reduced fertility in older females could be an additive effect of harvest (Table 1).

Some researchers have used litter size, mean birth interval, and proportion of females traveling with young as surrogate measures of maternity (e.g., Lambert et al. 2006); however, these measures may introduce a bias by excluding females that fail to reproduce. We estimated maternity rate based on the total number of kittens born to all radiocollared females of reproductive age (>24 months) monitored, thus including the proportion of non-reproductive females in the population. As with litter size, the compensatory mortality hypothesis predicts that maternity rate will increase in the hunted population because of reduced competition and increased resource availability, whereas the additive mortality hypothesis predicts that maternity will be reduced or unchanged between hunted and non-hunted periods (Table 1). We tested for a hunting effect on maternity rate using a Z-test to compare the mean annual maternity rate within the Garnet study area during hunting and following protection (Zar 1999).

Dispersal.—We defined dispersal as a juvenile establishing a home range with <5% overlap of its natal home range, whereas we considered juveniles establishing home ranges with >5% overlap to be philopatric (Logan and Sweanor 2001). Dispersal rate was based on the number of independent juveniles in each year that moved outside their natal home range compared to the number monitored. We modeled juvenile dispersal as a binomial function of the estimated total population size for males and females separately (i.e., we used a generalized linear model specifying a logit link and binomial family; Hardin and Hilbe 2007). The additive mortality hypothesis predicts density-independent dispersal, whereas the compensatory mortality hypothesis suggests reduced dispersal of both sexes in the hunted population (Table 1).

Survival and Mortality

We examined mountain lion mortality in 3 ways: survival modeling, survival rate analysis, and cause-specific mortality analysis. We used survival modeling to examine the effect of independent variables (i.e., sex, age, geographic location, and hunting pressure as dictated by quota levels) on mountain lion survival and to objectively determine the best method of breaking the population into segments or cohorts with similar survival experiences. We used survival analysis to calculate and compare the survival probabilities of animals within those cohorts. Finally, we calculated and compared cause-specific mortality rates.

We derived a spatially explicit encounter history from telemetry data for each individual mountain lion to estimate survival rates and test hypotheses about factors influencing survival. We removed duplicate same-day locations from GPS collar data and combined them with VHF data to create a continuous record based on calendar time for each animal (Fieberg and DelGiudice 2009). We censored (interval truncated) animals not located for >61 days until relocated (Winterstein et al. 2001). During the first 4 years of the study, before we began to deploy GPS collars, we scheduled

telemetry flights twice a week. During some periods, most notably the winter and spring of 2001, we could conduct flights only once a month because of weather, financial, and logistical constraints. We began deploying GPS collars in October 2001 and aerial telemetry flights were again limited during short periods for the remainder of the study. The 61-day period allowed some animals to be missed on 2 consecutive flights during these times of infrequent aerial telemetry. If not located after 61 days, we right-censored animals at the date of their last location in the study area.

We modeled factors influencing mountain lion survival using a combination of manual backward stepwise and best-subsets model selection (Hosmer et al. 2008). First, we conducted a univariate analysis using Cox regression (Cox 1972) to test the significance of sex, age, and hunting quota on mountain lion survival. We coded sex as an indicator variable with females coded as 1 and males coded as 0. We coded age and quota level as continuous variables, with age estimated in months and quota based on the annual-, sex-, and location-specific quotas as set by Montana Fish, Wildlife and Parks (Table 2).

We modeled mountain lion survival on the landscape by constructing 12 spatiotemporal *a priori* models, each suggesting a different hypothesized response in survival of the population to our experimental harvest design. We discuss 4 of these models in detail here (see online Supplementary Material for graphical depiction and explanation of all 12). For instance, the single-population (1-segment) model tested the hypothesis of total compensatory mortality by modeling survival as constant across the landscape and study period; equivalent to a null model relative to management (Fig. S1). The other 3 models represented different ways in which hunting mortality might be manifest. The management model tested the hypothesis that survival responded to small incremental changes in management or quota level, thus dividing the population into 6 segments, equivalent to a global model relative to management (Fig. S2, see also Table 2). The 3-segment population model grouped animals across the drainage between 1998 and 2000 (segment 1), then divided the population into 2 segments (segments 2 and 3) based on the protection of the Garnet study area following 2000, while hunting continued in the remainder of the Blackfoot drainage (Fig. S3). Under the compensatory mortality hypothesis, hunting replaces other forms of mortality, causing survival to remain relatively constant. Therefore, this model would not be supported if the compensatory hypothesis were true because survival between segments 2 and 3 would not differ. The 4-segment model (Fig. S4) tested the hypothesis that survival before protection of the Garnet study area differed between the watershed and the Garnet although management was the same for both areas, and that survival increased significantly outside the protected area once female quotas were set to 0. We used Akaike's Information Criterion for small sample sizes (AIC_c) to select among competing models to evaluate the strength of evidence for each hypothesis regarding the relationship of survival to temporal and geographical quota levels, as well as

age and sex (Burnham and Anderson 1998, Hosmer et al. 2008).

We modeled survival time using a parametric Weibull distribution (Hosmer et al. 2008):

$$\ln(T) = \beta_0 + \beta_1 x + \sigma \times \varepsilon \quad (1)$$

where T is survival time, β_0 the model intercept, β_1 the covariate, σ a parameter estimating the shape of the hazard function based on the data, and ε the error term. We checked model specification using a link test (Cleves et al. 2004).

We calculated annual survival rates for 3 age classes of mountain lions: kitten (1–12 months), juvenile (13–24 months), and adult (>25 months) for each population model segment (as delineated by our *a priori* model selection, see above) using the Nelson–Aalen estimator (Nelson 1972, Aalen 1978). Because kittens were first collared at a range of ages (1–12 months) rather than only at the den (i.e., within the first 7 weeks), our estimate of kitten survival is biased high. We based survival rates on a biological year (1 Dec–30 Nov) reflecting the start of the hound-hunting season on 1 December. We raised the cumulative hazard estimate for each segment to the power of $1/t$, where t represents the length of that period in years, to calculate a mean annual survival rate across that period. To test for differences in survival between the various segments of the population, we used a Peto–Prentice test (Peto and Peto 1972, Prentice 1978, Hosmer et al. 2008). The compensatory mortality hypothesis predicts no difference in survival between hunted and non-hunted segments of the population. Conversely, reduced survival in the hunted population would indicate additive mortality.

We calculated cause-specific mortality rates using cumulative incidence functions (CIFs; Kalbfleisch and Prentice 1980, Heisey and Patterson 2006). These functions allow the estimation of mortality rates in the presence of competing risks, which are defined as >1 mutually exclusive, cause of death (Pintilie 2006). Unlike the modified Mayfield or Heisey–Fuller (Mayfield 1961, Heisey and Fuller 1985) methods of mortality estimation, which assume a normal or constant distribution of mortality risk, CIFs are non-parametric and make no assumption regarding the underlying hazard distribution.

We grouped mortalities by 6 causes. We classified animals that were harvested as part of a legal hunt, or kittens that were orphaned and starved after their mothers were shot as hunting mortality. Illegal mortality included animals killed in snares or otherwise killed out of season. We classified animals that died naturally because of starvation, disease, or intraspecific strife (including cases of infanticide) as natural mortalities. The category depredation included animals shot because of conflict with humans (i.e., livestock depredation permits, and self-defense). The final 2 categories were vehicle collisions and unknown, where a clear cause of death could not be determined.

We used cause-specific mortality rates to test the compensatory mortality hypothesis in 2 ways. First, we regressed survival of juvenile and adult mountain lions against hunting mortality. We omitted kittens because of

their non-independence from adult females. We included juveniles because they spend approximately half of their juvenile year independent of their mothers and, unlike kittens, no juveniles starved after being orphaned by hunting. If hunting were compensatory, we would expect survival to remain constant as hunting mortality increased (Table 1). Conversely if hunting mortality were additive, we would expect a monotonic decrease in survival with an increase in hunting mortality (Williams et al. 2002). This regression used survival and hunting mortality probabilities based on the management model population structure (i.e., 6 population segments based on varying hunting quota levels, see Fig. S2). A similar analysis could have been conducted on annual survival and mortality values (e.g., Murray et al. 2010). However, because the management goal during the first 3 years of the study was to reduce the population, almost ensuring additive mortality, using annual rates may have biased our analysis towards inferring additivity of hunting mortality. We assumed this structure was less biased than an annual model towards an additive finding because the first 3 years of mortality are captured in a single data point and the model contains both hunting and natural mortality based on the protected and hunted portions of the Blackfoot watershed following December 2000.

We also tested the compensatory mortality hypothesis in adult and kitten survival by comparing the CIF for hunting and all other mortality sources between the hunted and non-hunted periods. Pepe and Mori (1993) provided a method for comparing the CIF of a main mortality source and competing risks simultaneously between 2 groups. This method tests the hypothesis of equality in the CIF of a main event (i.e., hunting mortality) while also testing for equality in the remaining competing risks (Pintilie 2006). If hunting mortality were additive, we would expect an increase in the hunting mortality rate, whereas the CIF for competing risks would be constant (i.e., no compensatory decrease in other mortality sources in the presence of hunting). Conversely, if hunting mortality were compensatory, we would expect an increase in the hunting CIF, with a concurrent reduction in the CIF for competing risks in the hunted population.

Population Modeling and Growth

Methods described thus far examined how harvest affected individual population parameters (i.e., survival, maternity, etc.). Ultimately, we were interested in how changes in these parameters combined to affect population growth. To quantify the population effects of harvest, we constructed a stage-based, 2-site, dual-sex Leslie matrix model (Leslie 1945) in MATLAB[®] (The MathWorks, Natick, MA). The model consisted of 2 transition matrices joined by juvenile dispersal terms and was based on the 2 top survival models using the estimated survival and fecundity parameters described below. We calculated stochastic growth rates and associated standard deviations by running 10,000 2- to 6-year iterations (dependent on population segment, see Supplementary Material).

Vital rates.—We used age- and sex-specific survival rates previously discussed, estimated using the Nelson–Aalen

estimator. We estimated variance of the Nelson–Aalen survival estimator following Anderson et al. (1997):

$$\text{Var}(\hat{S}(t)) = (\hat{S}(t))^2 V^2(t) \quad (2)$$

and

$$V^2(t) = \sum_{(i:t_i < t)} \frac{d_i(r_i - d_i)}{r_i^3} \quad (3)$$

where $\hat{S}(t)$ is the survival estimate to time t , d_i is the number of deaths at time t_i , and r is the number at risk at time t_i . We then used White's method to remove sampling variance from annual estimations of survival variance, and included this value of process variance in a beta-distributed variance vector in each matrix model (White 2000).

We assumed that females did not breed until becoming adults (>24 months; Root 2004, Robinson et al. 2008, Treves 2009). We also assumed an equal ratio of male and female kittens (total fecundity divided equally between sexes; Logan and Sweanor 2001). We modeled variance in maternity using a stretched beta distribution with a maximum value of 2.5 annually, or maximum litter size of 5 every 2 years (Morris and Doak 2002). We modeled fecundity as a birth-pulse post-breeding process. Kittens entered the matrix as newborns and fecundity was the product of adult female survival (S_a) and average annual maternity (M_a ; Morris and Doak 2002):

$$F = S_a \times M_a \quad (4)$$

We calculated a dispersal rate based on the number of independent juveniles in each year that moved between the Garnet study area and the remainder of the Blackfoot drainage compared to the number monitored. In this sense, our modeling definition of dispersal does not match the more traditional definition (reported above), where juveniles that establish home ranges with >5% overlap of their maternal home range are considered to be philopatric rather than dispersers (Logan and Sweanor 2001). Our model assumed a closed system consisting only of 2 populations, the Garnet study area and the remainder of the Blackfoot watershed. Therefore, for parameterization of our population models, an animal could have established a home range adjacent or overlapping with its mother's (philopatry) but still be classified as a disperser if its new home range was primarily (>50%) outside its maternal area (the Garnet area or the remainder of the drainage). We did not consider juveniles that dispersed out of the Blackfoot watershed completely to be dispersers because they were effectively lost to this system and population model and we therefore censored them.

Initial abundance and density dependence.—We set initial 1998 abundances at 37 total animals (i.e., kittens, juveniles, and adults) for the Garnet study area based on a minimum population back-calculated using known-aged animals, and 283 total individuals in the remainder of the Blackfoot drainage, extrapolating a similar total density (4.0 mountain lions/100 km²) to the remainder of the watershed. We started all models in 1998 at a stable age distribution, then the mean modeled age distribution for further projections.

For instance, we started the 3-segment population model in 1998 with a stable age distribution and projected for 3 years, when survival rates changed or diverged between the Garnet and remainder of the Blackfoot. We projected a second period from 2001 to 2007 based on the age distribution outputs from the 1998 to 2000 model.

We applied a ceiling density dependence to stochastic models that affected survival of adults only (>24 months; Root 2004). We set a ceiling density of 27 adults for the Garnet study area and 210 adults for the remainder of the Blackfoot drainage based on an average density of 3 adults per 100 km². This liberal estimate of maximum adult density was commensurate with observed levels of 2.92 mountain lions/100 km² in Wyoming (Anderson and Lindzey 2005) and 2.58 mountain lions/100 km² in northeastern Washington (Robinson et al. 2008) both hunted populations.

Sensitivity and life-stage simulation analysis.—If harvest is additive, its effect on total population growth should vary based on which population parameter is affected in an additive manner and how reliant population growth is on that parameter. We tested the effect of each population parameter on population growth rate through perturbation. The sensitivity of lambda to each vital rate (i.e., survival, maternity, and dispersal) was calculated by individually reducing each rate by 0.10 and recalculating lambda for each population as well as the total population combined (Caswell 2001). The inclusion of lower-level parameters (maternity and female survival combined to calculate fecundity) in our matrix model negated the use of elasticities (Caswell 2001). We conducted an LSA to quantify the effects of variance on population growth within the Garnet study area separately during the hunted period (1998–2000), and the non-hunted period (2001–2006), comparing the r^2 values for each vital rate, for each period (Wisdom et al. 2000). We conducted sensitivity analysis using the 3-segment population model. Because we were only interested in the effect of harvest on vital rate variability and population growth, we conducted LSA on only the Garnet portion of the 3-segment population model pre- and post-harvest (i.e., segment 1 vs. segment 2, see Fig. S3).

Finally, given the results of our sensitivity and LSA analysis, we constructed a deterministic population model to quantify how varying levels of maternity, female kitten survival, and adult female survival combine to affect population growth. In this model, we fixed all male survival rates as well as juvenile female survival at the average levels observed for the entire study population, but ran successive simulations in which we incrementally increased kitten and adult female survival from 0.01 to 1.0, at 3 levels of maternity (1.08, 1.29, and 1.40; maternity during the hunting period, mean maternity across the study period, and maternity during the non-hunting period, respectively). We used standard matrix analysis techniques (Caswell 2001) to calculate the projected long-term population growth rate (λ) for each possible parameter combination. The probability of a kitten surviving to become a juvenile was the combined function of kitten and adult survival (i.e., kitten survival \times adult survival) to mimic the effect of kitten abandonment

following an adult's death. We modeled fecundity levels as in the other population models.

RESULTS

Harvest, Capture, and Monitoring

From 1998 to 2006, 299 mountain lions (158 M and 141 F) were harvested from the Blackfoot watershed, with 41 (18 M, 23 F) harvested from the Garnet study area. Mean age of harvested animals was 2.88 years ($M \bar{x} = 2.64$ yr and $F \bar{x} = 3.16$ yr). A female quota existed in all but the last 2 years of the study in the Blackfoot watershed. This quota was filled or exceeded in each year (i.e., 100–133% quota), and females composed 37% of the animals harvested (Table 2).

We captured 121 individual mountain lions 152 times between January 1998 and December 2006, including 82 kittens, 8 juveniles, and 31 adults. Of these, we collared 117 individuals and monitored them for habitat use and survival. We monitored animals for an average of 502 days (range: 7–3,231 days) with males remaining on the air for shorter periods ($\bar{x} = 284$ days) than females ($\bar{x} = 658$ days). We recorded known fates for 63 animals, and right-censored the remainder. We used right-censored animals in analysis until loss due to collar failure ($n = 16$), dispersal from the Blackfoot River drainage ($n = 7$), or survival to the end of the study ($n = 31$).

Population Characteristics

Sex and age structure.—The minimum total population count for the Garnet study area ranged from 37 mountain lions (4.0/100 km²) in 1997 to a low of 20 (2.2/100 km²) in 1999, before recovering to 33 (3.6/100 km²) in 2006 (Table 3). The average age of adult females increased from 3.53 years during the hunted period to 4.83 in the non-hunted population, although this difference was not significant ($Z = -1.47$, $P = 0.14$). Similarly, the average age of adult males increased from 2.73 to 3.53, also a non-significant increase ($Z = -1.46$, $P = 0.14$). The oldest radiocollared female monitored during the study was 10 years old and the oldest male was 6 years old.

From 1997 to 2006, the Garnet population averaged 37% adult females, 15% adult males, 17% juveniles, and 30% kittens. Although the proportion of adult females in the population remained relatively constant between the hunted and non-hunted phases ($Z = 1.20$, $P = 0.22$), the proportion of adult males in the hunted population was higher (21%) than in the non-hunted (10%; $Z = 2.87$, $P < 0.01$; Table 3.).

Reproduction.—Mean total litter size of litters visited early in the den (<7 weeks) was 2.92 ($n = 24$, 95% CI: 2.70–3.13). Litter size was not affected by hunting ($F_{1,11} = 0.27$, $P = 0.61$). Of 32 litters where birth month could be confirmed, mountain lions gave birth in all months but December, February, and March. Most litters were produced from July to October. The mean age of sires in our population was 35 months (Onorato et al. 2011). Fourteen known-aged females gave birth to their first litter at a mean age of 31.4 months (range: 23–37 months). We found no effect of female age on litter size ($F_{6,6} = 1.39$, $P = 0.35$). Average birth interval was 602.6 days (95% CI: 503–702

Table 3. Minimum total mountain lion population (including kittens, juveniles, and adults), mean adult age, and proportion of total population consisting of adult male and female mountain lions censused on 1 December, 1997–2006, Garnet study area, western Montana.

Year	Minimum total population	Mean adult age (yr)		Adult proportion of total population	
		Male	Female	Male	Female
1997	37	2.29	3.79	0.189	0.378
1998	27	2.83	3.91	0.222	0.407
1999	20	2.8	3.7	0.25	0.5
2000	21	3	2.75	0.19	0.381
Hunted mean		2.73	3.53	0.21	0.42
2001	25	3.67	3.75	0.12	0.32
2002	24	3	4.44	0.125	0.375
2003	30	4	4.82	0.1	0.367
2004	32	3	4.91	0.094	0.344
2005	33	3.5	5.27	0.121	0.333
2006	33	4	5.8	0.061	0.303
Non-hunted mean		3.53	4.83	0.10	0.34

days) or 19.8 months. Approximately 58% of females ≥ 24 months gave birth each year, and 89% of females were traveling with dependent young.

The mean maternity rate across the study period was 1.29 ($n=9$, 95% CI: 0.84–1.76) kittens per female per year. Although maternity was lower during the hunting period ($\bar{x}=1.08$, $n=3$, 95% CI: 0–3.59) compared to the protected population ($\bar{x}=1.40$, $n=6$, 95% CI: 1.02–1.78), this difference was not significant ($Z=-0.53$, $P=0.59$). In 1999, we documented no litters born to collared females; however, because of heavy harvest pressure, we monitored only 2 adult females.

Dispersal.—We monitored 66 mountain lions (39 F and 27 M) during their juvenile year (13–24 months of age) during 1998–2006. Of these 66 individuals, 47 survived to independence. Mean age of dispersal was 15 months ($n=33$, range: 11–23 months). Dispersal was severely constrained in the hunted population before 2001. During the first 3 years of study when harvest level was high, only 2 of 12 juvenile females survived to independence. One dispersed out of the Blackfoot drainage, and 1 established a philopatric home range inside the Garnet study area. Between 2001 and 2006, during protection of the Garnet from hunting, we monitored 54 juvenile mountain lions, 45 of which survived to independence. In total, female juveniles showed essentially equal levels of dispersal ($n=12$) and philopatric behavior ($n=14$). We found no relationship between population level and dispersal rate of juvenile females ($Z_5=0.60$, $P=0.55$). We did not document any philopatric behavior in radiocollared juvenile males ($n=19$; 100% dispersal).

Survival and Mortality

We recorded mortalities in every month but October, with the majority coinciding with the start of the hound-hunting season in December (Fig. 2). Sex was the best predictor of mountain lion survival followed by quota and age. Females were 73% less likely than males to die (hazard ratio [HR]=0.27, $Z=-4.79$, $P<0.01$), with risk of mortality increasing 10% with each numerical increase in quotas (HR=1.10, $Z=2.77$, $P<0.01$). Risk of mortality was highest for kittens, declining by 1% for each month survived

(HR=0.99, $Z=-1.52$, $P=0.11$). Although age was not a significant model covariate at the 0.05 level, Hosmer and Lemeshow (2000) recommend retaining variables with a probability of significance of 20% ($P=0.2$) for inclusion in further modeling following univariate analysis. This recommendation, coupled with our desire to create age-based population models as the next phase of our research, led to inclusion of all 3 variables in our subset models, with age broken into 3 categories.

Two models, 3-segment and 4-segment, including 3 age classes and sex, were the top models (Table 4; Figs. S3 and S4). The management model, which we thought best fit the actual quota levels, was the seventh ranked model (Table 4). A linktest showed that both the 3-segment ($Z=-0.51$, $P=0.61$) and the 4-segment ($Z=-0.58$, $P=0.56$) models were properly parameterized.

Mean annual survival, pooling all individuals across all years, was 0.651 (SD=0.03). Survival of kittens ($\bar{x}=0.785$, SD=0.05) and juveniles ($\bar{x}=0.592$, SD=0.09) did not vary by sex (kitten: $\chi^2_1=0.14$, $P=0.70$; juvenile: $\chi^2_1=0.18$, $P=0.66$). Among adults, female survival ($\bar{x}=0.786$,

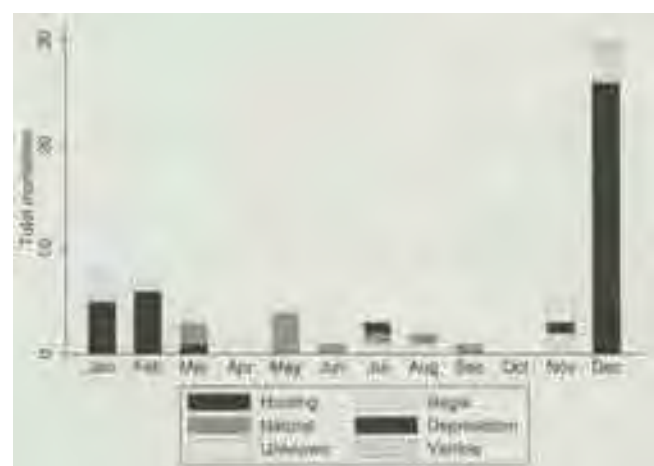


Figure 2. Timing and cause of 63 radiocollared mountain lion mortalities, 1998–2006, in the Blackfoot River watershed, Montana.

Table 4. Top models in best-fit analysis of mountain lion survival patterns in Blackfoot watershed Montana, 1998–2006. Null model log likelihood (LL) was –54.2168 (8 remaining models in Table S1).

Rank	Model	LL	df	AIC _c	ΔAIC _c
1	3-Segment	–36.1078	7	87.1115	0
2	4-Segment	–35.5328	8	88.2269	1.1154
7	Management	–35.4528	10	92.7088	5.5973
10	1-Segment	–44.1786	5	98.8296	11.7181

SD = 0.05) was higher than males (\bar{x} = 0.515, SD = 0.12; χ^2_1 = 5.04, P = 0.02).

Adult survival (F: n = 13, M: n = 3) was similar between the Garnet study area and the remainder of the Blackfoot drainage before December 2000 (χ^2_1 = 0.45, P = 0.50), but differed once hunting was halted in the Garnet (χ^2_1 = 17.62, P < 0.01; F: n = 38, M: n = 17; Table 5), consistent with the additive mortality hypothesis. Once adult female quotas were reduced to 0 outside the Garnet study area (segment 4 of the 4-segment population model, see Fig. S4), adult survival increased from 0.60 to 0.87 (χ^2_1 = 3.08, P = 0.08) compared to survival before quota reduction (population segment 2). The marginal significance in total adult survival is explained by an increase in adult female survival while adult male survival remained relatively constant (Table 5).

Hunting was the main cause of mortality for all age and sex classes across the study period, accounting for 36 of 63 mortalities documented. Additional factors were illegal mortalities, natural, unknown, depredation, and vehicle collision (Table 6). Across the study period, mountain lions in the Blackfoot watershed had a 22% annual probability of mortality due to hunting. Regression analysis of hunting-caused mortality and survival of juveniles and adults showed a significant negative slope of –0.97 ($F_{1,4}$ = 21.97, P = 0.01), consistent with the additive-hunting mortality hypothesis and suggesting hunting mortality is completely additive (Fig. 3). For adults and juveniles, PepeMori tests of equality in cause-specific mortality rates were significant (hunting mortality χ^2 = 31.18, P < 0.01; all other mortality χ^2 = 3.58, P = 0.06). The difference in other mortality sources between hunted and non-hunted populations was due to higher mortality in the hunted populations, supporting the additive-hunting mortality hypothesis.

During the heavy hunting period before closure of the Garnet study area, 6 kittens died of starvation following the harvest of their mothers, leading to a kitten cause-specific mortality rate of 0.41 (SE = 0.14). During the same period, no kittens died of natural mortality; however, following closure of the Garnet study area, 6 kittens died of natural causes including cannibalism or infanticide, a cause-specific mortality rate of 0.16 (SE = 0.06). Kitten mortality

Table 5. Mean annual survival rates of radiocollared mountain lions broken into population segments according to our 3- and 4-segment model structures 1998–2006, western Montana. Sample sizes (n) include animals that were counted in the risk pool of more than 1 model segment. The 3-segment model assumes that survival was similar across the watershed prior to protection of the Garnet (combined hunted), but differed after December 2000 when hunting ceased in the Garnet (Garnet protected and Blackfoot hunted). The 4-segment model assumes survival differed among 4 groups: 1) Garnet study area before December 2000 (Garnet hunted), 2) Garnet study area after hunting ceased in the area (Garnet protected), 3) Blackfoot watershed before 2005 (Blackfoot hunted), and 4) Blackfoot watershed during the last 2 years of the study when female quotas were reduced to 0 (Blackfoot hunted reduced). Survival of kittens and juveniles did not vary by sex; therefore, we present pooled estimates.

Model and segment	Area (yr)	Age and sex	n	Mean survival	SD
3-segment 1	Combined hunted (1998–2000)	Kitten	24	0.6566	0.09
		Juvenile	12	0.3117	0.12
		Female adult	13	0.6737	0.09
		Male adult	3	0.7167	0.21
3-Segment 2	Garnet protected (2001–2006)	Kitten	60	0.8505	0.06
		Juvenile	43	1.0	
		Female adult	25	0.9654	0.03
		Male adult	10	0.7788	0.15
3-Segment 3	Blackfoot hunted (2001–2006)	Kitten	29	0.9672	0.05
		Juvenile	44	0.6920	0.08
		Female adult	31	0.7130	0.08
		Male adult	16	0.4699	0.13
4-Segment 1	Garnet hunted (1998–2000)	Kitten	16	0.7281	0.11
		Juvenile	10	0.2326	0.13
		Female adult	9	0.5740	0.13
		Male adult	3	1.0	
4-Segment 2	Blackfoot hunted (1998–2004)	Kitten	34	0.5352	0.15
		Juvenile	32	0.2735	0.13
		Female adult	29	0.5985	0.11
		Male adult	7	0.5387	0.13
4-Segment 3	Garnet protected (2001–2006)	Kitten	60	0.6151	0.12
		Juvenile	43	1.0	
		Female adult	25	0.9654	0.03
		Male adult	10	0.7788	0.15
4-Segment 4	Blackfoot hunted reduced (2005–2006)	Kitten	9	0.9048	0.12
		Juvenile	21	0.6218	0.14
		Female adult	17	0.8746	0.09
		Male adult	10	0.5488	0.21

Table 6. Number of cause-specific mortalities and associated mortality rates (cumulative incidence function, CIF) of radiocollared mountain lions in 1998–2006 in western Montana.

Age class	Sex	Hunting	Illegal	Natural	Depredation	Unknown	Vehicle
Kitten	Male	2		5	1		1
	Female	4		2			
Juvenile	Male	9	2		1		
	Female	4	1			1	
Adult	Male	8	2				
	Female	9	6	3		2	
Total		36	11	10	2	3	1
CIFs		0.221	0.055	0.038	0.007	0.011	0.006
SE		0.03	0.01	0.01	0.006	0.006	0.006

attributed to hunting was higher during the 3-year period of heavy hunting than in the 6 years following protection of the Garnet study area ($\chi^2 = 7.58$, $P = 0.01$). However, we found no change in all other sources of mortality between the 2 periods ($\chi^2 = 0.49$, $P = 0.48$), supporting the additive mortality hypothesis.

Population Modeling and Growth

We monitored 47 kittens until independence from their mothers. One female and 6 males dispersed out of the watershed completely and were censored from dispersal rate calculations. Dispersal rates of juveniles from the Garnet study area to the Blackfoot was 0 prior to the cessation of hunting, but increased to 0.82 ± 0.19 per year for females and 0.71 ± 0.39 per year for males once the Garnet was closed to hunting. No radiocollared juveniles immigrated into the Garnet study area from the remainder of the Blackfoot watershed, where hunting was allowed, although low juvenile survival reduced the number of independent juveniles in our Blackfoot sample to 4 (3 F and 1 M), all of which remained in the hunted area.

Our population models indicated that the mountain lion population in the Blackfoot watershed declined by approximately 11–12% per year between 1998 and 2000 (Table 7). With cessation of hunting in the Garnet study area in 2001, the 3-segment model predicted recovery beginning immedi-

ately, with the watershed population growing at approximately 3% annually (Table 7). The 4-segment model indicated that mountain lion numbers in the watershed were still slightly declining between 2001 and 2004, before climbing rapidly following reductions in quotas outside the Garnet in 2005 (Table 7). Both models predicted a watershed-wide population level in January 2007 slightly below 1998 levels (Fig. 4). Both models also predicted final abundances in the Garnet study area of approximately 28 individuals, 9 fewer than at the start of the study. The trend in watershed-wide estimates from both modeled populations matches the minimum count for the Garnet based on backdating (Fig. 4); however, both models predicted a slower recovery within the Garnet study area than the minimum count for the number of animals based on backdating (Fig. 4).

The growth rate of the watershed-wide, mountain lion population was most sensitive to changes in adult female survival followed by juvenile and kitten female survival and maternity (Fig. 5). Negative sensitivities of dispersal from the Garnet to the hunted area of the watershed following 2001 attest to the lower survival probability of adults in the hunted area compared to the protected Garnet. LSA showed that hunting increased the importance of adult female survival to population growth by 50%, while reducing the significance of kitten survival and maternity (Fig. 6). The sum of adult female survival, female kitten survival, and maternity accounted for 92% and 57% of the variability in annual population growth of non-hunted and hunted populations, respectively. In general, adult female survival levels below 0.80 should lead to declining population levels (Fig. 7).

DISCUSSION

Population Characteristics

Hunting directly reduced population size from 37 to 20 animals between 1997 and 2000, but population parameters such as litter size, birth interval, maternity, age at dispersal, and age at first breeding were not significantly affected. Increased harvest increased the proportion of adult males in the population, while reducing the average age of both adult males and females, likely because of a compensatory immigration response into vacated home ranges (Cooley et al. 2009). We had hypothesized that female recruitment would be reduced by harvest, perhaps more greatly than

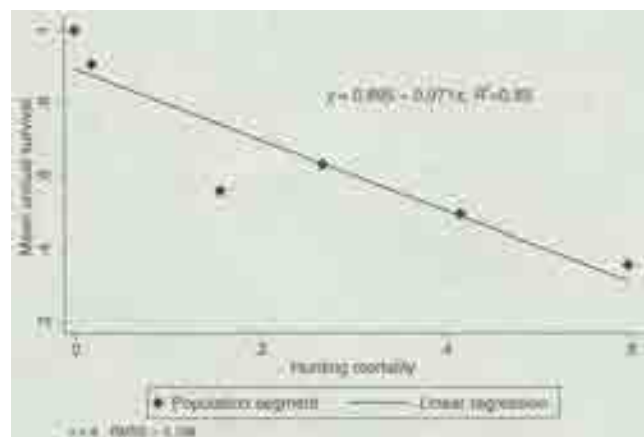


Figure 3. Regression of the relationship of hunting mortality and survival of independent mountain lions, 1998–2006, in the Blackfoot River watershed, Montana based on the management model population breakdown (see also Fig. S2).

Table 7. Modeled population growth rate (λ ; \pm SD) based on the 3- and 4-segment population models in western Montana, 1998–2006.

Study area	Model	1998–2000 (λ)	2001–2004 (λ)	2005–2006 (λ)
Garnet	3-Segment	0.8686 (0.08)	1.024 (0.06)	1.024 (0.06)
	4-Segment	0.9352 (0.11)	0.9855 (0.05)	1.016 (0.09)
Blackfoot	3-Segment	0.8797 (0.08)	1.033 (0.06)	1.033 (0.06)
	4-Segment	0.8829 (0.12)	0.9375 (0.11)	1.176 (0.10)
Combined	3-Segment	0.8795 (0.08)	1.034 (0.05)	1.034 (0.05)
	4-Segment	0.8928 (0.11)	0.9475 (0.09)	1.155 (0.09)

males because of shorter female dispersal distance and reduced juvenile survival, resulting in an increased adult female age structure. Both female and male immigration were likely occurring during the heavy harvest period despite very low juvenile survival in the study area. The change in age structure of the population to a greater proportion of males did not affect productivity.

We estimated a mean litter size of 2.92 (measured at the den <7 weeks); however, this did not differ between hunted and unhunted periods. Estimates of litter size have ranged from a low of 1.9 in Florida (Maehr and Caddick 1995) to a high of 3.1 in southeastern British Columbia (Spreadbury et al. 1996), with most averaging around 2.5 (Logan and Sweanor 2001). Logan and Sweanor (2001), Cooley et al. (2009), and most recently Hostetler et al. (2012) have likely produced the least biased estimates of litter size by visiting den sites within the first month of birth, producing means of 3.0 ($n=53$), 2.55 ($n=33$), and 2.6 ($n=94$), respectively. Similarly, our estimated birth interval of 19.8 months closely matched others in the literature, including 17.4 in New Mexico (Logan and Sweanor 2001), 19.7 in Alberta (Ross and Jalkotzy 1992), and 24.3 in Utah (Lindzey et al. 1994).

We found no effect of hunting on maternity rates, and the mean maternity rate of 1.29 was also similar to other published rates (e.g., New Mexico ranged from 1.3 to 1.6 kittens/F/yr [Logan and Sweanor 2001], whereas

Robinson et al. [2008] and Cooley et al. [2009] reported maternity rates in hunted populations of 1.2 and 1.1 kittens/F/yr). Onorato et al. (2011) found the mean age of sires in our population, 35 months (range: 15–57 months), was younger than reported elsewhere. For instance, Logan and Sweanor (2001) found that 71% of litters in their non-hunted population were sired by males 35–88 months of age. However, as indicated above, the younger age structure of the male population during the hunted period did not affect kitten production.

Mean age at dispersal in our study population was similar to other mountain lion studies, where dispersal occurred between 10 and 33 months (Sweanor et al. 2000). Levels of philopatry were also similar to non-hunted populations. Sweanor et al. (2000) found that 68% of female recruits came from the local population, compared to a 50% philopatry rate in juvenile females in our work. We documented 100% male juvenile dispersal following protection from hunting.

Perhaps our most striking finding of the effects of hunting on the characteristics of this mountain lion population was the elimination of emigration during the heavy harvest period. Although this result may suggest a compensatory response (i.e., increased philopatry) of juveniles to reduced conspecific densities, juvenile survival was reduced to a level such that only 2 females and no males survived to dispersal

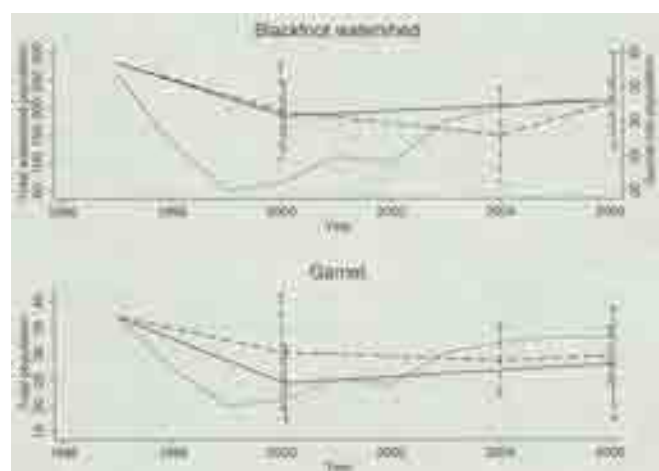


Figure 4. Projected population levels (\pm 1 SD) for the entire Blackfoot watershed and Garnet study area based on the top population models: 3-segment model (solid black line) and 4-segment model (dashed line). The minimum population for the Garnet study area, based on backdating known-aged animals, is included for comparison (solid gray line).

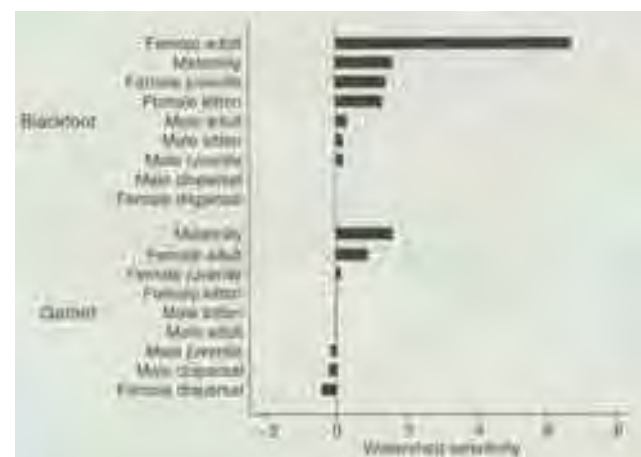


Figure 5. Sensitivities of mountain lion population growth to matrix vital rates of the 3-segment population model, 2001–2006. Maternity sensitivity is for both the Garnet and Blackfoot hunted area subpopulations in western Montana. For ease of interpretation, we present only sensitivities of the entire watershed population based on the 3-segment model 2001–2006; the sensitivities for all population segments from other population models were similar.

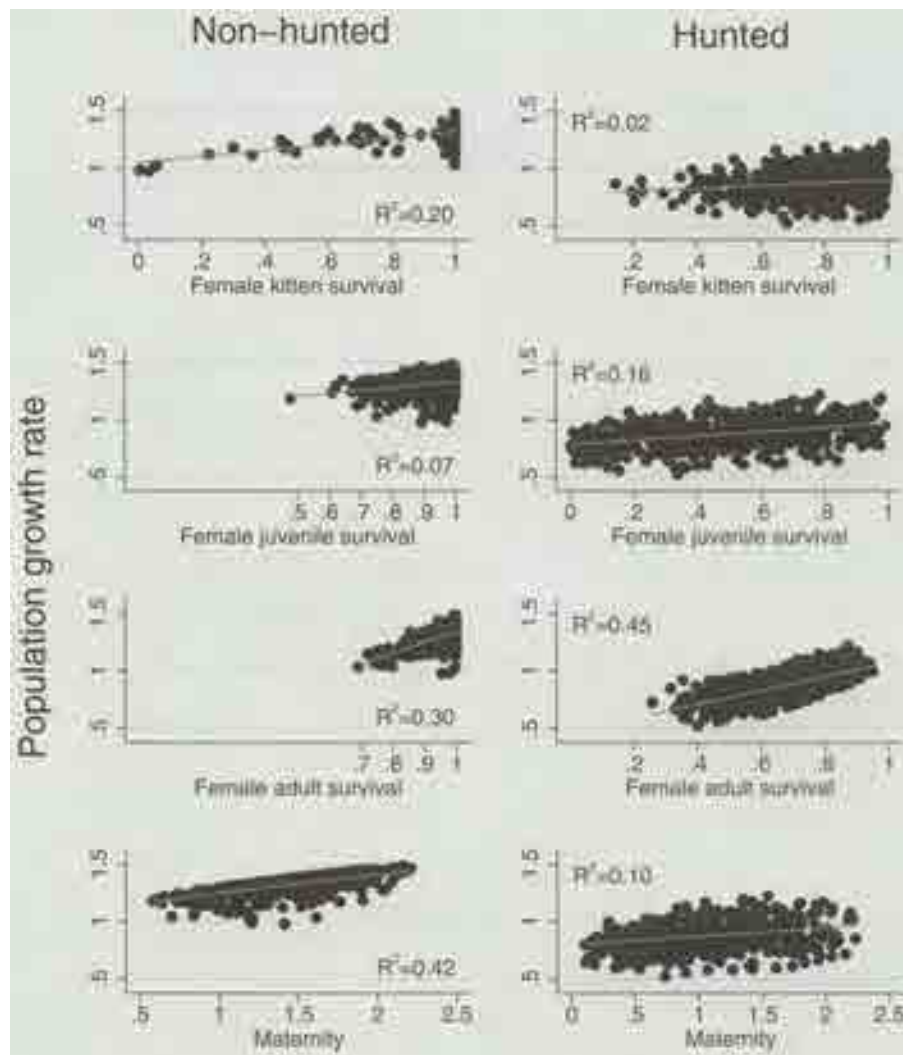


Figure 6. Life-stage simulation analysis (LSA) for mountain lions in the Garnet study area in West-Central Montana during the hunted and protected periods from 1998–2006. The R^2 value describes the proportion of the variation in population growth explained by variation in the vital rate. We omitted values for males because their survival rates and associated variances had little effect on population growth.

age (Table 5). Metapopulation dynamics are an increasingly important focus of mountain lion management and immigration, and emigration can play a major role in balancing hunted and non-hunted mountain lion populations (Beier 1993, Robinson et al. 2008, Cooley et al. 2009). Harvest levels equivalent to those recorded during the first 3 years of our study may severely reduce a population's ability to act as a source of immigration to other areas, affecting not only the focal population level, but also those populations surrounding it (Liu et al. 2011).

Survival and Mortality

Human-caused mortality shaped the survival of mountain lions in our study area, with hunting being the leading cause of mortality. The compensatory mortality hypothesis posits that harvest reduces the probability of animals experiencing other sources of mortality, thus allowing survival rates to remain relatively constant. We found an almost perfectly linear decrease in total survival of adults and juveniles with increased hunting mortality. We also found that mortality

due to all other causes (i.e., illegal, natural, depredation, vehicle, and unknown) was actually lower in the non-hunted population when compared to the hunted population. Both of these findings support the additive mortality hypothesis. The 3-segment model demonstrated the distinct difference between harvest pressures and resultant survival within the Garnet study area and remainder of the Blackfoot following the restriction of hunting in 2001. We interpret the relatively poor performance of the management model as evidence that the small incremental reductions in quotas following 2000 (Table 1) did not result in significant differences in population-level survival rates.

We believe an important mechanism rendering the effects of harvest as additive is kitten mortality due to starvation following harvest of adult females. We found an essentially equal number of kitten mortalities due to the direct effects of hunting through abandonment and natural mortality following closure of the Garnet to hunting. However, because of the timing of hunting mortalities (early in the biological yr), and the longer period of monitoring and

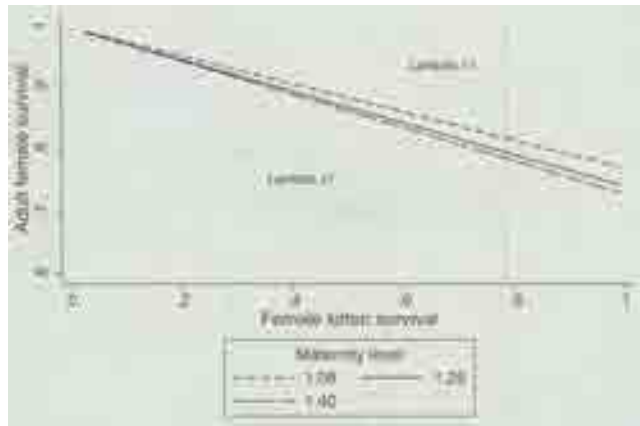


Figure 7. The relationship between mountain lion female kitten survival, adult female survival, and population growth at maternity rates of 1.08, 1.29, and 1.4. Areas above the lines represent possible lambda values greater than 1.0 and areas below represent survival levels that may lead to a decline in population. The dotted reference line represents our kitten survival estimate of 0.785 from 1998 to 2006 in the Blackfoot River watershed, Montana.

sample size following closure of the Garnet to hunting, estimated mortality rates due to hunting were significantly higher. The main influence of hunting on kitten survival may be starvation due to abandonment, not infanticide, and reductions in natural mortality do not compensate for hunting losses of kittens. Our results regarding the additive nature of hunting mortality in mountain lion populations build on Cooley et al. (2009). The additive effects of harvest, not only on adults but also through the orphaning of kittens, suggests that hunting, especially of adult females, shapes survival in hunted populations and has the potential to quickly reduce population levels.

Logan and Sweanor (2001) described the “sledgehammer approach,” where hunting quotas are set mainly by the previous season’s hunter success rate. As success rates decline, quotas may be reduced. However, because of a lack of inexpensive and reliable methods for tracking populations, even reduced quotas may not match existing population levels leading to further declines (Fryxell et al. 2010). Our survival modeling suggested that incremental reductions in quotas outside the protected Garnet study area did not result in significant increases in adult survival until female quotas were reduced to 0, possibly because of a mismatch between quota levels and existing population levels.

Population Modeling and Growth

Matrix population models based on the structure of our 2 top survival models resulted in similar predicted population-level outcomes. They suggested that the mountain lion population in the greater Blackfoot watershed was declining annually between 11% and 12% before protection of the Garnet study area in 2001, but recovered to levels slightly below 1998 by the end of the study in 2007. This was due to protection of the Garnet area, dispersal out of the protected Garnet, and reduced quotas in the remainder of the watershed beginning in 2004. Differences in the predicted level of decline, and the speed and level of the recovery is the result of slightly different estimated survival rates for the various survival

model segments. Our estimates of kitten survival were biased high because of inclusion of kittens first marked as late as 12 months. However, even with this optimistic estimate of kitten survival, both population models predict declining populations in response to the heaviest harvest levels. If our kitten sample was based purely on animals marked at the den, our estimate of survival would most certainly be lower as would our estimate of population growth, thus strengthening our conclusion of harvest being additive.

Our sensitivity analyses showed that maternity was second in importance to female survival rates in influencing population growth rates. Sensitivity analysis does not account for annual variability, as the LSA does. Although maternity rate was held constant for all models at 1.29 kittens per female per year, fecundity is a function of maternity and adult female survival. Differences in fecundity also partially explain the different performance of each model segment.

Sensitivity analysis also showed that dispersal of both juvenile males and females from the protected Garnet into the hunted Blackfoot watershed had a strong negative effect on Garnet population growth and a weak negative effect on growth in the watershed as a whole. The population demonstrated a negative sensitivity of dispersal from the Garnet to the Blackfoot (Fig. 5), which is due to the lower survival rates in the unprotected portion of the Watershed. The matrix model suggested that juveniles would be better off remaining where their probability of survival and reproduction were higher (i.e., inside the Garnet).

Our LSA clearly demonstrated the effect of hunting on the normal population dynamics of mountain lions. In the non-hunted population, adult female survival accounted for approximately 30% of the variation in population growth between years, whereas reproduction (kitten survival and maternity) accounted for approximately 62%. Hunting reversed this balance, shifting the reliance of population growth towards adult survival (45% of the variation in growth), and away from reproduction (12%). In general, we found little effect of male survival on population growth. In the non-hunted segment of our population, male survival accounted for less than 1% of the variability in annual population growth; this level increased to 5% in the hunted population.

By varying 3 important vital rates to population growth (adult female survival, female kitten survival, and maternity) in a deterministic matrix model, we showed that adult female survival rates >0.80 (depending on kitten survival) are required for population growth (Fig. 7). However, kitten survival estimated with minimal bias due to delayed marking (e.g., Cooley et al. 2009, Hostetler et al. 2010) suggests that rates may rarely be >0.50 (see also Logan and Sweanor 2001). At that level, adult female survival <0.85 will likely result in population reduction (Fig. 7). Consistent with these results, Lambert et al. (2006) modeled broad mountain lion population declines in British Columbia, Washington, and Idaho with adult female survival rates of 0.77. Our estimates of mean kitten survival may have been biased high as the average age of a kitten when first marked was 4.7 months. As a result, our population models may slightly overestimate

true growth. However, the predictions of our deterministic model regarding the relationship of kitten survival, adult female survival, maternity, and population growth (Fig. 7) are not affected by our measure of kitten survival.

Immigration and emigration have dramatic effects on real population growth rates when compared to modeled rates that do not account for dispersal. Our population models assumed a closed system consisting of only 2 populations, the Garnet and the remainder of the Blackfoot drainage. We found no juvenile dispersal from the Blackfoot back into the Garnet and therefore could not model the effect of immigration into the Garnet. We found a difference of approximately 8 animals between our modeled population estimates, and our minimum count for the Garnet. This small difference over a 9-year period could be explained by as few as 3 litters that were born inside the Garnet and were not accounted by our estimate of mean maternity rates. However, immigration into the Garnet was likely occurring, but from outside the Blackfoot watershed. Accounting for immigration and emigration, Cooley et al. (2009) showed real population decline ($\lambda = 0.91$) in a heavily hunted area with adult female survival estimated at 0.66. Without immigration, population growth would have been significantly lower, that is, $\lambda = 0.78$. That same study found an essentially stable real population growth rate ($\lambda = 0.98$) in a lightly hunted population with adult female survival of 0.87, with emigration reducing modeled growth from 1.10.

MANAGEMENT IMPLICATIONS

Our research indicates that mountain lion populations are affected by human harvest through additive effects on survival of all age classes and a resultant disruption of juvenile dispersal. We found no effect of harvest on reproductive parameters (i.e., litter size, birth interval, maternity, age at dispersal, and age at first breeding). The consistency in litter size and associated birth interval and maternity rate observed by several studies with varying levels of protection suggests that mountain lions do not possess the ability to respond to harvest through increased reproduction. This lack of elasticity in reproduction and therefore recruitment increases the need for connectivity to facilitate immigration into hunted populations. The high reliance on adult female survival for population growth should dictate very conservative female harvest unless population reduction is the stated management goal. Our results show the strong effect of harvest on targeted populations through shaping survival, and perhaps on neighboring untargeted populations by affecting dispersal patterns. Given the limitations of techniques of abundance estimation currently available and the effect of harvest on mountain lion populations, we recommend lion population objectives and harvest strategies that account for this lack of precision. A source-sink or zone management strategy, as proposed by Logan and Sweeney (2001) would protect the biological integrity of mountain lion populations, while providing public harvest opportunity and flexibility to managers in addressing management concerns.

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SUPPORTING INFORMATION

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Special Section on Mountain Sheep Management

The Gordian Knot of Mountain Lion Predation and Bighorn Sheep

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ABSTRACT The objective of this review is to generate a synthesis of research conducted on predation of bighorn sheep (*Ovis canadensis*) and to suggest directions for future research relative to current knowledge gaps and a novel hypothesis. This review is primarily based on literature from the last 60 years on desert bighorn sheep (*O. c. nelsoni*), Rocky Mountain bighorn sheep (*O. c. canadensis*), and mountain lion (*Puma concolor*) predation. Although, many predators kill bighorn sheep, only mountain lions are currently considered to be the primary proximate cause of mortality for many bighorn sheep populations. The ultimate cause of this phenomenon has vexed wildlife managers for >40 years. There are 3 primary reasons for increased predation on bighorn sheep by mountain lions. First, there is an increased presence of mountain lions in habitats where they were historically absent or rare because of the expansion of mule deer (*Odocoileus hemionus*) following the extensive conversion of fire-maintained grasslands to shrublands in the late-1800s. Second, is the extirpation of the 2 dominant apex carnivores (wolves [*Canis lupus*] and grizzly bears [*Ursus arctos*]) during this same time period and a hypothesized numerical response of mountain lions to those extirpations. Finally, the response of mountain lions to the cessation of >70 years of intensive predator control has often resulted in unsustainable mountain lion-bighorn sheep ratios, especially for desert bighorn sheep. Additionally, the effect of mountain lion predation is exacerbated by declines in bighorn sheep that do not result in declines in mountain lions because of their ability to prey switch to mule deer, elk (*Cervus canadensis*), or domestic cattle; kleptoparasitism of mountain lions kills, by ursids and canids, resulting in higher kill rates for mountain lions; and a possible ecological trap where adaptations derived over evolutionary time are no longer adaptive because of human-induced changes in the sympatric apex predator guild. Control of mountain lions, when mountain lion-ungulate ratios are high, might be required to protect small or endangered bighorn sheep populations, and to produce bighorn sheep for restoration efforts. © 2017 The Wildlife Society.

KEY WORDS apparent competition, bighorn sheep, ecological trap, kleptoparasitism, mountain lion, Native American fire, predation, predator control, predator-prey ratio.

Predation on bighorn sheep (*Ovis canadensis*), specifically mountain lion (*Puma concolor*) predation on isolated populations of bighorn sheep, has hindered restoration efforts for bighorn sheep in western North America. This review paper synthesizes our current knowledge and includes a novel hypothesis for the ultimate cause of high mountain lion predation that has confounded wildlife managers for >4 decades. This review is derived primarily from historical literature published in the last 60 years on desert bighorn sheep (*O. c. nelsoni*), Rocky Mountain bighorn sheep (*O. c. canadensis*), and mountain lion predation.

Predation has a profound influence on prey population dynamics in many ecosystems. Laboratory, mesocosm, or natural experiments have assessed the role of predation on non-ungulate prey including relationships between starfish

(*Pisaster* spp.) and tidal pool prey (Paine 1969), mites (*Typhlodromus occidentalis*) and mite prey (*Tarsonemus pallidus* and *Eotetranychus sexmaculatus*; Huffaker 1958), mesocarnivores and waterfowl (Garrettson and Rohwer 2001), weasels (*Mustela nivalis*) and voles (*Microtus agrestis*; Graham and Lambin 2002), mountain lions and porcupines (*Erethizon dorsatum*; Sweitzer et al. 1997), lynx (*Lynx canadensis*) and snowshoe hares (*Lepus americanus*; Krebs et al. 1995), and numerous other species. Hairston et al. (1960:424) noted “herbivores are seldom food-limited and appear most often to be predator-limited.” Excluding anthropogenic associated mortality, only disease has the potential for greater population-level consequences on prey populations (Pedersen et al. 2007).

The scientific literature on predation and ungulates is replete with evidence of the depressive effects that carnivores can have on ungulate populations (Gasaway et al. 1992, Harrington et al. 1999, Hayes et al. 2003, Wittmer et al. 2005, Bergerud et al. 2007). For example, some species of African ungulates increased ≥ 7 times following the removal

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of apex carnivores and all prey species <150 kg declined to near pre-removal densities after those predators were reestablished (Sinclair et al. 2003).

Asymptotic densities of ungulate populations, including bighorn sheep, on predator-free islands and in predator-free enclosures are examples of the profound influence the absence of predation can have on prey density. In North America, maximum ungulate densities in those settings are remarkably similar across an array of ecosystems and study area sizes ranging from 2.5–8,000 km² (McCullough 1979, Bowyer et al. 1999, Bergerud et al. 2007, Simard et al. 2010, Rominger 2015). In predator-free environments the median maximum density of deer-size ungulates is approximately 35 individuals/km² and compared to adjacent mainland areas with predators, ungulate densities are generally an order of magnitude, or more, greater (Rominger 2015).

High ungulate densities in the absence of predation have been documented in many cases for decades (Matthews 1973, New Mexico Department of Game and Fish [NMDGF], unpublished data) and for 80–130 years in the case of the Slate Islands, Ontario, Canada, Anticosti Island, Quebec, Canada, and Antelope Island, Utah, USA (Wolfe and Kimball 1989, Potvin et al. 2003, Bergerud et al. 2007) despite dramatic changes in vegetation composition. In other northern hemisphere predator-free islands, the non-irruptive mean ungulate density is like that reported on North American islands (Kaji et al. 2004). Density of tropical fauna is also 10 to 100 times greater on tropical predator-free islands compared with adjacent mainland densities, which mirrors the ratio of ungulate densities on temperate islands to adjacent mainlands (Terborgh et al. 2001).

The predator evasion strategy of bighorn sheep relies on the combination of keen eyesight to detect predators at distance and the ability to navigate steep terrain and outmaneuver predators following visual detection (Geist 1999). Sexual segregation of female and juvenile bighorn sheep, from male bighorn sheep, is hypothesized to be related to anti-predator behavior that includes proximity to steep escape terrain (Bleich et al. 1997). Both strategies are more effective, and therefore likely to have evolved, in response to coursing predators (e.g., wolves [*Canis lupus*]; Festa-Bianchet 1991). These strategies are less effective against a stalking predator (e.g., mountain lions).

Bighorn sheep-predator relationships are associated with potential proximate and ultimate causes. High mountain lion predation on bighorn sheep, particularly desert bighorn sheep and Sierra Nevada bighorn sheep (*O. c. sierrae*) has been the proximate factor hindering restoration in many historical ranges (Wehausen 1996, Hayes et al. 2000, Kamler et al. 2002, Rominger et al. 2004). High mountain lion predation on bighorn sheep, seen since the 1970s, appears to be related to the cessation of intensive predator control used during much of the twentieth century. This release of mountain lions from predator control has resulted in increased mountain lion-bighorn ratios that can be unsustainable based on native ungulate density, especially for desert bighorn sheep (Rominger 2013).

The ultimate cause of high mountain lion predation on bighorn sheep appears to be related to a restructuring of the apex predator guild following the extirpation of wolves and grizzly bears (*Ursus arctos*; Young and Goldman 1944, Brown 1985), major shifts in biotic communities (Berger and Wehausen 1991, McPherson 1995), and the associated restructuring of the ungulate guild across much of western North America. This restructuring has been primarily influenced by the cessation of widespread Native American burning and hunting (Turner 1991, Kay 1995, Stewart 2002), the introduction of livestock and feral equids (Berger and Wehausen 1991, Brown 1994), and the resulting expansion of mule deer (*Odocoileus hemionus*) and mule deer habitats.

Other ecological factors affecting predation and bighorn sheep include apparent competition (Rominger et al. 2004, Johnson et al. 2013), specialist predators (Ross et al. 1997, Logan and Sweaner 2001, Knopff and Boyce 2007, Knopff et al. 2010), kleptoparasitism (Elbroch et al. 2015), vulnerability of small populations (Berger 1990), subsidized predators (Rominger et al. 2004), indirect effects of predation (Bourbeau-Lemieux et al. 2011), and declining native prey (Unsworth et al. 1999). The extirpation of wolves and grizzly bears from the predator guild associated with bighorn sheep resulted in mountain lions becoming the primary bighorn sheep predator. This human-induced change might have resulted in an ecological trap (Dwernychuk and Boag 1972, Schlaepfer et al. 2002). Continued restoration of wolf and grizzly bear populations throughout Rocky Mountain and desert bighorn sheep habitat will add complexity associated with multi-predator, multi-prey systems (Knopff and Boyce 2007, Kortello et al. 2007, Knopff et al. 2010, Ruth et al. 2011) compared to many systems that only have had mountain lions as a resident apex carnivore for most of the last century.

Virtually all predators, sympatric with bighorn sheep, ranging in size from gray fox (*Urocyon cinereoargenteus*) to grizzly bear, have been documented to prey upon bighorn sheep (Sawyer and Lindzey 2002) and except for foxes, have been documented to prey on adults and juveniles. Although smaller predators (e.g., coyotes [*Canis latrans*], bobcats [*Lynx rufus*], and golden eagles [*Aquila chrysaetos*]), and less cursorial predators (e.g., black bear [*U. americanus*] and grizzly bear) are likely more effective predators of neonates, mountain lions have been documented as the primary predator of lambs (Parsons 2007, Smith et al. 2014, Karsch et al. 2016).

The consensus in the earliest review of the effects of predation on desert bighorn sheep was that no predators had population-level consequences (Desert Bighorn Council [DBC] 1957). At the inaugural DBC meeting, a special session on predation concluded that bobcats and golden eagles were the primary predators of desert bighorn sheep but that neither species limited population demographics (DBC 1957). Most biologists working on desert bighorn sheep thought that mountain lion numbers were so low, and the predator-control programs so strict (private and government year-round trapping and hunting, bounties, poisons), that

mountain lions simply could not induce population declines. The first monograph and 2 of the earliest books on Rocky Mountain and desert bighorn sheep ecology (Buechner 1960, Geist 1971, Monson and Sumner 1980) were written during a period when mountain lions were unprotected, or just recently protected by law, and wolves had been extirpated from all bighorn sheep habitats in the conterminous United States (Young and Goldman 1944). Mountain lion predation was not considered to be an important influence on bighorn sheep population dynamics.

In contrast, 5–6 decades later, a different predator-management paradigm, with mountain lions protected throughout the United States (except TX) and Canadian provinces, has shifted our interpretation of the consequences of predation. The demographic recovery of mountain lions in virtually all bighorn sheep ranges, and the advent and use of radio-telemetry to assess mortality causes, has resulted in multiple examples of population-level effects of mountain lion predation on bighorn sheep (Harrison and Hebert 1988, Wehausen 1996, Hayes et al. 2000, Rominger et al. 2004, Festa-Bianchet et al. 2006). In a recent review, Sawyer and Lindzey (2002) determined that mountain lions were capable of depressing bighorn sheep populations and numerous publications have corroborated that conclusion (Kamler et al. 2002, McKinney et al. 2006, Foster and Whittaker 2010, Brewer et al. 2013, Johnson et al. 2013).

CHANGES IN THE PREDATOR-PREY COMMUNITY

Predation on bighorn sheep hypothetically has been influenced by a change in the apex predator guild following the extirpation of wolves and grizzly bears and a change in the ungulate guild following the conversion of much of western North America from a grassland ecosystem maintained with fire by Native Americans to a shrub-dominated ecosystem. Changes in the ungulate guild are primarily related to the extensive range expansion of mule deer throughout large portions of bighorn sheep range (Berger and Wehausen 1991, Turner 1991, McPherson 1995, Kay 1995, Stewart 2002).

Changes in Predator Guild

Grizzly bear and wolf distribution overlapped nearly all Rocky Mountain bighorn sheep range and some desert bighorn ranges (Young and Goldman 1944, Lamb et al. 2017). These 2 predators were absent only from the most xeric parts of Mexico, western Arizona, California, and Nevada (Young and Goldman 1944, Lamb et al. 2017). The extirpation of wolves (Young and Goldman 1944) and near extirpation of grizzly bears (Brown 1985, Lamb et al. 2017) is well documented. Mountain lions are subordinate to wolves and bears (Boyd and Neale 1992, Kortello et al. 2007, Ruth et al. 2011, Elbroch et al. 2015) and much like the well documented response of subordinate coyotes to the absence of wolves (Berger and Gese 2007, Merkle et al. 2009), mountain lions almost certainly have responded numerically to competitive release from these 2 dominate carnivores. Evidence of this subordination is the observation

that when pursued by hounds, mountain lions in North America will climb trees. In South America, where mountain lions did not evolve with a large canid predator, they do not climb trees when pursued by hounds (B. M. Jansen, Arizona Game and Fish Department [AZGFD], personal communication.). Although the total cost to mountain lions of sympatry with wolves has not been assessed, it is hypothesized that interactions could affect reproduction, survival rates, habitat selection, and home range size (Kortello et al. 2007, Ruth et al. 2011). Mountain lion survival was negatively affected by increasing annual wolf use, wolves were responsible for 15% of adult mountain lion deaths, and wolf predation decreased annual kitten production 10–39% (Ruth et al. 2011).

Anecdotal evidence suggests that mountain lions and coyotes were rare or absent where grizzly bears and wolves occurred in New Mexico (Barker 1953, Stevens 2002). Stevens (2002) hunted grizzly bears, black bears, and mountain lions with dogs throughout the late 1800s, in the portion of New Mexico that is now the Gila Wilderness, but only mentioned 2 mountain lions in his book. In 1882, a Professor Dyche from the University of Kansas came to New Mexico to collect grizzly bears in what is now the Pecos Wilderness. Using a tree blind and a deer for bait, Dyche reported bobcats and foxes but not a single coyote in his diary, although they became common after the turn of the century following the extirpation of wolves (Barker 1953).

Extirpation of wolves and grizzly bears was facilitated by intensive predator control. Private predator control efforts began in the western United States soon after livestock was introduced following the end of warfare with Native Americans. In 1914, following a Congressional appropriation, federal agencies employed 300 predator control agents to protect livestock and remnant wild ungulate populations (Brown 1992). Control efforts included year-round trapping, poisoning, hunting with hounds, denning, and bounties paid from private and government sources (Buechner 1960, Brown 1992).

Xeric ecoregions with sufficient numbers of deer to maintain resident mountain lions, but without wolves or grizzly bears, presumably functioned much like systems where high mountain lion predation on bighorn occurs today. Historical accounts suggest that native ungulate densities may have been low in multi-prey ecosystems with sympatric mountain lions as the primary apex predator. As Charles Sheldon embarked on a bighorn sheep hunt into Mexico in 1915, his guide remarked that he had recently been to the Sierra Pintas in Arizona and “lions are numerous there but sheep are scarce” (Sheldon 1979:66). During the 1907 William Hornaday expedition from Tucson, Arizona to the Pinacate Mountains in Sonora, Mexico, a single adult deer was seen in a trip that lasted more than 30 days (Hornaday 1908).

Mountain lions may have been less common historically because of interspecific competitors (Stevens 2002, Riley et al. 2004, Wittmer et al. 2005) and a much more limited distribution of mule deer (Berger and Wehausen 1991, Potter 1995, Heffelfinger and Messmer 2003). Although

mountain lion abundance might have been briefly released following the extirpation of wolves, >70 years of intensive predator control kept numbers low. Quantifying abundance of mountain lions is difficult (Logan and Sweaner 2001) and there are no reliable estimates from periods of intensive predator control. Bounty records from 1902–1906 in Montana indicate that bounties paid for wolves outnumbered those paid for mountain lions by >30:1. By region, there was an inverse relationship between the number of wolves and mountain lions for which a bounty was paid suggesting that in areas where wolves were prevalent, mountain lions were rare (Riley et al. 2004).

Changes in Prey Guild

Grasslands were maintained across western North America with fire by Native Americans for millennia (Turner 1991, Kay 1995, McPherson 1995, Stewart 2002). Shrubs, which are the primary forage of mule deer, were an inconspicuous component of desert grasslands prior to 1880 (McPherson 1995). Reports of mule deer were rare in the diaries of early travelers and were reported to be a minor component of Native American diets (Berger and Wehausen 1991, Potter 1995, Heffelfinger and Messmer 2003, Kay 2007). The landscape conversion, of historical grasslands to shrub or chaparral, was influenced by grazing of excessive numbers of livestock and feral equids (Berger and Wehausen 1991). This conversion resulted in range expansion of mule deer and concomitantly the presence of mountain lions (Berger and Wehausen 1991). This conversion of grasslands to chaparral and shrublands occurred throughout bighorn sheep ranges in western North America. Range expansion of mountain lions following invasion by white-tailed deer (*Odocoileus virginianus*) into areas of clear-cut old-growth forests converted to shrub-dominated habitats also has been documented (Compton et al. 1995, Wittmer et al. 2005).

The 500,000-km² Great Basin ecoregion is hypothesized to have been void of deer and mountain lions because grass-dominated basin and range habitats, maintained by burning by Native Americans, did not support deer (Berger and Wehausen 1991). The Great Basin contains extensive bighorn sheep habitat and pronghorn (*Antilocapra americana*) and bighorn sheep were likely the primary ungulates present in this vast landscape. Therefore, bighorn sheep in the Great Basin may have encountered little predation by mountain lions just 125 years ago. Niche separation between pronghorn and bighorn sheep would have resulted in this ecosystem functioning much like a single-prey system. Analysis of Native American diets at 2 pueblo sites in New Mexico reported the ratio of pronghorn specimens to deer specimens was 25:1 and 79:1, respectively (Potter 1995).

Mountain lions are most effective at limiting bighorn sheep populations when they are able to prey switch onto deer, elk, or cattle and there is little evidence that mountain lions can limit bighorn sheep populations without alternative prey (Berger and Wehausen 1991, Wehausen 1996). Resident mountain lions were undocumented in bighorn sheep habitat of the Providence and New York Mountains, California, United States, until the introduction of mule deer (R. A. Weaver,

California Department of Fish and Wildlife, personal communication). Mountain lion predation is rare in the most xeric mountain ranges without sympatric deer or livestock (Berger and Wehausen 1991, Cronin and Bleich 1995).

THE PARADOX OF MOUNTAIN LION DENSITY

Regardless of the mechanisms that have resulted in the predator-prey guilds present today, it is the current ratio of mountain lions to native ungulate populations that appears to influence the primary proximate cause of mortality for bighorn sheep. Following decades of intensive predator control, mountain lions have increased numerically and in distribution (Fecske et al. 2011, Knopff et al. 2014). Predator control across North America was initially directed primarily toward wolves; however, the emphasis switched to mountain lions, black bears, and coyotes following the near-extirpation of wolves. Some states paid higher bounties for female mountain lions to incentivize population reduction (Buechner 1960). Until the cessation of large-scale predator control, mountain lion predation on bighorn sheep populations was insignificant (DBC 1957).

In a review of 12 studies assessing the effects of sport hunting on mountain lions, the range of densities was 1.1–7.1 mountain lions/100 km², although the low density does not include subadults or kittens (Cooley et al. 2011). A density of 1–3 mountain lions/100 km² when coupled with a standard ungulate kill rate (Wilckins et al. 2016) may have a profound influence on ungulate population dynamics (Table 1).

Global positioning system (GPS) collaring of mountain lions has allowed for a refinement of kill rates by visiting waypoint clusters associated with kills and most studies have confirmed that mountain lions kill about 1 ungulate/week (Anderson and Lindzey 2003, Knopff et al. 2009, Wilckins et al. 2016). This value is used as the mean for calculating the number of ungulate kills/100 km² with the 95% confidence interval for a high and low kill rate (Table 1; Wilckins et al. 2016). At a high density of 3 mountain lions/100 km² and a high kill rate of 1.1 ungulate/week, there would be a predicted 172 kills/100 km² annually (Table 1). Most small desert bighorn sheep populations in New Mexico were predicted to go extinct with 5% additive mountain lion mortality (Fisher et al. 1999). For 172 kills to be 5% of a wild ungulate population, the density required would be 3,440 ungulates/100 km². At a low density of 1 mountain lion/100 km² and a low kill rate of 0.9 ungulate/week there would be 47 kills annually (Table 1). For 47 kills to be 5% of a wild ungulate population, the density required would be 940 ungulates/100 km². Both numbers are essentially 1–2 orders of magnitude greater than currently estimated ungulate densities in desert bighorn sheep ranges in New Mexico (Bender et al. 2012, Rominger 2013). This is the paradox that influences high mountain lion predation in desert bighorn sheep ranges. Cunningham et al. (1999) estimated that 44% of mountain lion dietary biomass was comprised of livestock at an Arizona study area. The fact that mountain lions are a subsidized predator (Soule et al. 1988) is a partial explanation for their ability to persist despite low native

Table 1. Kills as a percentage of 3 hypothetical deer-size ungulate-prey population densities using 3 values of mountain lion density and 3 values of kill rates (e.g., low lion density [1.0] \times low kill rate [0.9] \times 52 weeks = 47 kills/annually). The final column is number of deer-size ungulates/100 km² required for the number of kills to be a 5% mortality rate (e.g., 47 kills/5 \times 100) = 940.

Mountain lion density/100 km ^{2a}	Mountain lion weekly kill rates ^b (no. prey)	No. annual kills	Annual % mortality ^c at 50 prey/100 km ²	Annual % mortality ^c at 100 prey/100 km ²	Annual % mortality at 200 prey/100 km ²	No./100 km ² if % mortality = 5%
1	0.9	47	94	47	24	940
1	1.0	52	>100	52	25	1,040
1	1.1	57	>100	57	28	1,140
2	0.9	94	>100	94	47	1,880
2	1.0	104	>100	>100	52	2,080
2	1.1	114	>100	>100	57	2,280
3	0.9	140	>100	>100	70	2,800
3	1.0	156	>100	>100	78	3,120
3	1.1	172	>100	>100	86	3,440

^a These values lower than most values in Cooley et al. (2011).

^b Mean kill rate \pm 95% confidence intervals from Wilkins et al. (2016).

^c >100 indicates the estimated annual kill exceeds population size.

ungulate densities (Cunningham et al. 1999, Rominger et al. 2004).

In the Fra Cristobal Mountains, New Mexico, mountain lion control conducted from 1999 until 2013 resulted in the highest estimated ungulate density of any desert mountain range in the state (New Mexico Department of Game and Fish [NMDGF], unpublished data). The combined bighorn sheep and mule deer density is approximately 400/100 km² (NMDGF, unpublished data). From 2003 to 2013, an average of 3.3 mountain lions were killed annually on the 107-km² mountain range (NMDGF, unpublished data). However, even at this high ungulate density, 2 resident mountain lions could potentially kill nearly 25% of the resident ungulates annually.

A long-term mountain lion study on the San Andres Mountains, New Mexico documented 1.72–4.25 mountain lions/100 km² including adults, subadults, and cubs. This study was completed in 1995 just as high mountain lion predation adversely affected mule deer density and was also the predominant mortality cause associated with the biological extinction of desert bighorn sheep (Logan and

Sweaner 2001, Rominger and Weisenberger 2000). Following this study, mule deer density declined to one of the lowest ungulate densities reported in North America with an estimated 10–12 deer/100 km² (Bender et al. 2012, Rominger 2013). Although mountain lion density in the San Andres Mountains is currently unknown, they persist in this habitat despite a very low deer density. There has been no discernable recovery of mule deer in >20 years.

DIRECT PREDATION

Although predation by mountain lions had been anecdotally noted by several authors (Leopold 1933, DBC 1957, Blaisdell 1961), it was not until the earliest stages of the restoration of desert bighorn sheep in Texas that high mountain lion predation was documented to cause population declines (Kilpatrick 1976). In rapid succession, other western states and provinces began documenting instances of high mountain lion predation (Table 2). Most early data are reported as a percentage of radio-collared bighorn sheep killed annually (Muñoz 1982, Harrison and Hebert 1988, Creeden and Graham 1997, Ross et al. 1997).

Table 2. Examples of high mountain lion predation on bighorn sheep (bhs) in western North America.

Location	Year	Citation	Specifics
TX	1975	Kilpatrick (1976, 1982)	21 bhs killed inside captive breeding facility by mountain lions at Black Gap State Wildlife Area; the wild population estimated to have declined from 20 to <10
NM	1979	Muñoz (1982)	9 of 25 (36%) bhs killed by mountain lions in 14 months
NM	1980–1989	Hoban (1990)	22 of 43 bhs mortalities attributed to mountain lion predation
NM	1996–1997	Rominger and Weisenberger (2000)	Bhs decline from ~25 to 1 resulting in biological extinction. Mountain lion predation the primary cause of death
BC	1986–1988	Harrison and Hebert (1988)	2 female mountain lions kill a minimum of 21 bhs in 14 months
CO	1995	Creeden and Graham (1997)	5 of 14 (36%) radio-collared bhs killed by mountain lions within 12 months
AB	1985–1994	Ross et al. (1997)	13% of winter bhs population killed; 1 female mountain lion killed 9% of total population and 26% of lambs in 1 winter
OR	1995–2002	Foster and Whittaker (2010)	Hart Mountain bhs herd declined from 600 to 125 with mountain lion predation the primary cause of mortality
CA	1997–1999	Schaefer et al. (2000)	Mountain lion predation cause of 75% of bhs mortality
CA	1976–1988	Wehausen (1996)	49 bhs documented killed by mountain lions without telemetry
AZ	1979–1997	Kamler et al. (2002)	In meta-analysis of 365 translocated bhs, 66% of mortality was mountain predation

Table 3. Cause-specific mortality rates (CSMR) on bighorn sheep (bhs) attributed to mountain lion predation in western North America.

Location	Year	Citation	Mortality rates
CA	1988–1995	Wehausen (1996)	CSMR due to mountain lions was 0.38
AZ	1979–1997	Kamler et al. (2002)	In meta-analysis of 365 translocated bhs, the highest CSMR due to mountain lions was 0.29
AZ	1993–1996	Bristow and Olding (1998)	CSMR due to mountain lions was 0.12 for females and 0.15 for males
NM	1992–2000	Rominger et al. (2004)	CSMR due to mountain lions was 0.13 for males and 0.09 for females in desert habitat
OR	2004	Foster and Whittaker (2010)	CSMR due to mountain lions for 44 radio-collared bhs was 0.17 for males and 0.10 for females
AB/MT	1983–2003	Festa-Bianchet et al. (2006)	During years of high mountain lion predation, the CSMR due to mountain lions was 0.26 for males and 0.32 for females
CA	1992–1998	Hayes et al. (2000)	CSMR due to mountain lions for 113 radio-collared bhs ranged between 0.08 and 0.26

The development of survival models (Heisey and Fuller 1985, White and Burnham 1999) that incorporate data from telemetrically monitored bighorn sheep, allow researchers to calculate cause-specific mortality rates (CSMR; Table 3). Mountain lion-specific mortality rates of adult bighorn sheep have been as high as 0.26 (Hayes et al. 2000), 0.29 (Kamler et al. 2002), and 0.31 (Goldstein and Rominger 2012) in some ranges. Statewide lion-specific mortality rates for desert bighorn sheep in New Mexico between 1992 and 2002 were 0.16 (Goldstein and Rominger 2012) and 88% of New Mexico desert bighorn sheep populations went extinct or declined to <10 females during this period.

The high mortality rates on state-endangered desert bighorn, attributed to mountain lion predation, in New Mexico during the 1990s were unsustainable and caused populations to decline rapidly (Goldstein and Rominger 2012). However, substantially lower mountain lion mortality rates are projected to be detrimental to the persistence of small populations of bighorn sheep. A Vortex model for state-endangered desert bighorn sheep in New Mexico predicted that all extant populations had a 100% probability of extinction with just 10% mountain lion predation added to baseline non-predation demographic parameters (Fisher et al. 1999). Initial population sizes of these small herds ranged from 10–120 and just a 5% mountain lion predation rate induced an extinction probability of 0.82–1.0 for 6 extant herds (Fisher et al. 1999).

Following the initiation of mountain lion control in desert bighorn sheep ranges in New Mexico, numbers increased from <170 in 2001 to >1,100 in 2016 (Fig. 1; Ruhl and Rominger 2015). After 31 years on the New Mexico threatened and endangered species list, desert bighorn sheep were delisted in 2012 and returned to a state-protected game species (Rominger et al. 2009, Goldstein and Rominger 2013).

Predation is the dominant cause of mortality for ungulate neonates (Smith et al. 1986, Scotton 1998, Gustine et al. 2006, Quintana et al. 2016). Predation caused 82% and 86% of mortality of desert bighorn sheep lambs in 2 studies in New Mexico (Parsons 2007, Karsch et al. 2016). In both studies, mountain lions were the apex predator.

Although wolves are currently considered to be a predator of minor consequence, as mountain lions were in 1957, wolves are still recolonizing many Rocky Mountain bighorn sheep ranges and have just begun to re-occupy historical

desert bighorn sheep ranges in Arizona and New Mexico. The ecological relationship between wolves and mountain lions is not well understood (Hussemann et al. 2003, Kortello et al. 2007, Ruth et al. 2011, Krawchuck 2014) and research has been primarily conducted in ecosystems recently recolonized by one or both predators, or where both carnivores have responded to less intensive predator control (Knopff and Boyce 2007, Kortello et al. 2007, Ruth et al. 2011). Most of these studies have reported mountain lions to be subordinate to wolves resulting in usurpation of kills, direct mortality of adult and juveniles, and constriction of home ranges (Boyd and Neale 1992, Kortello et al. 2007, Ruth et al. 2011).

In North American ecosystems occupied by Dall's sheep (*O. dalli dalli*), the primary predator is the wolf and there is little evidence of consistent population-level consequences of predation (Barichello and Carey 1988, Hayes et al. 2003), although Bergerud and Elliot (1998) reported improved recruitment of Stone's sheep (*O. d. stonei*) following the reduction of wolf numbers in British Columbia. Barichello and Carey (1988) reported no evidence that a substantial reduction in wolf density influenced demographics of Dall's sheep. However, Arthur and Prugh (2010) reported high

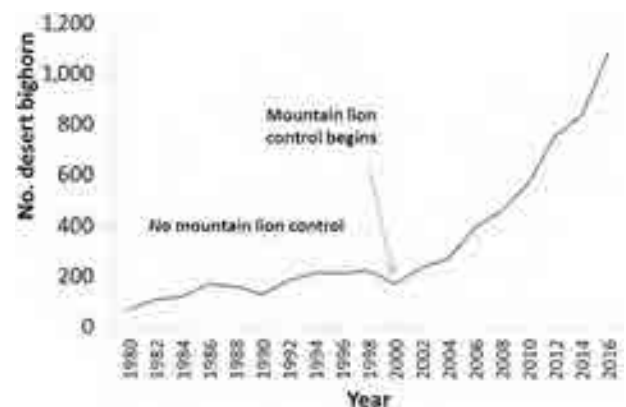


Figure 1. Desert bighorn sheep population estimates, New Mexico, 1980–2016. From 1979–1999, there were 253 desert bighorn sheep released into wild populations. From 2000–2016, there were 274 desert bighorn sheep released into wild populations. Mountain lion control began in 1999 in all endangered desert bighorn sheep herds when statewide population estimates declined to <170 in 6 herds.

levels of Dall's sheep lamb mortality by coyotes, which are hypothesized to have increased because of wolf control.

Coyotes are reported to kill adult and juvenile ungulates (Hass 1989, Kelley 1980) and were the second-most important predator of juvenile desert bighorn sheep after mountain lions in the Peloncillo Mountains, New Mexico (Karsch et al. 2016). Coyotes may be more effective predators than wolves on wild sheep neonates (Arthur and Prugh 2010) and the extirpation of wolves has resulted in a competitive release of coyotes (Berger and Gese 2007). Hebert and Harrison (1988) reported coyote predation as a major source of lamb mortality in British Columbia, Canada, and that predator control targeting coyotes was responsible for a 2–2.5-fold increase in lamb:female ratios. Bobcats are reported to kill adult and juvenile ungulates (Kelley 1980, DeForge 2002); however, there is little evidence that they have population-level effects on bighorn sheep populations. Bobcats were not confirmed to have killed desert bighorn sheep lambs in the 2 New Mexico studies (Parsons 2007, Karsch et al. 2016).

Most bighorn sheep herds are comprised of <100 individuals (Berger 1990) and therefore may be more vulnerable to extinction (Berger 1990, Fisher et al. 1999), although Wehausen (1999) found less support for a strong population size effect on extinction probability. High levels of predation can cause the extirpation of small isolated populations of bighorn sheep (Rominger and Weisenberger 2000), woodland caribou (*Rangifer tarandus*; Kinley and Apps 2001), and other species (Williams et al. 2004). However, bighorn sheep populations >100 also have been documented to decline substantially, with mountain lion predation the primary cause of mortality (Wehausen 1996, Hayes et al. 2000, Foster and Whittaker 2010).

Bighorn sheep populations with sympatric deer have been documented to decline to low density, with mountain lion predation the primary mortality factor (Wehausen 1996, Foster and Whittaker 2010, Rominger 2013). This apparent competition in multiple-prey systems was first described by Holt (1977) and has been documented in bighorn sheep populations (Rominger et al. 2004, Johnson et al. 2013) and other ungulates (Bergerud and Elliot 1986, Harrington et al. 1999, McLellan et al. 2010, Wittmer et al. 2014). For Sierra Nevada bighorn sheep, the more common prey species is mule deer (Johnson et al. 2013); however, in most desert bighorn sheep habitats in Arizona and New Mexico, domestic cattle, usually juveniles, are also alternative prey (Cunningham et al. 1999, Rominger et al. 2004).

The usurpation of mountain lion kills by interspecific competitors, primarily bears or wolves, can influence predation dynamics. In Colorado and California, mountain lion kill rates increased 48% in the presence of sympatric black bears because of kleptoparasitism, with bears detected at 48–77% of mountain lion kills (Elbroch et al. 2015). Although mountain lions may occasionally kill small black bears at cache sites, it appears that mountain lions generally depart permanently following the arrival of larger black bears (Elbroch et al. 2015). Wolves were documented to usurp 12% and scavenge 28% of mountain lion kills during a 4-year

period (Kortello et al. 2007). In southern British Columbia, where wolves and grizzly bears were extirpated, or greatly reduced, mountain lions are the dominant predator of woodland caribou (Compton et al. 1995, Kinley and Apps 2001, Wittmer et al. 2005). However, in north-central British Columbia, where wolves and grizzly bears persist, mountain lions are not the dominant predator (Wittmer et al. 2005).

After work by Ross et al. (1997) that documented high mortality on a wintering bighorn sheep herd by an individual mountain lion, it has been debated whether most predation on bighorn sheep is a function of specialist mountain lions. Although, specialist predators exist (Ross et al. 1997, Logan and Sweanor 2001, Knopff and Boyce 2007), other data suggest that most sympatric mountain lions will kill bighorn sheep. In the Peninsular Ranges of California, 18 of 23 individually identified mountain lions were associated with bighorn sheep kills (Ernest et al. 2002) and in the Fra Cristobal Mountains, New Mexico 16 of 18 radio-collared mountain lions either killed or attempted to kill desert bighorn sheep (NMDGF, unpublished data).

The predator-evasion strategy of bighorn sheep is far more effective against a coursing predator than a stalking predator (Festa-Bianchet 1991) and the abrupt removal of wolves and widespread replacement by mountain lions may have resulted in an evolutionary trap where past selection pressures shaped cue-response systems that were adaptive but no longer are in the face of human-induced changes. Additionally, the sexual segregation behavior of bighorn sheep might be associated with the potential for an ecological trap. Mortality rates for female bighorn sheep, attributed to mountain lion predation can be as high or higher than those for males, suggesting the benefit of this sexual segregation strategy is not particularly effective against mountain lion predation (Krausman et al. 1989, Hayes et al. 2000, Kamler et al. 2002, Festa-Bianchet et al. 2006).

DISCUSSION

Recent studies throughout western North America provide evidence that direct predation by mountain lions is a primary proximate mortality factor of bighorn sheep. The increase in mountain lion predation on bighorn sheep has followed the demographic recovery of mountain lion populations following the cessation of intensive predator control efforts. The recovery of mountain lions was preceded by expansion of their primary prey, mule deer, following the vast conversion of grasslands that had been maintained with fire by Native Americans. This shift in the mountain lion prey guild allowed for range expansion of mountain lions into habitats where wolves and grizzly bears have been extirpated. The combination of restructured predator-prey guilds and elimination of Native American fire and hunting has resulted in bighorn sheep with sympatric mountain lion densities unlikely to have occurred previously.

Additionally, livestock and feral equids responsible for conversion of grasslands contribute to the alternative prey-base for mountain lions. In ecosystems with low densities of native prey, cattle subsidize mountain lion populations and

may comprise >40% of the biomass in mountain lion diets, precluding a decline in mountain lion numbers despite declining native ungulate populations (Cunningham et al. 1999, Rominger et al. 2004). Feral equids are also reported to subsidize mountain lion populations, although they are much less numerous than cattle (Berger 1986, Turner et al. 1992, Knopff and Boyce 2007). Low densities of native ungulates are correlated with increased depredation of livestock by felids and canids (Brown 1992, Khorozyan et al. 2015).

The intensity of mountain lion predation has been reported to be nearly continuous in some ecosystems and more pulse-like in other ecosystems (Ross et al. 1997, Rominger et al. 2004). Because bighorn sheep density is rarely but a fraction of that observed on predator-free islands and predator-free enclosures, most predation is considered additive mortality, especially at low bighorn sheep densities. The stalking hunting style of mountain lions is hypothesized to result in more prime-age bighorn sheep kills compared to the effect of a coursing hunting style (e.g., wolves), which exposes compromised individuals. Additionally, the encroachment of woody vegetation due to the exclusion of fire for more than a century has enhanced stalking cover for mountain lions (Wakelyn 1987).

Increased mountain lion predation and related declines in New Mexico desert bighorn sheep populations have been correlated with declines in sympatric mule deer. These populations declined sharply in the mid-1990s and there has been no discernable recovery in the last 20 years (Rominger and Weisenberger 2000, Bender et al. 2012, NMDGF, unpublished data). Observations of deer during helicopter surveys in the San Andres Mountains were as high as 150 deer/hour and have declined to <5.5 deer/hour for all bighorn sheep surveys flown since 1996 (NMDGF, unpublished data). The estimated deer density in the San Andres has declined to 0.08–0.11 mule deer/km², making this one of the lowest densities of North American ungulates ever reported (Bender et al. 2012, Rominger 2013). Because of this low density, there has been no deer hunting on the entire 8,300-km² White Sands Missile Range, New Mexico since 1999. Similarly, low mule deer observation rates have been recorded in all other desert bighorn sheep surveys in New Mexico for the last 20 years (NMDGF, unpublished data). However, it was the ratio of mountain lions to these very low-density ungulates that precluded recovery and has required mountain lion control to increase desert bighorn sheep numbers.

Declines in bighorn sheep populations, due to mountain lion predation, have been reported for nearly every state and province where this species occurs. There is little evidence that these populations recover in the absence of predator control. One exception appears to be the federally endangered Peninsular bighorn sheep population. Although this herd is still listed as endangered, it has increased from approximately 275 (Rubin et al. 1998) to approximately 980 (Botta 2011) without mountain lion control. Peninsular bighorn sheep have an elevational niche separation from mule deer that use habitat at higher elevations in the Peninsular Ranges (Hayes et al. 2000), much like the niche

separation of pronghorn and bighorn sheep in the Great Basin (Berger and Wehausen 1991). Thus, mountain lions hunting in low-elevation desert bighorn habitat have virtually no opportunity to prey switch onto deer without vacating bighorn sheep habitat.

Management of predation deemed excessive relative to bighorn sheep population objectives generally involves lethal predator control. Controlling apex carnivores is much more controversial than culling mesocarnivores (Reiter et al. 1999, Rominger 2007) despite documented success in the protection and recovery of endangered species (Hecht and Nickerson 1999, Rominger et al. 2009, Johnson et al. 2013, Hervieux et al. 2014).

Predator control is used by most western state and provincial wildlife agencies to protect endangered ungulate species (Hervieux et al. 2014) and big game populations (Rominger 2007). Predator control to protect translocated desert bighorn was first advocated by Wilson et al. (1973) and has been used to aid the restoration of bighorn sheep in New Mexico, California, Texas, Arizona, Utah, and elsewhere (Rominger 2007). High levels of mountain lion predation associated with desert bighorn sheep translocations and some Rocky Mountain bighorn sheep translocations (Krausman et al. 1999, Rominger et al. 2004, McKinney et al. 2006) can be reduced by removing resident mountain lions prior to translocation. After multiple failed translocations due to mountain lion predation, NMDGF no longer translocates desert bighorn sheep without a pre-treatment mountain lion control program to reduce the density of resident mountain lions, usually beginning 3–4 months prior to translocation.

Following the extirpation of desert bighorn sheep in the Catalina Mountains, Arizona in the 1980s, desert bighorn sheep were released into historical habitat in 2013 (Krausman 2017). The initial translocation, done without a pre-treatment removal of resident mountain lions, had high mortality with mountain lions killing 15 of 30 radio-marked bighorn sheep within 4 months. Post-release control of offending mountain lions resulted in the lethal removal of 7 mountain lions. To date, mountain lions have killed a minimum of 27 of 86 radio-marked bighorn sheep from 3 releases. In the absence of mountain lion control, this attempted restoration of a native faunal component would have almost certainly failed.

Ernest et al. (2002) modeled predator control management options to mitigate mountain lion predation and determined that for populations or subpopulations with <15 females, range-wide control (habitat control) of mountain lions was the most effective paradigm. At higher female numbers, less strict take of mountain lions was recommended (e.g., only remove offending mountain lions [kill-site removal]). However, this model assumes that a documented offending mountain lion will be removed prior to making additional kills. A large data set from NMDGF suggests this is unlikely and offending mountain lions were taken at <20% of bighorn sheep kills (Rominger et al. 2011). During a period of range-wide mountain lion control, 68 mountain lion-killed bighorn sheep with very high frequency (VHF)

radio-collars were documented. However, only 13 (19%) offending mountain lions were culled.

The 2 primary reasons mountain lions were not culled were the bighorn sheep kill was not detected and located prior to the mountain lion departing (59% of all kills) and the mountain lion was present but missed at the kill site (54% of attempted removals were unsuccessful because the mountain lion did not step into snare, substrate was not conducive to snare placement, hounds were unable to tree or bay mountain lion). Although sample sizes were substantially reduced, the data set was partitioned between attempts to snare offending mountain lions and attempts to hound-hunt offending mountain lions. Use of hounds was successful in 5 of 14 attempts, whereas use of snares was successful in 8 of 14 attempts (Rominger et al. 2011). Culling offending mountain lions in the Catalina Mountains, Arizona restoration project has been successful in 6 of 15 attempts and this higher success rate is attributed to the use of GPS collars that alerted managers to mountain lion kills more quickly than VHF radio-collars (B. D. Brochu, AZGFD, personal communication).

Trapping and translocation is the primary management tool used to reestablish bighorn sheep populations into unoccupied habitats (Foster 2004). Currently, most bighorn sheep used for translocation come from mountain lion-free islands (e.g., Tiburon Island, Sonora, Carmen Island, Baja California Sur, MX; Wild Horse Island, MT, USA, Antelope Island) or predator-free enclosures (e.g., Red Rock, NM, USA and Pilares, Coahuila, MX). Very few desert bighorn sheep populations with uncontrolled sympatric mountain lions produce surplus bighorn sheep for translocations.

Restoration of natural grasslands, maintained by frequent fires, at scales that would substantially reduce deer numbers is unlikely to be a near-term management option. However, most state and provincial agencies have developed habitat management plans to reduce woody vegetation to increase bighorn habitat, and potentially reduce stalking habitat for mountain lions. Although, mountain lion predation seems to be lowest in single-prey systems in the most xeric habitats, most bighorn sheep currently occur in habitats with multiple sympatric ungulates. It is hypothesized that high levels of alternative buffer prey are preferable to low-density buffer prey when habitats have high mountain lion density.

Kill rates may increase substantially in ecosystems with high levels of kleptoparasitism and if deemed excessive, population reduction of kleptoparasites, specifically bears, would be a novel management action. The cumulative effects of predation on all sex and age classes of a bighorn sheep population must be recognized. Total predation in ecosystems with a diverse predator guild may have a much more profound influence on bighorn sheep demography; therefore, wildlife managers must decide on the appropriate response relative to management needs (Griffin et al. 2011). Small, isolated bighorn sheep herds, reduced to very low numbers by predation, will require human-mediated translocations to mitigate genetic loss and demographic declines.

Factors that influence rates of mountain lion predation should be examined experimentally to enable managers to better understand this complex system that appears to be substantially altered by anthropogenic causes. Experiments should be designed and conducted in bighorn sheep herds that are large enough to sustain high levels of predation without the need to manipulate mountain lion numbers during the experiment. Understanding the role of alternative prey, including livestock, will be a potential research direction. Understanding the influence of wolf restoration on bighorn sheep and mountain lions, particularly the effect on recruitment of adult female mountain lions, will be important. Because mountain lions are relatively long-lived, this research should be conducted over long periods following the reestablishment of wolves.

MANAGEMENT IMPLICATIONS

Productive bighorn sheep populations are required for restoration via translocation, sport hunting, and endangered species recovery. Management practices to decrease mountain lion densities that adversely affect bighorn sheep populations can be ideally addressed via sport harvest levels regulated by state wildlife agencies. In habitats or states (e.g., CA) where sport harvest does not meet management objectives, facilitated mountain lion control may be required to prevent population declines of bighorn sheep. Removal of resident mountain lions, prior to translocation of desert bighorn sheep, has increased the probability of successful restoration (Rominger et al. 2009).

There is still the potential that bighorn sheep can remain a viable faunal component in the North American west. If the public and wildlife managers are interested in keeping and restoring bighorn to their native ranges for viewing, hunting, and as source populations for recovery in landscapes that have been anthropogenically altered, difficult decisions will have to be made. Continued research on predation and other ecological factors will aid in the conservation of this species.

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Using multiple data sources provides density estimates for endangered Florida panther

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Summary

1. To assess recovery of endangered species, reliable information on the size and density of the target population is required. In practice, however, this information has proved hard to acquire, especially for large carnivores that exist at low densities, are cryptic and range widely. Many large carnivore species such as the endangered Florida panther *Puma concolor coryi* lack clear visual features for individual identification; thus, using standard approaches for estimating population size, such as camera-trapping and capture–recapture modelling, has so far not been possible.

2. We developed a spatial capture–recapture model that requires only a portion of the individuals in the population to be identifiable, using data from two 9-month camera-trapping surveys conducted within the core range of panthers in southwestern Florida. Identity of three radio-collared individuals was known, and we incorporated their telemetry location data into the model to improve parameter estimates.

3. The resulting density estimates of 1.51 (± 0.81) and 1.46 (± 0.76) Florida panthers per 100 km² for each year are the first estimates for this endangered subspecies and are consistent with estimates for other puma subspecies.

4. A simulation study showed that estimates of density may exhibit some positive bias but coverage of the true values by 95% credible intervals was nominal.

5. *Synthesis and applications.* This approach provides a framework for monitoring the Florida panther – and other species without conspicuous markings – while fully accounting for imperfect detection and varying sampling effort, issues of fundamental importance in the monitoring of wildlife populations.

Key-words: camera-trapping, mark–resight, population estimation, *Puma concolor coryi*, spatial capture–recapture, telemetry, unmarked populations

Introduction

An accurate understanding of population status is fundamental for the management and recovery of endangered species (Campbell *et al.* 2002; Hoekstra *et al.* 2002). However, estimates of population size and density are lacking for many of the world's most endangered species. As a result, it has been difficult to quantify extinction risk and monitor the effects of conservation actions.

The Florida panther *Puma concolor coryi* is the last remaining puma subspecies in eastern North America. Originally occurring from Arkansas and Louisiana to South Carolina and Florida (Young & Goldman 1946), the current distribution is restricted to about 10 000 km² in southern Florida (Kautz *et al.* 2006). Due to unregulated hunting in the 19th century and large-scale loss of habitat during the 20th century (Onorato *et al.* 2010), Florida panthers were listed as endangered in 1967 (US Federal Register 1967) and subsequently protected under the Endangered Species Act of 1973 (Public Law 93-205).

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Nevertheless, by the early 1990s, their population had dwindled to 20–30 individuals (McBride *et al.* 2008). Intensive population management, including introduction of wild-caught pumas from Texas to alleviate effects of inbreeding (Seal 1994; USFWS 1994), legal protection (O'Brien & Mayr 1991; Janis & Clark 2002), efforts to reduce road mortality (Foster & Humphrey 1995), and habitat and prey conservation (Janis & Clark 2002) have led to an increase in panther abundance (McBride *et al.* 2008) and genetic diversity (Johnson *et al.* 2010). Still, the Florida panther remains one of the most endangered felids world-wide (Onorato *et al.* 2010).

The Florida Fish and Wildlife Conservation Commission (FWC), with assistance from the federal government (e.g. National Park Service – NPS, U.S. Fish and Wildlife Service – USFWS), commenced research on the Florida panther in 1981, resulting in publications covering a variety of topics including: estimates of demographic parameters, habitat selection, assessment of genetic restoration and documentation of biomedical issues (Beier *et al.* 2003; Onorato *et al.* 2010). Despite the intensive research effort, producing rigorous estimates of population size for the Florida panther has eluded scientists for decades (Beier *et al.* 2003), yet abundance remains a central tenet of the USFWS recovery plan objectives (USFWS 2008).

Large, elusive carnivores such as pumas are typically difficult to sample, and accurate estimates of population-related parameters are often challenging to obtain. Obstacles include low sample sizes due to rarity, wide-ranging behaviour and concerns about invasive sampling methods. Mark–recapture techniques are generally considered the gold standard for generating robust estimates of population parameters. For many felid species, camera-trapping is increasingly used for abundance estimates because the technique is non-invasive and efficient. The resulting data, in combination with traditional capture–recapture (CR) models (e.g. Otis *et al.* 1978) or spatial capture–recapture (SCR) models (e.g. Efford 2004; Royle & Young 2008), have largely facilitated the estimation of demographic parameters of many felid species with unique pelage patterns (e.g. Karanth & Nichols 1998; Karanth *et al.* 2006; Royle *et al.* 2009). Although some puma studies use this combination of methods (Kelly *et al.* 2008; Negrões *et al.* 2010), the species generally lacks clear features for individual identification from photographs, seemingly rendering camera-trapping an unfeasible option for capture–recapture modelling of Florida panthers.

Alternatively, scat sampling in combination with genetic analyses can provide capture–recapture data (Royle, Kéry & Guélat 2011). Although this sampling technique has been applied in the study of felid populations (e.g. Ruell *et al.* 2009; Gopalaswamy *et al.* 2012), it would be difficult to implement for the Florida panther due to the subspecies' low genetic diversity (Roelke, Martenson & O'Brien 1993) and the fast decay of DNA in Florida's

warm and moist climate (Farrell, Roman & Sunquist 2000; Lucchini *et al.* 2002).

Given the obstacle of individual identification, collecting capture–recapture data would require that animals be physically marked and recaptured. The high cost and safety issues to both animal and handler make such approaches impractical for elusive and potentially dangerous animals like large carnivores. This risk is compounded when dealing with the small populations of endangered species. Thus, non-invasive sampling techniques are preferable whenever possible (Long *et al.* 2008).

Florida panthers have been extensively studied using traditional very high frequency (VHF) and Global Positioning System (GPS) telemetry (e.g. Land *et al.* 2008; Onorato *et al.* 2011). Potentially, telemetry collars permit individual identification based on collar characteristics (e.g. different brands on different individuals or modifying collars with unique marks) observable in photographs. Under these circumstances, camera-trap surveys concurrent with existing telemetry studies can provide data suitable for population estimation in the framework of mark–resight models (e.g. Rice & Harder 1977; McClintock *et al.* 2009; McClintock & White 2010), which do not require that individuals be physically captured multiple times. Rather, a sample of individuals is captured and marked during a single marking event that occurs prior to resighting surveys, and a non-invasive technique such as camera-trapping or visual resighting can be used to collect 'recapture' data on these individuals. While mark–resight models provide robust estimates of abundance, they suffer from the same shortcomings as traditional capture–recapture models when it comes to estimating population density. To estimate density, we need to define the area sampled. This generally relies on ad-hoc approaches, which renders density estimates somewhat arbitrary.

Our objective was to provide a rigorous and statistically sound density estimate for Florida panthers in the Pica-yune Strand Restoration Project area (PSRP). We used data collected during a 21-month camera-trapping study (Shindle & Kelly 2007) and telemetry data simultaneously collected by the FWC in a new modelling framework that, analogous to traditional mark–resight, allows for only a portion of the population to be identified (Chandler & Royle *In Press*; Sollmann *et al.* 2013). Further, analogous to SCR models, this new framework explicitly links abundance to a clearly defined area, thus providing unambiguous density estimates. To improve the estimation of model parameters associated with individual location and movement, and to produce more precise estimates of density, we extend the model by also incorporating telemetry location data. We confirm the reliability of model results using a simulation study. Providing a rigorous estimate of Florida panther density, this modelling approach has wide application for animal conservation and endangered species management.

Materials and methods

STUDY AREA

The study was conducted in PSRP, an area that encompasses the former Southern Golden Gate Estates subdivision development, covering approximately 241 km² in Collier County, Florida. Originally slated for housing development, the area is currently undergoing vegetative and hydrological restoration (U.S. Army Corps of Engineers 2004). Together with two neighbouring reserves, the PSRP forms a large block of panther habitat in the core of the subspecies' range. The climate of the study area is that of a tropical savannah with distinct wet (May–October) and dry (November–April) seasons (Duever *et al.* 1985).

CAMERA-TRAPPING AND RADIOTELEMETRY

From 2005 to 2007, 98 camera traps (Digital CamTrakkerTM, CamTrak South Inc., Watkinsville, GA, USA) with passive infrared heat-in-motion detectors were deployed in PSRP for 21 consecutive months as part of a pre-restoration baseline survey for panther and white-tailed deer *Odocoileus virginianus* (Shindle & Kelly 2007). A grid with 2-km² cells was overlaid on the study area, and one camera was placed within each grid cell (Fig. 1). Most cameras were deployed along roads or trails and secured to trees approximately 45 cm above ground. Cameras operated 24 h per day with a minimum 20-s delay between sequential photographs. Camera traps were checked every 21–28 days to retrieve images and ensure units were functioning.



Fig. 1. Picayune Strand Restoration Project area, Southern Florida, with camera-trapping grid used to survey Florida panthers between 2005 and 2007, and radiotelemetry locations for three collared panthers (stars, circles and triangles) used in the spatial mark–resight model as the marked portion of the population.

The FWC monitors Florida panthers in the PSRP and neighbouring areas using radiotelemetry. Locations were collected via aerial telemetry three times per week (see Land *et al.* (2008) for methods). Manufacturers of radiocollars included Telonics (Mesa, Arizona, USA), Advanced Telemetry Systems (Isanti, MN, USA) and Followit (Lindesberg, Sweden). Collars from different manufacturers have distinct physical features and therefore provided a visual means of individual identification of collared panthers from camera-trap pictures.

Mark–resight models require that all marking takes place before resighting. Here, we regard those panthers as the marked part of our population that wore radiocollars throughout one or both primary camera-trapping occasions (see below) and used the PSRP as part of their home range. Panthers that were collared during the course of a primary occasion were regarded as ‘unmarked’. Although some photographs of uncollared panthers could be attributed to individuals based on natural marks, many photographs of uncollared panthers were ambiguous. Since mark–resight models require that individuals can always correctly be identified as marked or unmarked, we treated all photographs of uncollared individuals as unmarked. For photographic records of uncollared individuals, we treated subsequent pictures at a given camera trap as independent if they were separated by at least an hour. Photographs that showed two (three, etc.) individuals were treated as two (three, etc.) independent records. We discarded pictures that we were unable to verify whether the individual was collared or not. We further excluded dependent kittens and juveniles from our analysis.

DATA ANALYSIS

Spatial capture–recapture models

We analysed concurrent photographic and telemetry data, building on the SCR model for partially marked populations described by Chandler & Royle (In press). Generally, SCR combines a model for individual location and movement with a model describing detection by traps, using individual and site specific detection data (Borchers & Efford 2008; Royle & Young 2008; Gardner, Royle & Wegan 2009; Borchers 2012). In SCR models, we assume that each individual i has an activity centre, s_i , and that all s_i are distributed uniformly across the state space S , an area including the trapping grid, chosen large enough to include all animals potentially exposed to sampling. We assume that the number of records of individual i at trap j and occasion k , y_{ijk} , is a Poisson random variable with mean encounter rate λ_{ij} , which is a decreasing function of the distance, d_{ij} , from trap j to the individual's activity centre s_i . Under a half-normal encounter rate model,

$$\lambda_{ij} = \lambda_0 * \exp(-d_{ij}^2 / 2\sigma^2),$$

λ_0 is the baseline trap encounter rate at $d_{ij} = 0$ and σ is the scale parameter of the half-normal function.

To estimate N , the number of activity centres in S , we employ data augmentation (Royle, Dorazio & Link 2007). Let n be the number of observed individuals. Then this approach is equivalent to augmenting the observed data set with $M - n$ ‘all-zero’ encounter histories or ‘hypothetical individuals’ that were never observed. N is estimated as the sum of an individual auxiliary variable, z_i ,

$z_i \sim \text{Bernoulli}(\Psi)$

where $i = 1, 2, 3, \dots, M$ and $z_i = 1$ if the animal is part of the population and 0 otherwise. The prior probability of Ψ is uniform (0,1), which corresponds to a discrete uniform (0, M) prior probability for N . M is an arbitrary value set sufficiently large as to not truncate estimates of N . Density, D , can be derived by dividing N by the area of S .

Extension of the SCR model to a mark-resight situation

Chandler & Royle (In press) extended this model to a mark-resight situation, where only part of the population can be individually identified. Under these circumstances, the individual encounter histories y_{ijk} are partially latent – only y_{ijk} for the m marked animals are observed. For the unmarked individuals, we observe only the accumulated counts $n_{jk} = \sum \mathbf{y}_{ujk}$, where $\mathbf{u} = \{m + 1, \dots, N\}$ is an index vector of the $N - m = U$ unmarked individuals. Unobserved encounter histories are essentially missing data. Adopting a Bayesian framework and using Metropolis-within-Gibbs (MwG) Markov chain Monte Carlo (MCMC) sampling, we can update missing data using their full conditional distribution (Gelman *et al.* 2004, Ch. 11). For the y_{ijk} from unmarked animals, the full conditional is multinomial with sample size n_{jk} :

$$\mathbf{y}_{ujk} \sim \text{Multinomial}(n_{jk}, \lambda_{uj} / \sum \lambda_{uj})$$

The remaining model parameters are then updated conditional on the full set of encounter histories.

When the number of marked individuals, m , is known, estimating N reduces to estimating the number of unmarked individuals U . In this situation, $M - m = \text{size of the hypothetical unmarked population in } S$. By updating the latent encounter histories (see above), we assign records of unmarked individuals to some of these hypothetical individuals, so that their encounter histories are no longer ‘all-zero’.

In non-spatial mark-resight models, an important model assumption is that marked individuals represent a random subset of the population. This assumption is still required in spatial mark-resight, but additionally, the marked individuals must represent a random sample of individuals in the state space S . Here, we have only a small set of marked individuals (see results), and the telemetry information for these individuals indicates that they are distributed throughout most of S (Fig. 1).

Incorporating telemetry location data

We can relate the parameters of the half-normal encounter rate model to those of a bivariate normal movement model (Calhoun & Casby 1958), with mean = \mathbf{s}_i , and variance-covariance matrix Σ , where the variance in both dimensions is σ^2 and covariance is 0. Under this model, σ can be related to a measure of how far individuals move (Reppucci, Gardner & Lucherini 2011). Ordinarily, these parameters are estimated only from the trapping data. Telemetry data, however, provide more detailed information on individual location and movement. By assuming that the R_i locations of individual i , \mathbf{l}_i , are a bivariate normal (Normal_2) random variable:

$$\mathbf{l}_i \sim \text{Normal}_2(\mathbf{s}_i, \Sigma)$$

we can estimate σ , as well as \mathbf{s}_i for the collared individuals, directly from telemetry location data using their full conditional

distributions within the MwG sampler. Under this formulation, σ and \mathbf{s}_i for the collared individuals are no longer conditional on the resighting data \mathbf{y} , but only on \mathbf{l} . For the unmarked individuals, \mathbf{s}_i are estimated as in conventional SCR, conditional on the encounter histories. The full MwG MCMC sampler can be found in Appendix S1 (Supporting Information).

Model application to Florida panther data

To account for the lack of demographic population closure over 21 months of camera-trapping, we defined two primary occasions, from 1 July 2005 to 31 March 2006 and from 1 July 2006 to 31 March 2007. Within primary occasions, we grouped data by month and accounted for the number of days each camera trap was functional each month, t_{jk} , using $\lambda_{ij} * t_{jk}/30$. We limited telemetry data used in our model to the same time periods. To define S , we used a 15-km buffer from the outermost coordinates of the trapping grid and removed parts of the resulting rectangle that comprised ocean or islands. This resulted in an area for S of 1719.13 km².

We ran three chains of the MwG sampler with 200 000 iterations each, discarding 10 000 iterations as burn-in using the software R 2.13.0 (R Development Core Team 2011). To check for chain convergence, we calculated the Gelman-Rubin statistic R-hat (Gelman *et al.* 2004) using the R package coda (Plummer *et al.* 2006). Values below 1.1 indicate convergence; in our results, all model parameters had R-hat < 1.1. We report the posterior mean (\pm standard deviation), mode, and 95% Bayesian credible intervals (95BCI) for all parameters.

Results

During the two primary occasions, we accumulated 43 890 trap days and obtained 445 photographs of Florida panthers. We discarded 137 pictures that we were unable to determine whether they belonged to a radio-collared individual or not and one picture of a collared panther that traversed the study area but was not resident (see Discussion for further treatment of this topic). Of the remaining photographs, 17 were records of identifiable radio-collared individuals and 290 pictures showed uncollared panthers (Table 1).

Three individuals met our requirements of being collared throughout one or both primary sampling occasions, with two collared individuals being present in one primary occasion only, while one was present in both occasions. For each collared individual, we accumulated an average

Table 1. Collared Florida panthers present in the Picayune Strand Restoration Project area and used as marked individuals in the spatial mark-resight model, total number of photographs and number of photographic records of these collared individuals in the two 9-month primary camera-trapping occasions

Occasion	No. collared individuals	Total number of pictures	No. pictures of collared individuals
1	2	131	2
2	2	176	15
Total*	3	307	17

*One individual from year 1 was present again in year 2.

of 99.5 (SD 10.6) telemetry locations per primary occasion (Fig. 1).

The posterior mean for the movement parameter σ was 4.45 (± 0.11) km. The baseline trap encounter rate λ_0 had a posterior mean of 0.09 (± 0.02) expected photographs per 30 days. The posterior mean for population density D was 1.63 (± 0.50) individuals per 100 km² in year 1 and 1.66 (± 0.56) individuals per 100 km² in year 2; for both years, the posterior mode was slightly lower, at 1.51 and 1.46 individuals per 100 km², respectively. Posterior summaries of parameter estimates are given in Table 2.

SIMULATION STUDY

To investigate potential bias and precision of our estimators, we generated 100 data sets consisting of both camera detection and telemetry location data under the same conditions observed for the surveyed panthers (i.e. with parameters equal to the posterior means obtained in our analyses, and the trapping grid, sampling effort, number of known individuals and telemetry locations equivalent to values in the actual field study). Across 100 data sets, parameters were estimated with low accuracy (relative root mean squared error (RMSE) 26–39%); only the RMSE of σ was low, at 3%. For N , the posterior mode presented a less biased estimator (relative bias 11–13%) than the mean (27–29%). For λ_0 and σ , relative bias of the mean was 4 and 0.3%, respectively. Coverage of the true values by 95% BCI was between 92% and 99% for all parameters (see Appendix S2, Supporting Information).

Discussion

Large felids such as the Florida panther are notoriously difficult to monitor. Low population densities and elusive behaviour often result in sparse data, requiring intensive sampling over several years. Camera traps are an ideal tool for the study of large and wide-ranging species, but

inference from camera-trap data for populations that cannot be individually identified is limited. Mark–resight methods have long been used as an alternative to traditional mark–recapture studies (e.g. Rice & Harder 1977; Minta & Mangel 1989), but only recently has the concept of mark–resight modelling been extended to SCR models (Chandler & Royle In press). This development has made it possible to address a major problem facing wildlife managers who are in need of reliable density estimates for rare and elusive species without conspicuous natural marks.

FLORIDA PANTHER DENSITY

The density estimates of approximately 1.5 individuals per 100 km² summarize the current state of knowledge on Florida panthers in PSRP. Historically, there have been no reliable estimates of abundance or density for the Florida panther (Beier *et al.* 2003). Although the density estimate by Maehr, Land & Roof (1991) of one individual in 110 km² was considered reasonable, it lacked confidence intervals and could not be applied elsewhere (Beier *et al.* 2003). Similarly, counts based on physical evidence (e.g. tracks, scats; McBride *et al.* 2008) do not account for varying sampling effort, possible double-counting of or failure to detect individuals, and they lack the potential for repeatability due to a reliance on expert observers for accurate interpretation of panther signs.

Our density estimates fall within reported densities of pumas in other parts of their geographical range. Generally, the lowest puma densities of ≤ 1 individual per 100 km² are found in the northern part of the species' range (e.g. Hemker, Lindzey & Ackerman 1984; Laundré & Clark 2003). Except for areas heavily impacted by poaching and logging, Central and South America generally harbour higher puma densities, ranging from just over 1 to almost 7 individuals per 100 km² (Kelly *et al.* 2008; Paviolo *et al.* 2009; Negrões *et al.* 2010; Soria-Diaz *et al.* 2010). Given the tropical climate and habitat of Florida, and the fact that PSRP is still recovering from heavy anthropogenic impacts, our density estimates of approximately 1.5 panthers per 100 km² are consistent with previous findings.

The panther population of PSRP most likely declined because of the severe habitat degradation caused by water management practices and direct human disturbance. However, PSRP has two neighbouring reserves, the Florida Panther National Wildlife Refuge (FPNWR) and the Fakahatchee Strand Preserve State Park, both of which have been protected for several decades. Compared with these reserves, PSRP probably has less suitable habitat. Indeed, until recently, the PSRP area was mainly used by dispersing male Florida panthers, and reproductive events in the area were rare (Shindle & Kelly 2007). Applying the bivariate normal model to telemetry data from VHF and GPS collared individuals in the neighbouring FPNWR showed that individuals at this site have smaller home ranges (average σ

Table 2. Posterior summaries of parameter estimates from a spatial mark–resight model applied to Florida panther camera-trapping and telemetry data from the Picayune Strand Restoration Project area, Florida. Density is estimated for two 9-month primary occasions (t)

Parameter	Unit	Mean (SE)	Mode	2.5%	97.5%
σ	km	4.45 (0.11)	4.46	4.24	4.68
λ_0	Pictures per 30 days	0.09 (0.02)	0.09	0.06	0.14
$N(t = 1)$	individuals in S	27.98 (8.54)	25	14	47
$N(t = 2)$	individuals in S	28.59 (9.67)	25	13	51
$D(t = 1)$	individuals per 100 km ²	1.63 (0.50)	1.51	0.81	2.73
$D(t = 2)$	individuals per 100 km ²	1.66 (0.56)	1.46	0.76	2.97

was 3.44 km based on seven individuals), which in carnivore populations is often linked to a higher population density (e.g. Dahle & Swenson 2003; Benson, Chamberlain & Leopold 2006). Most likely, individuals from neighbouring reserves are immigrating into the PSRP area as it recovers from the severe anthropogenic impacts and as panther populations in the neighbouring areas expand.

RELIABILITY OF ESTIMATES

The precision of density estimates from spatial mark–resight models depends on the number of marked individuals (Chandler & Royle *In press*). In the present study, photographic data on the small number of radio-collared individuals were particularly sparse (17 pictures total), but incorporating telemetry information about individual locations and movements increased the precision of our density estimate. According to our simulation study, although we can expect some positive small-sample bias in estimates of N , we also expect the true value to fall within the 95BCI. As a result, our modelling framework represents a promising tool for population monitoring of far-ranging, elusive species. For species that are studied extensively using radiotelemetry (Land *et al.* 2008; Onorato *et al.* 2011), the combination of traditional sampling techniques such as radiotelemetry with the increasingly popular methods of camera traps and SCR modelling (Royle *et al.* 2009) is likely to replace more traditional inference methods (Nichols, O'Connell & Karanth 2011). This approach is not limited to Florida panthers, but applies to other species that are not 'naturally marked' but can be tagged or otherwise recognized, and can also be applied to other types of spatial resighting data, such as point counts for birds or amphibians. With adequate sample size, telemetry locations are not necessary to estimate population size, so tags can be anything that permits identification.

Current spatial mark–resight models assume that marked individuals are a random sample from the total population of S . This means, ideally, defining S should be part of the study design and marking efforts should be spread evenly within S . In practice, that may often not be realistic. When marked individuals are not a random sample of S , but were taken from a smaller area, density estimates are likely negatively biased. Relaxing this assumption is the focus of current SMR model development.

IMPLICATIONS FOR FUTURE FLORIDA PANTHER RESEARCH

Despite the progress made towards recovery in over 30 years of research, the Florida panther population continues to require close monitoring. Our method is an improvement over monitoring methods historically implemented for three main reasons:

1. Our model enables researchers to use camera traps, which allow for non-invasive monitoring of Florida

panthers in regions where they are also monitored by telemetry.

2. The spatial mark–resight model provides a standardized analytical framework that accounts for imperfect individual detection and varying sampling effort, so that estimates of density across time and space are comparable.

3. Our modelling approach provides estimates of uncertainty about density estimates. As such, we can fully assess whether a sampling design is yielding appropriate data to monitor the Florida panther population or whether sampling has to be modified (in terms of sampling technique, design and effort).

Still, there is room for improvement. A basic assumption of any mark–resight approach is that the marked individuals are a representative sample of the population (McClintock & White 2010). This is generally accomplished by applying a technique that is different from the resighting method to mark a random sample of individuals (Bowden & Kufeld 1995). While the methods for marking and resighting were distinct in the present study, the extremely low number of collared individuals may not be representative of the entire population. Considering the difficulties, risks and costs associated with capturing large felids, tagging a larger sample of panthers may be challenging. But even adequate coordination of marking and resighting would be an improvement. In the present study, marking and resighting occurred concurrently and individuals tagged within the primary camera-trapping occasions had to be treated as 'uncollared'. By tagging animals ahead of the resight surveys, this loss of valuable data could be avoided.

Owing to the low number of collared individuals, we were unable to incorporate sex- or year-specific differences in movement and detection into our model. Differences in these parameters between males and females are known to be pronounced for large carnivores (e.g. Gardner *et al.* 2010; Sollmann *et al.* 2011). For Florida panthers, males are known to have larger home ranges than females (Onorato *et al.* 2010). Further, collared individuals were photographed more frequently during the second primary occasion, which could indicate higher trap encounter rates. Ideally, future studies should aim at collecting enough data to allow for the modelling of these effects.

The sparseness of the data also precluded any formal treatment of transiency. Transiency is a common issue in open population capture–recapture studies (e.g. Pradel *et al.* 1997). In closed population studies, formally, the presence of transient individuals violates the fundamental assumption of population closure and is therefore generally not explicitly addressed but 'assumed away'. Only because we had radiotelemetry locations, we were able to identify one of the collared panthers in our study as a transient and we decided to remove that individual from the data set. We cannot apply such a correction to the uncollared individuals. By removing transients from the collared individuals but not the uncollared, the former are arguably no longer a representative sample of the latter, which may introduce some positive bias into the estimates of density. We found,

however, that retaining the transient individual resulted in unreasonable estimates of the movement parameter σ (data not shown). Given the transient's large movements this is not surprising: when applying the bivariate normal movement model to individual sets of telemetry locations, σ for the transient was 3.5 times larger than for the remaining individuals. Within the spatial mark–resight model, the estimate of σ almost doubled when retaining the transient. While it is disconcerting that a single individual impacted estimates to such a degree, this is a consequence of the small data set, where one outlier has disproportionate effects on model outcomes. With an adequate sample size (i.e. larger number of marked individuals), presence of a single outlier would have a much smaller impact. Further, the problem could be avoided or diminished by shortening the sampling time frame to better approximate a closed population. Even if a transient is present, over a short time interval, its movements are unlikely to be so pronouncedly different from resident individuals, thus diminishing its effect on parameter estimates. Alternatively, with adequate sample size, or as information on the proportion of transients in the population accumulates over time, transiency could be addressed explicitly within the model, for example, using an individual covariate describing transiency state. Regardless of the approach, future study design for Florida panther population monitoring has to both strive for larger sample sizes and consider the assumption of population closure.

Finally, identifiability of individuals on pictures could be improved, for example, by increasing camera trigger speed to allow more centred subjects and by taking multiple pictures per camera-trapping event. We discarded 137 pictures from analysis because we were unable to tell whether an animal was wearing a collar or not. If individuals can at least be identified as 'marked' (but not to individual level), their data can still be included in mark–resight models (e.g. McClintock *et al.* 2009; Sollmann *et al.* 2013).

In spite of these caveats, spatial mark–resight models allow for the development of a standardized protocol that can be applied by different investigators and at different study sites without compromising the comparability of results. As such, these models provide a valuable population monitoring tool for wildlife species that are not consistently identifiable to the individual level. For Florida panthers, spatial mark–resight models could be the cornerstone of a distribution-wide survey protocol to estimate the density or size of the Florida panther population. This is a current research priority and will be indispensable in helping quantify the level of success conservation, and management measures are having at achieving recovery objectives outlined by the USFWS.

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Supporting Information

Additional Supporting Information may be found in the online version of this article.

Appendix S1. Description of the Metropolis-within-Gibbs MCMC sampler.

Appendix S2. Simulation results.



Cougar Exploitation Levels in Utah: Implications for Demographic Structure, Population Recovery, and Metapopulation Dynamics

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Cougar Exploitation Levels in Utah: Implications for Demographic Structure, Population Recovery, and Metapopulation Dynamics

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Abstract

Currently, 11 western states and 2 Canadian provinces use sport hunting as the primary mechanism for managing cougar (*Puma concolor*) populations. Yet the impacts of sustained harvest on cougar population dynamics and demographic structure are not well understood. We evaluated the effects of hunting on cougar populations by comparing the dynamics and demographic composition of 2 populations exposed to different levels of harvest. We monitored the cougar populations on Monroe Mountain in south-central Utah, USA, and in the Oquirrh Mountains of north-central Utah from 1996 to 2004. Over this interval the Monroe population was subjected to annual removals ranging from 17.6–51.5% (mean \pm SE = 35.4 \pm 4.3%) of the population, resulting in a >60% decline in cougar population density. Concurrently, the Oquirrh study area was closed to hunting and the population remained stationary. Mean age in the hunted population was lower than in the protected population ($F = 9.0$; $df = 1, 60.3$; $P = 0.004$), and in a pooled sample of all study animals, females were older than males ($F = 13.8$; $df = 1, 60.3$; $P < 0.001$). Females from the hunted population were significantly younger than those from the protected population (3.7 vs. 5.9 yr), whereas male ages did not differ between sites (3.1 vs. 3.4 yr), suggesting that male spatial requirements may put a lower limit on the area necessary to protect a subpopulation. Survival tracked trends in density on both sites. Levels of human-caused mortality were significantly different between sites ($\chi^2 = 7.5$; $P = 0.006$). Fecundity rates were highly variable in the protected population but appeared to track density trends with a 1-year lag on the hunted site. Results indicate that harvest exceeding 40% of the population, sustained for ≥ 4 years, can have significant impacts on cougar population dynamics and demographic composition. Patterns of recruitment resembled a source-sink population structure due in part to spatially variable management strategies. Based on these observations, the temporal scale of population recovery will most likely be a function of local harvest levels, the productivity of potential source populations, and the degree of landscape connectivity among demes. Under these conditions the metapopulation perspective holds promise for broad-scale management of this species. (JOURNAL OF WILDLIFE MANAGEMENT 70(6):1588–1600; 2006)

Key words

connectivity, cougar, demographics, hunting, metapopulation, population dynamics, *Puma concolor*, radiotelemetry, refuge, source-sink dynamics, Utah.

Across western North America sport harvest is the primary mechanism for the population-scale management of *Puma concolor* (Pierce and Bleich 2003). Management regimes vary from public safety and depredation control only in California, to a year-round open season in Texas (Nowell and Jackson 1996). In order to balance hunting opportunities with protection of big game and livestock, most states manage cougar populations at some intermediate level. However, cougars are secretive, long-lived, and utilize large home ranges, making them difficult to manage with precision (Ross et al. 1996). At present, there are no widely accepted methods for the enumeration of cougars across diverse habitat types and climatic regimes (Anderson et al. 1992, Ross et al. 1996). Most techniques (e.g., track counts, scent stations, probability sampling) have limitations that render them marginally useful (Choate et al. 2006) or capable of detecting only large and rapid changes in population size (Van Sickle and Lindzey 1992, Beier and

Cunningham 1996). Additionally, cougars occur at low population densities relative to their primary prey, making them sensitive both to bottom-up (e.g., prey declines; Logan and Sweaner 2001, Bowyer et al. 2005) and top-down (e.g., overexploitation; Murphy 1998) perturbations. Assessing cougar population trends is complicated by annual removals of varying intensity. Changes in population size and composition are generally indexed through harvest data and are therefore confounded by nonrandom sampling biases, further hindering reliable trend estimation (Wolfe et al. 2004).

Cougar management in Utah is spatially organized, with 4 broad ecoregions subdivided into 30 different hunting units. Each unit is managed independently in order to apply harvest pressure according to local priorities, which can include density reductions aimed at increasing survival in mule deer (*Odocoileus hemionus*) or bighorn sheep (*Ovis canadensis*) populations. Cougars are therefore managed at 2 different spatial scales. Locally, they are either managed conservatively as a trophy species or liberally as a limiting factor in the population dynamics of native ungulates. The statewide population, however, is managed for sustainable

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hunting opportunities and persistence across its currently occupied range (Mason et al. 1999).

Cougar hunting in Utah is conducted by means of pursuit with trained hounds. The hunting season extends from mid-December to early June, but approximately 75% of the kill occurs during December to March, when snow cover facilitates tracking and pursuit (Mason et al. 1999). Prior to 1998 the sport harvest of cougars occurred under a Limited Entry (i.e., lottery) system in which the number of permits for individual units is restricted. The long-term mean hunter success for this system is 64%. Beginning with the 1997–1998 season the Harvest Objective (i.e., quota) system was introduced for some units. This system employs an unlimited availability of permits to achieve a prescribed level of kill. Hunters are required to report their kill within 48 hours and the unit is closed once the quota is reached. Typically 74% of the quota is achieved, but instances of overharvest do occur. Between 1995 and 2003 legal harvest accounted for 90.0% of the total statewide cougar kill (Hill and Bunnell 2005). The remaining known mortality was distributed among animals killed in response to livestock depredation (6.2%) and other human-caused mortality, including roadkill and accidental trappings (3.8%). Additional unreported mortality such as incidental take during big game hunting seasons and illegal snaring occurs, but the magnitude of this impact is probably small relative to legal harvest. Individual cougars involved in livestock depredation are managed by the Wildlife Services Division of the United States Department of Agriculture, who may employ foot-hold snares as well as hounds to remove offending individuals. Nuisance cougars are defined as animals in urban settings that constitute a potential threat to human safety. These animals are generally controlled by Utah Division of Wildlife Resources (UDWR) personnel using lethal or nonlethal means, as circumstances warrant.

Little is known about both the immediate and long-term effects of sustained harvest on cougar populations (Anderson 1983, Ross et al. 1996). Numerous studies have been conducted on exploited populations (Murphy 1983, Barnhurst 1986, Logan et al. 1986, Ross and Jalkotzy 1992, Cunningham et al. 2000), including 2 removal experiments (Lindzey et al. 1992, Logan and Sweanor 2001), but few of these studies directly addressed the questions of: 1) how harvest affects the demographic structure of a population, and 2) what the long-term implications are for persistence and recovery of exploited populations within a metapopulation context. Moreover, habitat configuration and connectivity are important factors influencing cougar recruitment patterns, but with few exceptions (Beier 1993, 1995, Maehr et al. 2002) this relationship has been largely overlooked.

Recent years have seen the emergence of the idea of managing cougars as a metapopulation based on the effects of natural habitat patchiness (Sweanor et al. 2000, Laundré and Clark 2003) or anthropogenic fragmentation (Beier 1996, Ernest et al. 2003). Because metapopulations transcend administrative boundaries, understanding population

response to sustained harvest is vital in order to manage for persistence across landscapes exhibiting varying degrees of natural and human-caused fragmentation.

We assessed the impacts of exploitation on cougar population dynamics by comparing demographic characteristics between an exploited and a semiprotected population. Specific objectives of this study were: 1) determine how harvest levels might influence the dynamics and demographic structure of individual populations, 2) identify the factors that may influence the rate of population recovery, and 3) assess how the distribution of harvest impacts might affect recruitment within a metapopulation context.

Study Area

Cougar habitat in Utah is geographically fragmented, being broadly associated with mesic regions between 1500 m and 3000 m. The Wasatch Mountains and associated high plateaus form the core habitat, longitudinally bisecting the state, whereas the Colorado Plateau and Great Basin ecoregions consist primarily of desert ecosystems, with suitable habitat sparsely distributed among insular mountain ranges (Fig. 1). We selected Monroe Mountain and the Oquirrh Mountains as study areas for this research (Fig. 1). Although differences existed between these sites in terms of size and plant community composition, they were located within 190 km of each other, making them climatically and ecologically similar in a broad sense, but far enough apart to be treated demographically as independent populations. The most pronounced difference between these populations was the level of exploitation to which each was subjected.

Exploited Area

Monroe Mountain comprises part of the Sevier Plateau in the Southern Mountains ecoregion of south-central Utah (38.5°N, 112°W). The site is a high volcanic plateau extending 75 km in a north–south orientation and lies within a west–east geologic transition from basin and range topography to the Colorado Plateau. Hydrologically, Monroe is part of the Great Basin, but climatically and biologically it is more closely associated with other high-elevation regions of the Colorado Plateau and southern Rocky Mountains. The study site covered approximately 1,300 km² and encompassed the central unit of the Fishlake National Forest, southeast of Richfield. Other landholders included the Bureau of Land Management (BLM), State of Utah, and various private interests.

The terrain is mountainous with elevations ranging from 1,600–3,400 m. Annual precipitation ranged from 15–20 cm at lower elevations to 60–120 cm on the plateaus above 2,700 m. Approximately 60% of the annual precipitation occurred as snow in January and February, with most of the remainder derived from summer thunderstorms (Ashcroft et al. 1992). Snowpack typically persisted until mid-June at elevations >3,000 m. Mean monthly temperatures ranged from –4.6° C in January to 18.7° C in July (Ashcroft et al. 1992).

Plant communities were diverse and varied with elevation and aspect (Edwards et al. 1995). Piñon-juniper woodlands

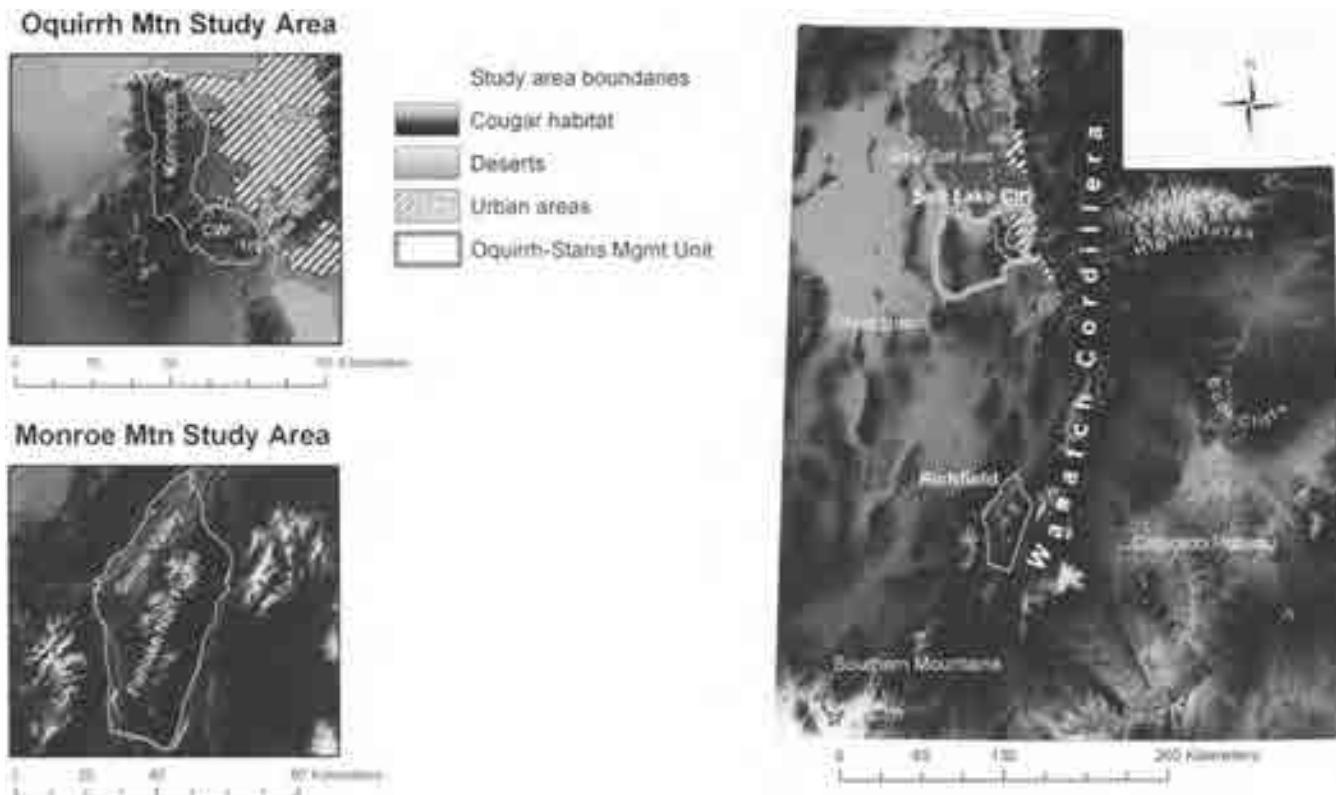


Figure 1. Study-area locations and cougar habitat across Utah, USA, 1996–2004.

(*Pinus edulis*, *Juniperus scopulorum*, *Juniperus osteosperma*) comprised the single largest vegetation type covering approximately 44% of the area. Mixed conifer and aspen (*Populus tremuloides*) stands occurred at higher elevations, with gambel oak (*Quercus gambelii*), mountain shrub (e.g., *Cercocarpus ledifolius*, *Rosa woodsii*, *Purshia tridentata*), and mixed sagebrush (*Artemisia tridentata*)–grassland meadows interspersed throughout.

Resource exploitation included livestock grazing, logging, and recreation. The UDWR classified Monroe Mountain as Cougar Management Unit 23. Mule deer and elk (*Cervus elaphus*), the primary cougar prey species on this site, were also managed for annual harvests. Human densities around the site varied from 73/100 km² to 382/100 km² (U.S. Census Bureau), with most of the population scattered among small agricultural communities in the Sevier Valley on the northwestern boundary of the study site.

Protected Area

The Oquirrh-Traverse Mountains complex (hereafter the Oquirrhs) extends 55 km in a north–south orientation on the eastern edge of the Great Basin ecoregion in north-central Utah (40.5°N, 112.2°W). The Oquirrhs are typical of other mountain ranges within this ecoregion in that they form islands of high productivity relative to the surrounding desert basins (Brown 1971) and thus represented the majority of cougar habitat in this area.

The total area of the Oquirrhs measures approximately 950 km², but we conducted fieldwork primarily on the northeastern slope of the range on properties owned and

managed by the Utah Army National Guard (Camp Williams, Traverse Mountains, 100 km²) and the Kennecott Utah Copper Corporation (Oquirrh Mountains, 380 km²). The site was situated at the southern end of the Great Salt Lake, abutting the southwestern side of the greater Salt Lake metro area. Ownership on the southern and western portions of the Oquirrhs was a conglomeration of BLM, grazing associations, and small mining interests, with approximately 45% of the range residing in private ownership.

Elevations on the site vary from lake level at 1,280 m up to 3,200 m. The Traverse Mountains run perpendicular to the Oquirrhs, and range in elevation from 1,650 m to 2,100 m. Annual precipitation ranged from 30–40 cm in the Salt Lake and Tooele valleys to 100–130 cm on the highest ridges and peaks. Most precipitation fell as snow between December and April, with approximately 25% occurring in the form of summer thunderstorms. Mean monthly temperatures ranged from −2.4° C in January to 22.2° C in July (Ashcroft et al. 1992).

Gambel oak and sagebrush were the predominant vegetation on the site. Also prevalent were Utah juniper in the foothills, and canyon maple (*Acer grandidentatum*) in the drainages at low elevations, and across broader areas above 1,800 m. Mountain mahogany (*Cercocarpus spp.*) was present, but relegated to well-drained soils along ridges. North-facing slopes above 2,200 m supported localized montane communities of aspen and Douglas fir (Edwards et al. 1995).

Mining activities have dominated the Kennecott property

for >100 years (Roylance 1982), and the site included 2 large open pit mines and attendant infrastructure. Camp Williams was used for military training activities, and consequently exhibited brief fire return intervals. All prominent peaks on the study site supported commercial radio and television transmitters with associated access roads. A limited amount of livestock grazing occurred seasonally. Mule deer and elk were present on this study area as well; however deer were not hunted, whereas elk were subject to intensive management through annual harvests and active translocation projects. The study site was part of the Oquirrh-Stansbury Cougar Management Unit 18, but both of these properties were closed to the public and cougar hunting was prohibited. Human density adjoining the study area varied from 232/100 km² in rural Tooele County to 47,259/100 km² in urban Salt Lake County (United States Census Bureau).

Methods

We monitored cougar populations within the 2 study areas simultaneously from early 1997 to December 2004. We estimated demographic parameters for each population based on radiotelemetry data collected between 1996 and 2004 on Monroe and from 1997 and 2004 on the Oquirrh. We calculated estimates of life-history parameters for cougars on the Oquirrh site during 1997 and 1998 from raw data presented in Leidolf and Wolfe (Utah State University, unpublished data). We performed statistical comparisons with the use of SAS (V.8) software. We report all descriptive statistics as mean \pm SE unless otherwise noted.

Radiotelemetry and Harvest

We conducted intensive capture efforts during winter (Nov–Apr) each year of the study. We captured cougars by pursuing them into trees, culverts, cliffs, or mine shafts with trained hounds (Hemker et al. 1984). We immobilized each animal with a 5:1 combination of ketamine HCl and xylazine HCl (Kreeger 1996) at a dose of 10 mg ketamine plus 2 mg xylazine/kg of body weight. We administered immobilizing drugs with a Palmer CO₂ pistol (Powder Springs, Georgia), jab stick, or hand-held syringe. We collected tooth (vestigial premolar, P2) samples for age determination by counts of cementum annulations. We sexed, aged, weighed, measured, tattooed with a unique identifier, and equipped with a radiocollar (Advanced Telemetry Solutions, Isanti, Minnesota) and a microchip (AVID Co., Norco, California) every adult animal captured. We checked adult females for evidence of lactation during handling. We tattooed, microchipped, and released all kittens too small to wear a radiocollar. We conducted all procedures in accordance with Utah State University Institutional Animal Care and Use Committee standards (Approval No. 937-R).

We relocated all radio-collared cougars with the use of aerial and ground-based telemetry techniques (Mech 1983). We conducted telemetry flights bimonthly on both sites as weather conditions permitted. We also relocated cougars

opportunistically with ground-based telemetry by plotting radiotriangulated locations on United States Geological Survey 7.5' topographic quads with the use of Universal Transverse Mercator coordinates (zone 12, North American Datum 1927). We stored all locations in a Geographic Information Systems (GIS) database (ArcView, ESRI Products, Redlands, California).

Over the course of the study, radiocollared cougars on Monroe Mountain were not protected from harvest beyond normal legal stipulations outlined in the UDWR hunting proclamations. Annual hunter-kill was regulated by apportionment of a limited number of hunter permits, issued by the UDWR on the decision of the State Wildlife Board. The Camp Williams and Kennecott properties were closed to hunting throughout the study; however, radiocollared cougars leaving those properties were considered legal take on adjacent private and public lands within Unit 18 during the 1997–2001 hunting seasons. Radiocollared cougars on that unit were protected after 2002.

Demographic Parameters

Density.—We measured cougar density as the total number of adult and subadult cougars/100 km² present during winter. Our a priori goal was to capture and collar as many individuals as possible. In this sense, we attempted to conduct a census of the population during winter, but during no year were we able to capture all independent cougars. To derive a conservative estimate of the number of unmarked animals on the site, we used 2 methods. First, because males and females can generally be differentiated by track size (Fjelline and Mansfield 1989), we considered multiple track sets of same-sexed animals encountered in the same watershed one individual. Given the large ranges of cougars, we felt that the primary watersheds on the site ($n = 4$; mean \pm SD = 361 ± 95 km², range = 237–462 km²) provided a practical threshold for differentiating individuals, as these basins approximated the size of a male home range. This does not negate the possibility that some individuals were double-counted; however, the effect of this error on the population estimate was small due to the number of animals that fell into this category annually. Second, we backcalculated birthdates of radiocollared cougars from age estimations based on tooth wear and counts of cementum annulations and used this information to assess our estimates of uncollared individuals from track evidence and hunter harvest. We excluded males backdated in this manner from the population estimate when they were <3 years old because of the likelihood that they were recent immigrants. Because females tend to be philopatric (Sweaner et al. 2000), we included them in the population estimate as resident subadults at the backcalculated age of 1–2 years. Although there are exceptions to these arbitrary dispersal rules, they provide a reasonable cutoff point for population estimates based on known cougar behavior (Beier 1995, Sweaner et al. 2000). We summed the total number of animals detected (from all means: capture, deaths, tracks) in June at the end of the capture and hunting seasons. This number most accurately represented the

population during the period June to December of the preceding year (Choate et al. 2006).

Road densities were high across both study areas. In addition to using 4-wheel-drive vehicles, we conducted winter tracking efforts on horseback and snowmachine in order to reduce bias associated with different levels of access. Using multiple methods also helped to reduce bias in terms of the social classes most vulnerable to detection due to frequent road crossings or small home ranges (Barnhurst 1986). Snow conditions influenced our ability to detect tracks, and therefore dry winters may have some bias associated with population counts; however, this bias was likely consistent between sites, as both study areas are subject to similar weather patterns.

We based study-area boundaries on major roads surrounding the site; therefore we used ecologically relevant vegetative and topographic features to delineate and quantify habitat within the study-site perimeter. We used the criteria of Laing and Lindzey (1991), which excluded valley bottoms and landcover types dominated by urban and agricultural uses. Maps represent geographical area on the planar surface and do not account for slope differences in mountainous terrain where actual surface area is greater. This discrepancy in area calculation leads to an increasing overestimation of population density as the ruggedness of the terrain increases. In order to increase the accuracy of the density estimates we used GIS software (ArcView surface to area ratio extension, Jenness Enterprises, Flagstaff, Arizona) to calculate the surface areas of habitat within study-site perimeters.

Age structure.—We determined age at the time of capture by visual inspection of tooth wear and gumline recession (Ashman et al. 1983, Laundré et al. 2000). In a few cases we used counts of cementum annulations (Matson's Lab, Milltown, Montana). To test for age differences among treatment groups (site and sex combinations), we used a 2-way factorial analysis of variance in a completely randomized design with unequal variances. We adjusted significance levels for pairwise mean comparisons to control experimentwise Type I error with the Tukey-Kramer method.

Cause-specific mortality.—We determined causes of mortality through visual inspection and necropsy of carcasses. When we could not determine cause of death in the field, we submitted the carcass to the Utah State University Veterinary Diagnostics Lab for detailed analysis. We calculated mortality by tallying cause of death among radiocollared animals and unmarked animals found opportunistically during tracking sequences. We pooled all human-related causes by site and tested for proportional differences with the use of chi-square (χ^2) tests.

Survival.—We calculated survival annually for all radiocollared adult and subadult animals from each population. To account for staggered entry and censoring due to the additions and losses of radiocollared animals to the sample, we used a Kaplan-Meier product limit estimator (Kaplan and Meier 1958). We estimated annual survival by defining

the start of sample intervals as 1 December of each year. By beginning the sampling interval prior to the beginning of the hunting season (15 Dec), we ensured that human-related mortality is accounted for only once during a single nonoverlapping period in each year. We calculated measures of precision for the computed survival rates from procedures described by Cox and Oakes (1984; cited in Pollock et al. 1989). We compared survival curves between sites with the use of the log-rank test (Pollock et al. 1989).

Fecundity.—We measured fecundity as the proportion of sexually mature females detected with litters-of-the-year (kittens <1 yr) on site during winter. We counted litters during snow tracking and capture efforts. We checked all females taken in the hunt for signs of lactation, which helped account for otherwise undocumented reproduction. Kittens >3 months old are only found with their mothers 20–43% of the time (Barnhurst 1986), but we tracked many female cougars on multiple occasions, thereby increasing the probability of detecting kittens, if present. We did not attempt any analyses on the actual number of kittens born per litter, because of the difficulty in determining the actual number of kittens when ≥ 2 track sets were found. There are 2 potential sources of error in this estimate. First, it is possible that some maternal females experienced whole-litter loss prior to the winter tracking season, and therefore a proportion of nonlactating females or those without kittens may actually have been reproductively active that season. Second, kittens <2 months old are not mobile, and so this cohort would also have been missed through track-based counts. Consequently, both the number of kittens per litter and the proportion of reproductively active females are biased low. The minimum percentage of females caring for young provided an annual estimate of productivity for each population (Barnhurst 1986). We used paired *t*-tests to detect differences in mean fecundity rates pooled over the entire study interval.

Dispersal.—We tattooed the ears of all kittens handled on the Oquirrh mountain site in the event that they were recaptured as adults. For the Oquirrh Mountain animals, we were able to calculate several crude estimates of dispersal distance and direction opportunistically based on harvest returns of animals marked as kittens. In addition, we monitored subadults captured as transients on Monroe via radiotelemetry for extrasite movements, thus providing some information on coarse-scale movement patterns. We calculated distances as a straight line between capture site and death site or the center of the home range.

Landscape Configuration

We used measures of landscape configuration to assess the overall degree of connectivity of the study sites to surrounding habitats within their respective ecoregions. Connectivity is defined here as “the degree to which the landscape facilitates or impedes [animal] movement among resource patches” (Taylor et al. 1993). We used descriptions provided by Laing and Lindzey (1991) to delineate potential connective habitats between the study areas and neighboring patches. In assessing connectivity for cougars we used only

easily quantifiable landscape variables and did not consider potential psychological barriers, although there is some evidence that outdoor lighting may function as such (Beier 1995). We derived the following metrics: size (km²), shape (perimeter–area ratios), greatest interpatch distance, percent of perimeter connected to neighboring habitat patches, width of connective habitat, and percent of perimeter impermeable to cougar movement. Impermeability refers to landscape features that prohibited, filtered, or redirected animal movement (Ernest et al. 2003, Forman et al. 2003), such as the Great Salt Lake, interstate highways, and urban areas. Some of these features may not form absolute barriers, but they can act as an impediment to animal movement. Perimeter–area ratios are a unitless metric that provided a relative measure of how circular (or how much edge) one study area had relative to the other. We derived these measures in ArcView using the spatial analyst extension and a 30-m digital elevation model of the state of Utah.

Results

Radiotelemetry and Harvest

Capture.—We captured and marked 110 individual cougars on the 2 study sites, representing 145 capture events (Table 1). In addition, we found one dead cougar opportunistically during tracking on the Oquirrh site. We conducted captures on Monroe Mountain from January 1996 to March 2004 and on the Oquirrh site from February 1997 to March 2004. Rugged terrain and frequent animal use of culverts, mine shafts, and lava tubes hindered the collection of ground-based telemetry observations. Consequently most telemetry data were derived from aerial surveys. Monitoring times for Monroe cougars averaged 758 days (range = 2–3140 days) for females, and 194 days (range = 3–662 days) for males. On the Oquirrh site we monitored females for a mean of 810 days (range = 14–2674 days) and males for 399 days (range = 76–1173 days). Differences between sexes reflected the smaller sample of males, their greater tendency to emigrate, and shorter residence times.

Monroe Mountain cougar harvest.—For the period 1990–1995, prior to initiation of this study, a mean of 15.6 (range = 14–19) hunting permits were issued annually, corresponding to a mean kill of 8.7 cougars per year (range = 6–12), and a mean hunter success of 54.0% (range = 40.7–64.9%). In 1996, the number of permits issued increased 33.7% over the 1990–1995 mean. In 1997, the number of permits increased 40% over 1996 levels and 151% over the 1990–1995 mean. Between 1999 and 2000, the number of permits issued decreased to 1990–1995 mean levels and was again decreased for the 2001 season. During the years of heavy harvest (1996–2001), mean per-capita hunting pressure (i.e., the proportion of the population that was legally harvestable) was 87% (range = 68.5–100%). During the years of reduced harvest (2002–2004) mean per-capita hunting pressure was 25.7% (range = 22.7–29.4%; Table 2). During the study 164 permits were issued, 79 cougars were killed (51 M, 28 F), and total hunter success was 48.1%, whereas mean annual hunter success was 46.5%

Table 1. Number of cougars captured according to age and sex classes, Monroe and Oquirrh Mountain study sites, Utah, USA, 1996–2004.

Age and sex	Monroe	Oquirrh
Adults		
F	16	20
M	12	7
Subadults		
F	14	2
M	15	3
Kittens		
F	2	9
M	1	9
Totals	60	50

(1996–2001) and 73.3% (2002–2004; Hill and Bunnell 2005). The general decline in the number of hunting tags issued over time was partially in response to preliminary study results.

Oquirrh Mountain cougar harvest.—From 1996 to 2001 radiocollared animals on Unit 18 were considered legally harvestable. Cougars on the Camp Williams and Kennecott properties were protected, but these areas were surrounded by private and public lands open to hunting, making any study animal found offsite legal quarry. Beginning in 2002, all radiocollared animals on the unit were protected by law regardless of property ownership to facilitate a concurrent study. During our study 5 radiocollared cougars were killed just outside the study site boundaries (4 M, 1 F). Of these, the 4 males were legally harvested, whereas the female was taken after the 2002 moratorium on radiocollared study animals.

Demographic Parameters

Density.—Estimated high densities (cougars/100 km²) were similar between sites (Oquirrh, 2.9; Monroe, 3.2); however, trends in this parameter differed markedly (Fig. 2). Density on Monroe showed a consistent decline during the years of heavy harvest (1997–2001), which leveled off when permits were reduced by 80%, averaging 2.0 ± 0.3 (2002–2004). Oquirrh density showed minimal variation over the study interval averaging 2.8 ± 0.1 (Fig. 2).

Age structure.—Age estimates determined upon initial capture were pooled by sex and site for the entire study period (Table 1). Sexually mature cougars from the Monroe population ($n = 57$) averaged 3.4 ± 0.2 years ($F = 3.7 \pm 0.4$; $M = 3.1 \pm 0.3$). Adult cougars from the Oquirrh population ($n = 33$) averaged 4.6 ± 0.3 years ($F = 5.9 \pm 0.5$; $M = 3.4 \pm 0.4$; Fig. 3). Mean cougar ages differed both by study site (Monroe cougars < Oquirrh cougars; $F = 9.0$, $df = 1, 60.3$, $P = 0.004$) and by sex ($F > M$; $F = 13.8$; $df = 1, 60.3$; $P < 0.001$). Further, we found evidence of an interaction between sex and site ($F = 5.31$; $df = 1, 60.3$; $P = 0.025$). Within the Monroe population male and female mean ages did not differ ($t = 1.21$; $df = 54.6$; $P = 0.625$), whereas Oquirrh females were significantly older than their male counterparts ($t = 3.70$; $df = 30.2$; $P = 0.003$). Between sites, Oquirrh females were older than Monroe females ($t =$

Table 2. Cougar harvest characteristics from Monroe Mountain (Unit 23), Utah, USA, 1996–2004.

Hunting season	Estimated population ^a	Permits issued	Cougars killed ^b	% hunter success	% F	% population	
						Hunted ^c	Killed
1995–96	35	24	14	58.3	42.9	68.5	40.0
1996–97	42	40	17	42.5	47.1	95.2	40.5
1997–98	33	30	15	50.0	26.7	90.9	45.5
1998–99	26	25	7	28.0	28.6	96.1	26.9
1999–00	21	15	9	60.0	44.4	71.4	42.9
2000–01	15	15	6	40.0	33.3	100.0	40.0
2001–02	17	5	3	60.0	33.3	29.4	17.6
2002–03	20	5	4	80.0	00.0	25.0	20.0
2003–04	22	5	4	80.0	25.0	22.7	18.2
Mean	25.6	18.2	8.8	55.4	31.2	66.6	32.4
SE	3.0	4.1	1.8	17.5	5.0	10.8	3.8

^a Estimated number of adults and independent subadults from winter capture and tracking efforts.

^b Legal sport harvest only (Hill and Bunnell 2005).

^c Per capita hunting pressure, i.e., the ratio of the number of permits issued to the estimated population size (column 3/column 2).

–3.53; $df = 38.8$; $P = 0.004$), but male ages did not differ between sites ($t = -0.54$; $df = 22.5$; $P = 0.949$).

Cause-specific mortality.—Mortality on the Monroe site was predominantly human caused (74%), with legal harvest accounting for 81% of human-caused ($n = 26$) and 60% of total mortality ($n = 35$) (Fig. 4). Causes of mortality on the Oquirrh site varied (Fig. 4). All human causes (including roadkill) comprised 53% of the total mortality ($n = 17$) and of this, legal harvest accounted for 44% of all human-caused mortality ($n = 9$) but only 24% of the total. Levels of human-caused mortality differed between sites ($\chi^2 = 7.5$; $P = 0.006$). Various forms of poaching (neck snares, illegal hunter-kill) occurred sporadically on both sites (Monroe, $n = 2$; Oquirrh, $n = 1$), though alone, this did not represent a significant source of mortality for radio-collared animals.

The second leading cause of death on both sites was intraspecific predation, comprising 17% ($n = 6$) and 18% ($n = 3$) of total mortality on the Monroe and Oquirrh sites, respectively. During the years of high per-capita harvest pressure on Monroe, all victims of intraspecific aggression were resident adult females ($n = 4$), whereas during the period of light harvest all victims were subadult males ($n = 2$). On the Oquirrh, 1 victim was a dispersal subadult male and 2 were adult females. Notably, one of these

instances was an adult female cannibalizing another female with dependent young. Two years later, the survivor in this encounter was killed by an unidentified cougar. Cause of death could not be determined in three cases (2 F, 1 M), but did not appear to be human-related.

In addition to direct mortality, ≥ 11 kittens from 5 different litters on Monroe were orphaned when their mothers were killed during the winter hunt ($n = 10$) or during summer depredation control actions ($n = 1$). We confirmed the death of one orphaned litter (2 kittens, approx. 6 months old) due to dehydration and malnutrition. On the Oquirrh, one male kitten was orphaned at the estimated age of 9 months when its mother was killed by an automobile. This animal survived 6 weeks before being taken in a depredation control action on a small ranch just outside of Salt Lake City. A litter of 3 4-month-old kittens died following the disease-related death of their mother. One other male kitten was marked at the age of 7 months following the poaching-related death of its mother in January 2002. It survived at least 2 months before radio contact was lost. Aside from this individual, no other orphans were detected following the deaths of their mothers or as adults on either study area in subsequent years.

Survival.—Adult survival varied between sites and among years (Fig. 5). On Monroe, survival tracked harvest

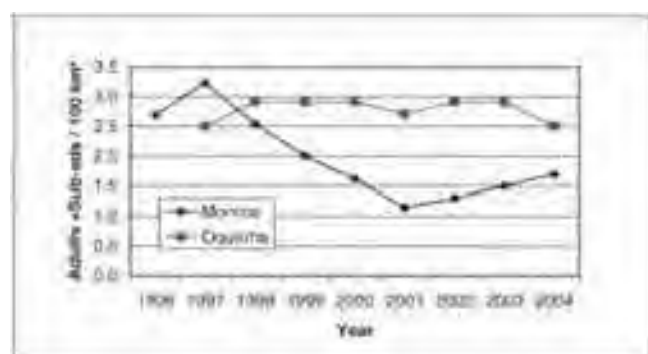


Figure 2. Annual nonjuvenile cougar density as determined from capture, tracking, and harvest, Monroe and Oquirrh Mountain study sites, Utah, USA, 1996–2004.

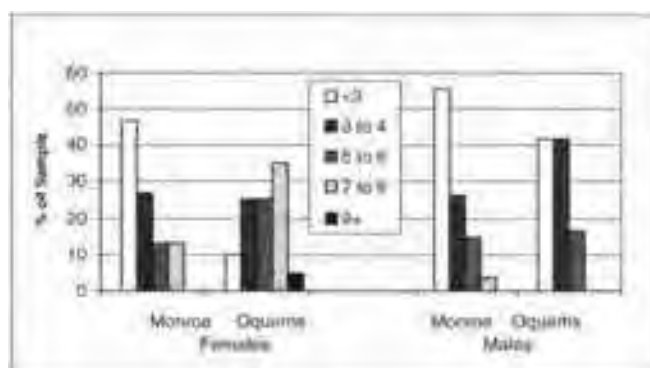
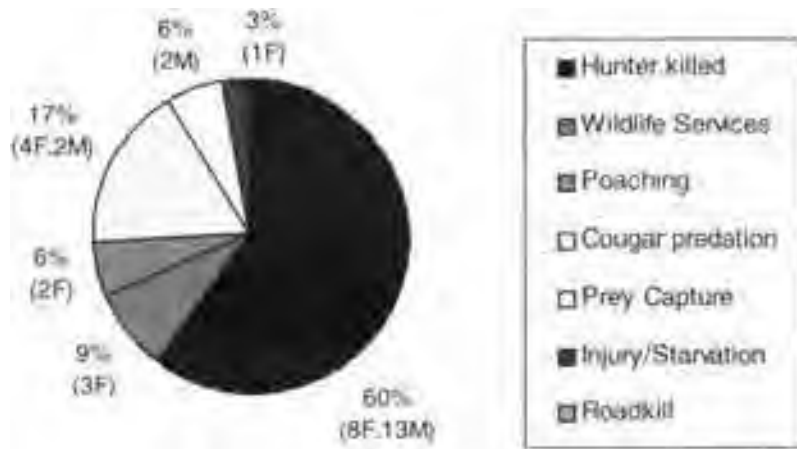


Figure 3. Age distribution of radiocollared cougars by sex, Monroe ($n = 57$) and Oquirrh ($n = 30$) Mountain study sites, Utah, USA, 1996–2004.

Monroe Mountain



Oquirrh Mountains

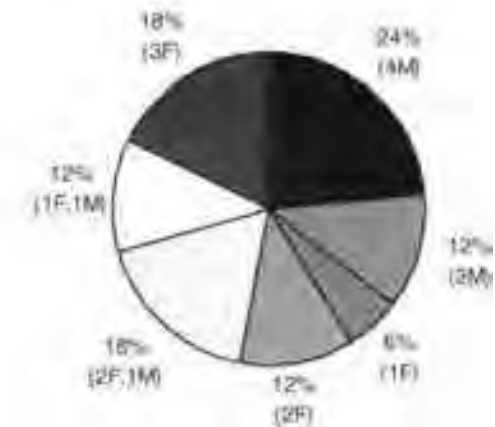


Figure 4. Cause-specific mortality among radiocollared cougars from the Monroe ($n = 35$) and Oquirrh Mountain ($n = 17$), study sites, Utah, USA, 1996–2004.

intensity, ranging from a high of 1.0 in 1996, just prior to the initiation of the treatment period, and declining to a low of 0.36 ± 0.33 (95% CI) in 2001, the end of high per-capita hunting pressure. Survival on the Oquirrh showed moderate variation, ranging from 0.63 ± 0.28 to 0.91 ± 0.17 . Trends in survival mirrored those of density on both sites, averaging 0.64 ± 0.07 (\pm SE) on Monroe and 0.76 ± 0.04 on the Oquirrh. Analysis of trends over the entire interval suggested a difference in survival between sites ($\chi^2 = 3.41$; $df = 1$, $P = 0.068$).

Fecundity.—Reproduction varied between sites and years (Fig. 6). The number of litters detected annually ranged from 0–9 on Monroe and from 1–5 on the Oquirrh, averaging 0.24 ± 0.04 (Monroe) and 0.34 ± 0.05 (Oquirrh) litters per sexually mature female. Although rates did not differ statistically between sites ($t = -1.23$; $df = 7$; $P = 0.258$), fecundity on Monroe tracked the population decline and included a zero detection rate in 2002, the year following the lowest population estimate. At that time there were ≥ 5 sexually mature females present. The lowest fecundity estimate for the Oquirrh population was recorded the year after a 50% reduction in elk numbers. These animals were removed for reintroductions in other states.

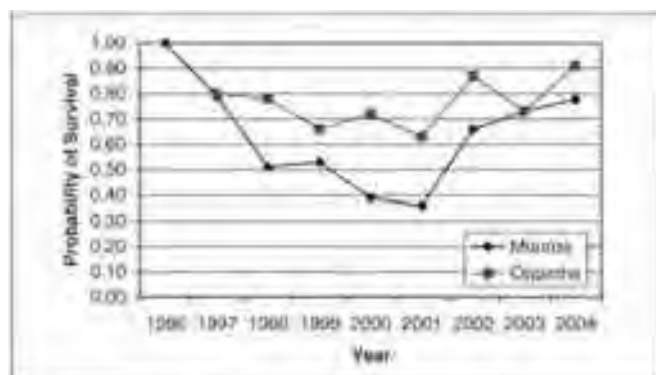


Figure 5. Estimated annual survival rates for radiocollared cougars, Monroe and Oquirrh Mountain study sites, Utah, USA, 1996–2004.

The removal was conducted over 2 years and was comprised primarily of cows and calves, the sex and age classes most vulnerable to cougar predation (Murphy 1998). The number of resident females on the Oquirrh site was smaller ($\bar{x} = 9.6/\text{yr}$) than on Monroe ($\bar{x} = 15.7/\text{yr}$), which may have influenced the variability in fecundity. Litter sizes averaged 1.7 and 1.9 kittens per litter on Monroe and the Oquirrh, respectively. Based exclusively on the Oquirrh site using only kittens handled and marked (4–10 months post partum), the sex ratio was even (9 F, 9 M).

Dispersal.—Several animals were captured and marked either just prior to, or during dispersal. Four cougars (1 F, 3 M) moved from Monroe to neighboring mountain ranges 19–55 km distant. Two of these (1 F, 1 M) established residency in habitat adjacent to the study area; one was recaptured and his collar removed (fate unknown); and one was harvested 42 km northeast on the Fishlake Plateau (Fig. 7).

Seven dispersals were documented on the Oquirrh site (2 F, 5 M), ranging in distance from 13 to 85 km (Fig. 7). Of these, 3 (1 F, 2 M) settled elsewhere in the Oquirrh Mountains; 1 female moved to the Simpson-Sheeprock Mountains; 2 males moved to the Stansbury Mountains where they were hunter-killed as transients; and 1 male dispersed to the Mt. Timpanogos region of the southern

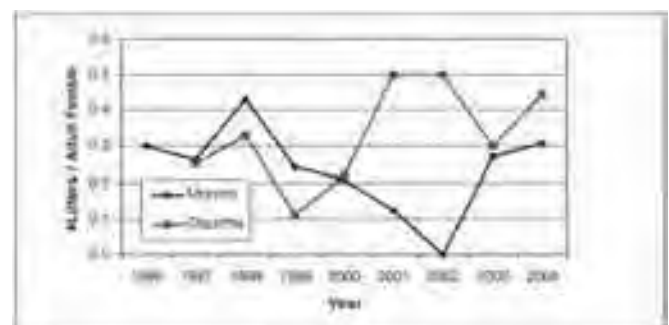


Figure 6. Annual fecundity rates for adult cougars on the Monroe and Oquirrh Mountain study sites, Utah, USA, 1996–2004.

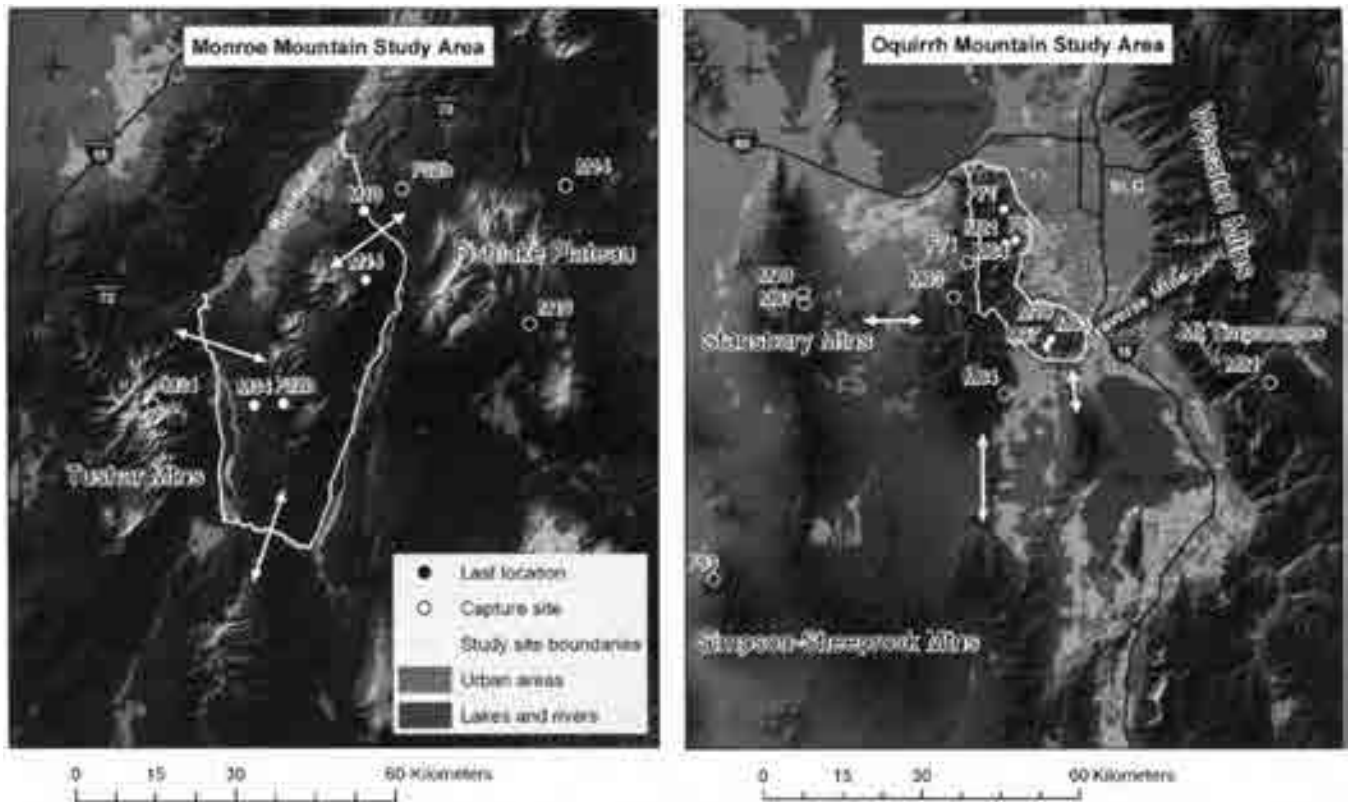


Figure 7. Dispersal patterns and landscape connectivity, Monroe and Oquirrh Mountain study sites, Utah, USA, 1996–2004. Arrows represent points of habitat connectivity.

Wasatch Mountains, crossing a 6-lane interstate and ≥ 5 km of city streets to get there.

Landscape Configuration

The study sites exhibited similar perimeter-area indices, but notable differences in connectivity and perimeter permeability (Table 3). During the study, no substantial movement barriers existed along the perimeter of Monroe Mountain, and in general, the unit was well connected to other habitats of similar quality within the Southern Mountains ecoregion (Fig. 7).

In contrast, only 5% of the Oquirrhes' perimeter was connected to neighboring habitat and approximately 40% was nearly impermeable to cougar movement. Movement barriers included the southern shore of the Great Salt Lake (7 km), the Salt Lake metro area (50 km), and a heavily traveled segment of Interstate 15 (2 km), which bisected the Traverse Mountains (Fig. 7). The remaining 55% graded into salt desert scrub communities offering little vegetative cover or surface water (West 1983). Additionally, residential development emanating from the Salt Lake–Provo metropolitan corridor was much greater around the Oquirrh site.

Overall, the Oquirrhes exhibited much thinner and more tenuous connectivity to neighboring patches of generally poorer quality (i.e., lower primary production), a pattern typical of basin and range topography (Fig. 1). This topographic fragmentation combined with anthropogenic fragmentation in the foothills and valleys around the site rendered this area susceptible to isolation (see Beier 1995).

Discussion

Influence of Harvest on Cougar Populations

Demographic differences between study populations reflected the prevailing management strategies. Cougar removal on Monroe Mountain ranged from 17.6–54.5% of the adult population exceeding 40% for 4 of the 5 years of high per-capita hunting pressure. Females comprised 32% of the harvest but 100% of depredation control and poaching mortality. Under this regime the population declined by $>60\%$, whereas the Oquirrh Mountain population remained stationary. Moreover, the Oquirrh population had a significantly higher mean age among females and a smaller proportion of subadults. Age structure of males did not differ between sites, suggesting either: 1) males and females had a fundamentally different age distribution in the general population, or 2) the unhunted portion of the Oquirrhes was too small to adequately protect males. Density, survival, and fecundity were all negatively associated with sustained high per-capita hunting pressure on Monroe Mountain, whereas, with the exception of fecundity, these measures remained relatively constant over the same interval on the Oquirrh site. Though humans represented the single greatest source of mortality for animals traveling outside the Oquirrh study site, the absence of harvest within the study area suggests that the Camp Williams–Kennecott properties collectively acted as a functional refuge. Resident females were the primary beneficiaries of this protection. On the Monroe site, the prevalence

Table 3. Measures of landscape connectivity, Monroe and Oquirrh Mountain study sites, Utah, USA, 1996–2004.

Landscape metrics	Monroe	Oquirrh
Perimeter (km)	178	150
Area (km ²)	1300	950
Perimeter:area	0.137	0.157
Greatest interpatch distance (km)	7	25
Perimeter impermeable (%)	0	40
Perimeter connected (%)	33	5
Width connective habitat (km)	7–21	2–4.5

of human-caused mortality, lack of starvation as a mortality cause, and moderately stable prey populations (UDWR, unpublished data) suggest that this level of mortality was largely additive. Annual harvests exceeding 30% of the adult population consisting of 42% females, carried out continuously for >3 years, can reduce density, fecundity, and skew age structure.

The consequences of sustained exploitation may not be limited to numeric population changes. Fecundity rates on Monroe tracked per-capita harvest pressure with a 1-year lag. We did not observe compensatory reproduction under increased harvest levels, as has been noted for some monogamous carnivores (Knowlton 1972, Frank and Woodroffe 2001). Smuts (1978), Knick (1990), and Wielgus and Bunnell (2000) reported analogous findings for hunted populations of African lions (*Panthera leo*), bobcats (*Lynx rufus*), and brown bears (*Ursus arctos*), respectively. One hypothesized function of male territoriality among polygynous carnivores is to increase offspring survival by excluding nonsire males from the natal range (Bertram 1975, Ross and Jalkotzy 1992), thereby reducing infanticide and optimizing fitness (Packer and Pusey 1984, Swenson 2003). Cougars are known to exhibit this behavior (Hornocker 1970, Hemker et al. 1986, Pierce et al. 1998) suggesting that hunted populations may experience increased levels of infanticide (Swenson 2003). On Monroe heavy harvest and subsequent social instability may have reduced the reproductive capacity of the population and therefore its ability to compensate losses.

Factors Influencing the Rate of Population Recovery

From 2002 to 2004 per capita hunting pressure on Monroe Mountain was reduced to <30%, during which survival and fecundity increased. Nevertheless, following 3 seasons of light harvest the population had only recovered to 52.4% of its 1997 levels, with nearly equal sex ratios and reproduction lagging behind resident replacement.

Lindzey et al. (1992) in Utah and Logan and Sweanor (2001) in New Mexico conducted controlled removals to examine the demographic mechanisms and time scales of population recovery. These authors noted that female recruitment was achieved via philopatric behavior or diffuse dispersal, whereas male recruitment was solely the product of immigration. Further, they suggested that recovery from 27–58% population reductions could be attained within 2–3 years under complete protection. However, those removals

spanned only a single season and large sanctuaries (>1,000 km²) buffered the treatment areas. In contrast, the Monroe population had only a 7-month annual reprieve from hunting pressure and was surrounded by units subjected to similar levels of exploitation.

The degree of landscape connectivity can mediate demographic connectivity, and is thus an important factor in population recovery or persistence (Beier 1993). Strong connectivity is the most likely reason we detected transients on Monroe each winter. These animals buffered population declines (Brown and Kodric-Brown 1977) but may have contributed to social instability. It has been hypothesized that the removal of resident males may induce a “vacuum effect” in which multiple transients vie for a vacant home range, potentially leading to an increase in population density (Shaw 1981, Logan et al. 1986). Our results lend only limited support to this argument. We observed an increase in the relative proportion of subadult males subsequent to removal of resident males, whereas the overall population declined. In general, males tend to disperse farther than females, remain transient longer, and are less tolerant of other males (Cunningham et al. 2001, Logan and Sweanor 2001, Machr et al. 2002). Conversely, females often exhibit philopatric behavior, reproduce at an earlier age than males, and tolerate spatial overlap with other females (Murphy 1998, Pierce et al. 2000). Therefore, the transient segment of the cougar population is likely to be male biased (Hansson 1991). Removal of resident males provides territory vacancies that may be contested by multiple immigrants, thereby temporarily increasing the proportion of males in the population but not the overall density of males in the general population. Based on preliminary data from the post-treatment period, we hypothesize that following sustained disturbance, population recovery will proceed in 2 general phases: numerical and functional. Functional recovery implies not simply increases in absolute density but rather stabilization of social relationships and decreases in the variability of vital life-history rates. Female-biased sex ratios, low male turnover rates, and higher per-capita productivity may be used as relative indices of functional recovery.

Harvest Dynamics and the Regional Metapopulation

The metapopulation concept has been proposed as a framework for large-scale management of cougars (Beier 1996, Sweanor et al. 2000, Laundré and Clark 2003). In the strictest sense, a metapopulation is the composite of numerous spatially discrete subpopulations exhibiting independent behavior over time. The dynamics of the metapopulation are the net result of the shifting balance between local extinctions and recolonizations facilitated by intermittent dispersal events. The latter quality defines the classic metapopulation (Levins 1969, Hanski and Simberloff 1997).

The source–sink model provides a mechanism for metapopulation dynamics by emphasizing recruitment patterns within and among populations. The more general

definition describes a sink as a net importer and a source as a net exporter of individuals over time (Pulliam 1988). Demographically, the Monroe and Oquirrh populations approximate the sink–source archetypes, respectively, albeit as a result of exploitation levels rather than habitat quality (e.g., Novaro et al. 2000). When harvest and its apparent impacts are considered, the Monroe population exhibited sink-like mortality. Notwithstanding low kitten production, each winter new animals, primarily subadult males, were captured on the site. Some of these individuals may have been resident progeny but mammalian dispersal patterns tend to be male-biased (Greenwood 1980). Low productivity and high immigration rates are the essence of a sink population.

In contrast, the Oquirrh population exhibited static density and emigration of resident progeny. No marked female kittens were detected as adults on the site. Indeed, 5 tattooed kittens (2 F, 3 M) were later killed elsewhere in the Oquirrh or on neighboring mountain ranges up to 85 km distant. Solely based on age (4 yr) the female emigrants could have raised one litter to independence, whereas the males were killed immediately upon leaving their natal ranges, thereby subsidizing the harvest in adjacent units. On the Oquirrh site female dispersal appeared to be related to the saturation of available habitat, suggesting a source-like population structure.

When the prevailing harvest rate is considered a component of habitat quality, then a spatially clumped harvest distribution can promote source–sink dynamics. This may result in an immigration gradient directed toward patches such as Monroe Mountain, where strong connectivity coupled with low population density create an ecological trap (i.e., a productive habitat that displays sink-like mortality patterns, e.g., Bailey et al. 1986, Kokko and Sutherland 2001). These sites represent examples of populations exhibiting different dynamics simultaneously within a metapopulation. Importantly, source–sink characteristics may be dynamic and interchangeable depending on how prevailing management interacts with habitat productivity and connectivity. For example, the Monroe population illustrates the potential consequences of overharvest, yet is situated within a large semicontiguous tract of habitat spanning the state with extensions into Colorado, Idaho, and Arizona. Conversely, the Oquirrh population appears demographically stable, but lies within an ecoregion defined by weak connectivity among sparsely distributed desert ranges. Under different objectives, conservative management could render the Monroe population a source, whereas the

Oquirrh population should be managed under the small population paradigm (Caughley 1994).

Management Implications

At the scale of the local population or management unit, annual harvests exceeding 40% of the nonjuvenile population for ≥ 4 years can not only reduce density but may also promote or maintain a demographic structure that is younger, less productive, and socially unstable. At an ecoregional scale the difficulties of reliably delineating discrete populations (Pierce and Bleich 2003) and their respective sizes (Choate et al. 2006) emphasize the importance of managing cougars in a metapopulation context. That said, source–sink characteristics may be more amenable to field evaluation than the extinction and recolonization events that define classic metapopulations. Numeric recovery of overexploited populations may initially depend more on immigration than in situ reproduction. Under moderate to heavy exploitation this task may require: 1) an assessment of habitat connectivity between identified sources and sinks, and 2) the presence of truly functional source populations, most readily managed through the establishment of refugia.

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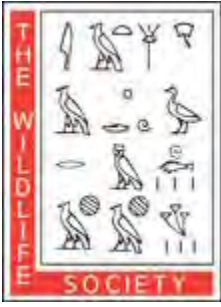
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Research Article

Evaluation of Harvest Indices for Monitoring Cougar Survival and Abundance

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ABSTRACT Harvest indices are used by state wildlife management agencies to monitor population trends and set harvest quotas for furbearer species. Although harvest indices may be readily collected from hunters, the reliability of harvest indices for monitoring demography and abundance of the harvested species is rarely examined, particularly amongst large carnivores. The overall objective of this study was to assess whether cougar (*Puma concolor*) harvest statistics collected by wildlife managers were correlated with changes in cougar demography, mainly survival rates and abundance. We estimated key demographic parameters for 2 cougar populations in Utah over 17 years during which we monitored 235 radio-collared cougars. We then compared these demographic parameters to harvest statistics provided by the Utah Division of Wildlife Resources over the same time period for the Oquirrh-Stansbury (lightly harvested population) and Monroe (heavily harvested population) harvest management units. In the Oquirrh-Stansbury unit, the percent of harvested cougars >6 years old was positively correlated with annual survival, indicative of a population experiencing several years of high survival resulting in an older age structure. Percent of permits filled and cougar abundance were also significantly correlated, suggesting higher hunting success with increased density. In the Monroe management unit, the annual percent of permits filled was correlated with changes in overall annual survival and male and female annual survival. Of utmost importance, pursuit success (cougars treed/day) increased with the number of cougars on the unit suggesting that pursuit indices may be an informative metric for wildlife managers to determine cougar population trends. Because both management units were subjected to contrasting mortality regimes, results provided by this assessment could potentially be applied to additional management areas sharing similar ecological characteristics and harvest metrics. Published 2015. This article is a U.S. Government work and is in the public domain in the USA.

KEY WORDS abundance, competing risks, exploitation, harvest statistics, management, mortality, *Puma concolor*, survival.

Knowledge of the status of a carnivore population is essential for the development and implementation of an effective management plan (Ginsberg 2001, Pollock et al. 2012). Carnivores are often managed through regulated sport hunting to maintain viable populations (Sillero-Zubiri and Laurenson 2001, Keefover-Ring 2005), and reduce impacts of predation on their principal prey species and domestic livestock (Treves and Karanth 2003, Anderson et al. 2010, Loveridge et al. 2010). Management agencies often face the difficulty of opposing demands for more effective carnivore control to protect human safety, big game populations, and domestic livestock, and the demand for

additional carnivore-hunting opportunities by sportsmen and outfitters and even societal demands for protection from exploitation (Sillero-Zubiri and Laurenson 2001, Anderson et al. 2010, Funston et al. 2013).

Given their large spatial requirements, low densities, and elusiveness, the management of large carnivores is often challenging because of the difficulties in estimating vital rates and population abundance (Gese 2001, Pollock et al. 2012). Cougar (*Puma concolor*) management nevertheless depends on the ability to monitor demographic responses to changing policies and management actions (Anderson et al. 2010). Unfortunately, state and provincial wildlife agencies are often required to make management decisions without the demographic information needed to monitor and maintain sustainable cougar population levels from one harvest season to the next (i.e., adaptive harvest management) because this information is often unavailable. Frequently, harvest

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composition statistics (e.g., age structure and sex composition) are used in lieu of measured demographic variables of population performance and abundance (Whittaker and Wolfe 2011). Harvest data alone is not sufficient for estimation of population size but rather should be used in conjunction with additional demographic data such as annual survival rates (Erickson 1982, Kolenosky and Strathearn 1987, Lindzey 1987, Rolley 1987, Chilelli et al. 1996). The question arises as to whether harvest statistics and harvest composition are reasonable approximations of changes in demographic performance (e.g., survival) and population abundance over time.

Of all demographic estimates, wildlife managers are most interested in monitoring animal abundance because annual changes in abundance measure the net balance among births, immigrants, deaths, and emigrants (BIDE), and indicate whether there is a surplus that can be sustainably harvested from year to year. Because a complete census is never possible, abundance must be estimated using appropriate methods that can account for imperfect detection and even multiple counting of individuals. Indeed, a number of approaches have been proposed for estimating cougar abundance and associated densities (Van Dyke et al. 1986, Smallwood and Fitzhugh 1995, Choate et al. 2006), but all have logistic limitations and statistical assumptions that are difficult to meet in a field setting.

When abundance becomes too difficult to accurately estimate, attention is sometimes transferred to the BIDE vital rates that determine abundance to monitor population trends rather than abundance per se. Immigration and emigration may play a large role in the change of male cougar abundance (Robinson et al. 2008), but in the female-limiting component of the population attention should be focused on reproductive success and survival (Lambert et al. 2006). Regardless of whether the focus is on the male or female component, cause-specific mortality analyses can provide deeper insight into the factors underlying management-relevant changes in survival and population dynamics (e.g., hunting vs. vehicle collisions).

The Utah Division of Wildlife Resources (UDWR) currently uses harvest rate, percent females in the harvest, and number of cougars treed per day to set the following years harvest quotas (Utah Cougar Advisory Group 2011). The cougars treed per day can be thought of a catch-per-unit-effort estimator (Choate et al. 2006). Although there was no significant relationship between cougars treed/day and the size of 2 cougar populations monitored for 6 years (Choate et al. 2006), the UDWR incorporates this index in their formula to determine harvest levels. We calculated estimates of key demographic parameters from 2 cougar populations that were intensively monitored in Utah for 17 years, and compared these estimates to harvest statistics provided by the UDWR over the length of the study period. Cougars in the Oquirrh-Stansbury cougar management unit (OSCMU) were primarily exposed to non-hunting anthropogenic sources of mortality and cougars in the Monroe cougar management unit (MCMU) were mostly influenced by hunting mortality. Our objective was to assess the

correlations between currently used harvest statistics and independently derived population parameters within the OSCMU and MCMU.

STUDY AREA

We examined cougar populations on the OSCMU and MCMU, located in the Great Basin and Colorado Plateau ecoregions, respectively, in Utah. Mountain ranges in these ecoregions were surrounded by desert basins and formed a basin and range landscape. Annual precipitation ranged from 60 cm to 120 cm in the higher elevations to 15–20 cm in the desert basin regions with most of the precipitation arriving as snow in January and February (Moller and Gillies 2008). The Oquirrh-Traverse Mountains were dominated by Gambel oak (*Quercus gambelii*), sagebrush (*Artemisia* spp.), and Utah juniper (*Juniperus osteosperma*), whereas Monroe Mountain was dominated by pinyon (*Pinus edulis*)-juniper (*Juniperus* spp.) woodlands.

The OSCMU was located in north-central Utah on the eastern edge of the Great Basin (40.5°N, 112.2°W). The Oquirrh Mountains measured >950 km², but the study area was focused on a 500-km² area encompassing the northeastern slope on properties owned and managed by the Utah Army National Guard (Camp Williams) and the Kennecott Utah Copper Corporation. The site was bounded on the north by the Great Salt Lake and on the east by the Salt Lake Valley. Approximately, 55% of the study area was under the jurisdiction of the Bureau of Land Management (BLM), with the remainder held by individuals, grazing associations, mining companies, and the military. The study area was situated within the larger OSCMU, but both properties (Camp Williams and Kennecott) were closed to the public and cougar hunting was prohibited. Although radio-collared cougars leaving those properties were legally protected within the management unit, they were susceptible to poaching, depredation control, trapping, and road kill. Thus, this population was considered to be semi-protected.

Monroe Mountain comprised part of the Sevier Plateau in south-central Utah (38.5°N, 112°W). The study area measured approximately 1,300 km², and formed the central part of the Fishlake National Forest. Additional landholders included the BLM, the State, and various private interests. The study area was within the MCMU, where cougars were managed for sustainable hunting opportunities. Other carnivores present included bobcats (*Lynx rufus*) and coyotes (*Canis latrans*), which were both subject to trapping pressure. Resource use included livestock grazing (cattle, sheep), logging, fossil fuel exploration, and off highway vehicle recreation (e.g., all terrain vehicles). Stoner et al. (2006) provide a more detailed description of the study areas.

METHODS

Cougar Harvest in Utah

Nearly all cougars harvested in Utah are taken with the aid of dogs (Utah Cougar Advisory Group 2011). An individual hunter is restricted to holding either a limited entry permit or a harvest objective permit per season, and must wait 3 years to

reapply once they acquire a limited-entry permit. The bag limit is 1 cougar/season, and kittens and females accompanied by young are generally protected from harvest. Currently, the cougar hunting season runs from late November through late May on both limited entry and most harvest objective units. Some units are open year-round and some have earlier or later opening dates. Pursuit (chase or no-kill) seasons provide additional recreational opportunities over most of the state. The pursuit season generally follows the hunting season, but specific units have year-round pursuit and a few units are closed to pursuit (Utah Cougar Advisory Group 2011).

We used information covering 1996–2012 that was published in the most recent Utah Cougar Annual Report (Utah Division of Wildlife Resources 2012), which collated information for a number of harvest and pursuit statistics used by UDWR managers from the OSCMU and MCMU; reporting of each cougar harvested is legally mandated. We first focused on the 3 indices used to monitor cougar population trends and guide management in Utah: percent females in harvest, number of cougars treed per day, and number of cougars harvested annually. We examined additional harvest indicators that were specific to each sex (i.e., annual no. harvested males, % of males in the harvest) and harvest indicators that pertained to age (i.e., proportion of cougars that were ≥ 6 years of age in the harvest, the mean age of harvested animals each year). Finally, we examined statistics related directly to harvest regulations (i.e., % of hunting permits filled each year, no. sport-harvested cougars, no. harvest permits allotted, including all limited entry, conservation, and conventional permits; Utah Division of Wildlife Resources 2012).

Field Methods

From January 1996 to June 2012, we conducted capture efforts during winter (Dec to Apr). We pursued cougars with trained hounds, and then immobilized each cougar with a combination of ketamine hydrochloride (10 mg/kg) and xylazine hydrochloride (2 mg/kg; Fort Dodge Animal Health, Fort Dodge, IA) following recommendations in Kreeger (1996). We sexed, weighed, measured, ear tattooed, and microchipped (AVID, Norco, CA) each individual. For aging the animal, we extracted a vestigial premolar (P2) for aging with cementum annuli, a field estimate of age using gum-line recession (Laundré et al. 2000), and tooth wear (Ashman et al. 1983). We fitted all adult (>24 months) and sub-adult (12–24 months) cougars with a very high frequency (VHF) radio-collar (Advanced Telemetry Systems, Isanti, MN) or a global positioning system (GPS) collar (i.e., Televilt Simplex, Lindesberg, Sweden; LoTek 4400S, Newmarket, Ontario, Canada). We located cougars with a VHF collar twice a month with aerial or ground telemetry (Mech 1983); we attempted to acquire locations of cougars with a GPS collar every 3 hours. We marked kittens (0–12 months) that were too small to wear a radio-collar with a microchip (AVID) and tattooed their ears with a unique identification number. We released all animals at the capture site. For each population, data collection was based on

radio-telemetry information collected between 1 January 1996 and 30 June 2012. Animal capture and handling procedures were conducted in accordance with Utah State University Institutional Animal Care and Use Committee standards (approval no. 937-R).

The Utah cougar hunting season commenced in mid-November and continued to the end of May each year. However, most of the harvest occurred during a 4-month period when snow was on the ground (Dec to Mar). We used individual locations within the MCMU collected after 1 March 1996, directly after the harvest season, so we would not split a harvest season across an analysis year and to maximize use of available data (the first individuals were marked in Jan 1996); similarly, the study began in the OSCMU on the 1 March 1997.

The fate of most marked individuals was known with the exception of 11 cases for which we could not ascertain an emigration or death status. We ascertained emigration status and radio-collar failures for 35 and 47 individuals in the QSCMU and the MCMU, respectively (Table 1). Kittens that did not survive to age 1 were not included in the analyses because their fates were dependent on the fate of their mothers. However, kittens that survived to their first birthday and remained in the unit where they were initially marked were included in the analyses; through left-truncation, we included such individuals from age 1 onward in all analyses.

We determined the causes of mortality through visual inspection and necropsy of carcasses (Stoner et al. 2006). When we could not determine cause of death in the field, we submitted the carcass to the Utah Veterinary Diagnostics Lab (Logan, Utah) for a detailed necropsy. Precision of mortality dates varied: with GPS-collared and hunter-harvested animal mortality, dates were known to within 1 day, whereas we estimated dates for animals wearing conventional VHF radio-collars using the midpoint between the last live signal and the detection date of the first mortality signal (± 15 days).

Demographic Analyses

Classical survival models used in human demography (Kleinbaum and Klein 2005) are appropriate for estimating survival trajectories when individuals are followed from entrance into the study until death (Murray et al. 2010, Aubry et al. 2011, Sandercock et al. 2011). Various extensions to the non-parametric Kaplan–Meier (Kaplan and Meier 1958) estimator, such as the Cox Proportional Hazard model (CPH; Cox 1972), further allow identification of the measurable (i.e., observed) covariates associated with patterns in survival trajectories. We used semi-parametric CPH models because they do not require assumptions about the shape of the underlying mortality hazard (the force of mortality) over life. Rather, each covariate within the model is assumed to act multiplicatively (i.e., proportionally) on the baseline mortality hazard at each time step (Bradburn et al. 2003): $h_i(t) = h_0(t) \cdot \exp(\beta_i X_i)$ such as where h_0 refers to the baseline hazard (i.e., the hazard's value when all covariate values are null), X denotes a vector of

Table 1. Sex- and location-specific deaths by cause of mortality for radio-collared cougars in the Oquirrh-Stansbury Cougar Management Unit (OSCMU), 1997–2012, and in the Monroe Cougar Management Unit (MCMU), 1996–2012, Utah, USA.

Mortality cause	OSCMU						MCMU					
	Total		Females		Males		Total		Females		Males	
	<i>n</i>	% of total mortality	<i>n</i>	% of total mortality	<i>n</i>	% of total mortality	<i>n</i>	% of total mortality	<i>n</i>	% of total mortality	<i>n</i>	% of total mortality
1 Hunting	16	32.0	5	17.2	11	52.4	72	67.9	28	53.8	44	81.5
2 Poaching	1	2.0	1	3.4	0	0.0	6	5.7	4	7.7	2	3.7
3 Depredation control	1	2.0	0	0.0	1	4.8	7	6.6	5	9.6	2	3.0
4 Road kill	3	6.0	3	10.3	0	0.0	0	0.0	0	0.0	0	0.0
5 Capture mortality	1	2.0	1	3.4	0	0.0	4	3.8	3	5.8	1	1.8
6 Intra-specific strife	11	22.0	6	20.7	5	23.8	12	11.3	8	15.4	4	7.4
7 Predation attempt	5	10.0	3	10.3	2	9.5	3	2.8	2	3.8	1	1.8
8 Injury, starvation	12	24.0	10	34.5	2	9.5	2	1.9	2	3.5	0	0.0
Total mortality	50		29		21		106		52		54	
Anthropogenic (1–5)	22	44.0	10	34.5	12	57.1	89	83.9	40	76.9	49	90.7
Harvest (1)	16	32.0	5	17.2	11	52.4	72	67.9	28	53.8	44	81.5
Natural only (6–8)	28	56.0	19	65.5	9	42.9	17	16.0	12	23.1	5	9.3

covariates such as $X = (X_1, X_2, \dots, X_i)$, and t denotes time (in our case, time elapsed since marking; Murray and Patterson 2006). We conducted all analyses in R (version 2.15.0, Development Core Team 2012).

Standard survival estimators consider the elapsed time from some origin until the occurrence of death or failure. If ≥ 1 type of end point is of interest, these end points are called competing risks (Geskus 2011). With radio-telemetry data, a competing risk analysis can be used to attain unbiased estimates of cause-specific mortality, whereas standard tabular presentations of percentage representations for cause-of-death data are inherently biased (Heisey and Patterson 2006) but can nevertheless be useful to visualize the cause of death data. Because specific causes of mortality might be more reliable indicators of harvest statistics used to guide cougar management, we considered 2 dichotomies in mortality estimates. We estimated annual cause-specific mortality at each study area for human harvest versus all other causes of death, or all anthropogenic causes of mortality (i.e., harvest, poaching, depredation control, road kill, capture-related mortality) versus natural mortality agents (i.e., intra-specific strife, injury during predation attempt) using the R package *wild1* (Sargeant 2011, Wolfe et al. 2015). For the purpose of this assessment, we were specifically interested in estimating annual mortality from hunting exclusively (i.e., the harvest rate \hat{h}_t) because it should be most closely linked to harvest statistics if such relationships exist.

We used a minimum abundance index or population estimate for each management unit that included the number of adults and independent sub-adults (i.e., no longer with their mother) based on all captures, radio-telemetry, tracking, and mortality data (Logan and Swenor 2001, Choate et al. 2006, Cooley et al. 2009). We also calculated corresponding densities based on the size of each unit (adult and independent sub-adult cougars per 100 km²).

We used Spearman's rank correlation coefficient (r) to examine the relationships between the harvest indices collected by the UDWR and the independently derived demographic rates (Zar 1999). Correlation coefficients range from -1 (i.e., perfect negative correlation) to $+1$ (i.e., perfect

positive correlation), where a correlation of 0 indicates there is no relationship between the 2 variables. We used the standard error of a correlation coefficient to determine the confidence intervals around a true correlation of 0, and t -tests to test the null hypothesis that the true correlation was 0 (Zar 1999). For each analysis, we reported the correlation coefficient and associated P -value and considered correlation coefficients with P -values ≤ 0.10 significant.

RESULTS

Overall, demographic analyses were based on 235 marked individual cougars (MCMU: $n = 148$, 66 M and 82 F, 37 sub-adults and 111 adults; OSCMU: $n = 87$, 32 M and 55 F, 24 sub-adults and 63 adults). Seventeen individuals died of natural mortality and 89 of anthropogenic causes in MCMU. In the OSCMU, 28 individuals died of natural death versus 22 of anthropogenic causes (Table 1). In the MCMU, 72 individuals were harvested and 34 individuals died of non-harvest mortality (i.e., all other causes of death). Within the OSCMU, 16 individuals were harvested and 34 individuals died of other causes (Table 1). An additional 82 cougars were right-censored because they were still alive at the end of the study or because they emigrated from the management unit (47 in MCMU and 35 in OSCMU; i.e., the data they provided while on the study area was used until they emigrated out of the study area).

We calculated an abundance index akin to a minimum population abundance estimate for each unit (Fig. 1). In the OSCMU, this index fluctuated between 10 and 20 adults and independent subadult cougars over time, with a corresponding density that ranged from 2 to 4 adult and independent subadult cougars/100 km² (Fig. 1). In the MCMU, this index ranged from 10 to 40 adult and independent subadults, for a corresponding density of 1 to 3.5 adult and independent subadult cougars/100 km² (Fig. 1).

Unit-Specific Demographic Estimates and Harvest Statistics

Annual survival fluctuated over time in the OSCMU (Fig. 2A) and MCMU (Fig. 2B). Notably, in 1999 and 2012

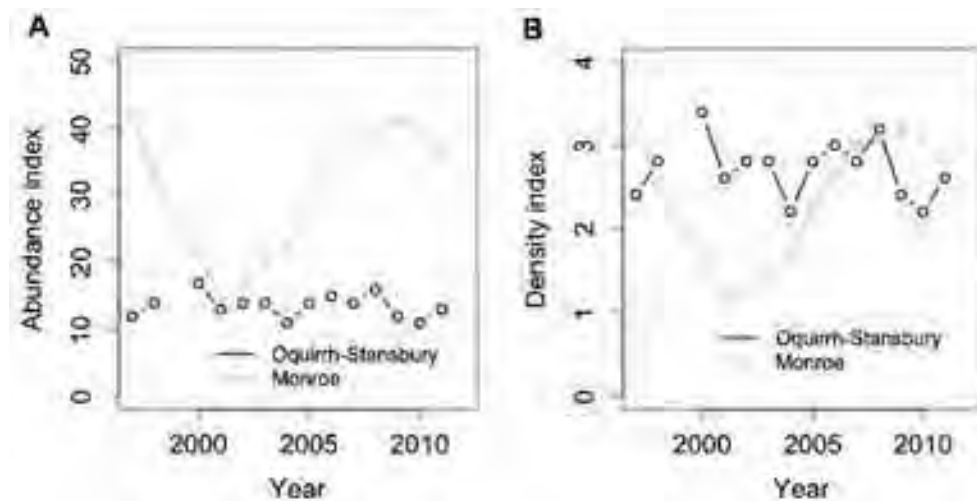


Figure 1. Changes in A) cougar abundance and B) associated density index (cougars/100 km²), for adult and independent subadult cougars on the Oquirrh-Stansbury (1997–2012) and the Monroe (1996–2012) study areas, in Utah, USA.

annual survival in the MCMU was low (Fig. 2B). Male survival was consistently lower than female survival in both units, and survival was higher in the OSCMU compared to MCMU (Fig. 2).

In the OSCMU, the primary cause of death in males was harvest (Table 1, Fig. 3), and natural causes (injury, starvation) in females (Table 1). Intra-specific strife was also an important influence of overall mortality, equally distributed between females and males (Table 1). Individuals between ages 2 and 6 primarily died from harvest mortality or other sources of anthropogenic mortality (e.g., car collision, Wildlife Services removals). For individuals that died of non-harvest mortality, females died at a later age on average than males (Wolfe et al. 2015). Over the span of the MCMU, 67% of all individuals that died were harvested (Table 1, Fig. 3). All age-classes were subjected to harvest and non-harvest causes of mortality, and more individuals died between 2 and 4 years of age compared to any other age class.

Generally, in the OSCMU we observed a decrease in harvest indices over time. In the MCMU, however, we observed an increase in harvest indices over the last few years of the study. Specifically, increases were observed in the total harvest and in the percentage of harvest permits filled since 2006, along with an increase in the percentage of cougars harvested that were >6 years old and in the number of females harvested since 2009. The number of cougars treed/day (i.e., pursuit statistic) and mean age at harvest fluctuated over time with an increase in the pursuit statistic and harvest pressure since 2004 in the MCMU.

Correlation of Demographic Estimates and Harvest

We found significant correlations between several harvest statistics and demographic estimates for the OSCMU (Table 2) and MCMU (Table 3). In the OSCMU, we found the percent of permits filled and the minimum abundance index were positively correlated (Fig. 4A, Table 2). Further, the percent of individuals in the harvest

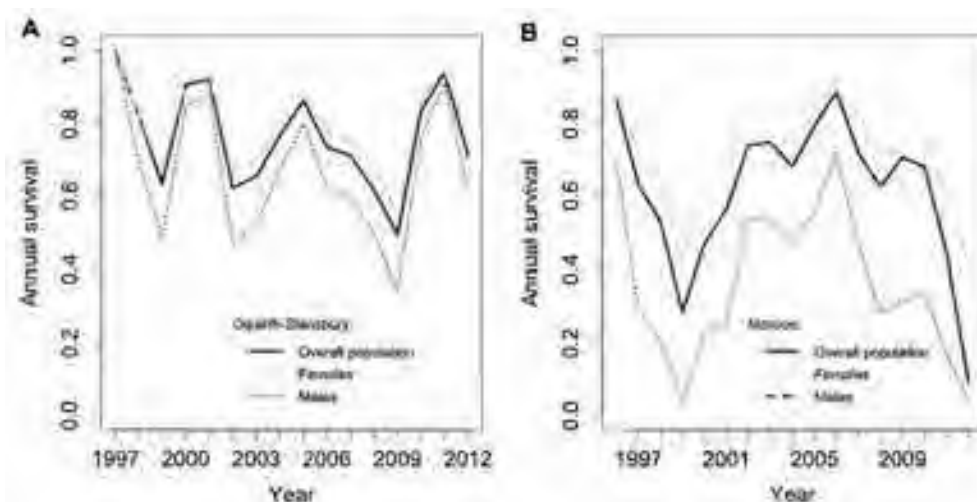


Figure 2. Changes in overall and sex-specific annual survival for radio-collared cougars in the A) Oquirrh-Stansbury and B) Monroe study areas in Utah, USA from 1997 to 2012 and 1996 to 2012, respectively.

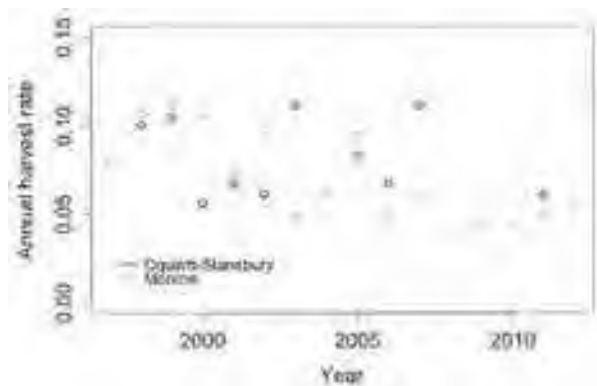


Figure 3. Changes in annual harvest mortality estimates over time in the Oquirrh-Stansbury and Monroe study areas Utah, USA from 1997 to 2012 and 1996 to 2012, respectively.

>6 years old was positively correlated with annual survival, annual male survival, and annual female survival (Fig. 4B–D, Table 2). In the MCMU, which experienced greater hunting pressure, overall annual harvest mortality was principally influenced by male annual harvest mortality (Fig. 5A, Table 3). We also observed a negative relationship between the annual number of females in the harvest and annual survival (Fig. 5B, Table 3). Additionally, we found a negative correlation between the annual proportion of females in the harvest and annual survival (Fig. 5F, Table 3). Further, percentage of permits filled each year was positively correlated with overall annual survival, annual male survival, and annual female survival (Fig. 5, Table 3). We detected a positive relationship between the number of cougars treed/day and the annual abundance index (Fig. 5G, Table 3), suggesting that pursuit success increased with the number of cougars on the unit.

DISCUSSION

Monitoring survival and determining the abundance of large carnivores is a daunting task for many wildlife agencies. Being able to use indirect measures of abundance to monitor changes in population size and survival (i.e., harvest) has routinely been used for large carnivores and cougars in particular, for several decades (Beausoleil et al. 2008,

Whittaker and Wolfe 2011). However, knowing the relationships between these indirect measures or harvest indices and actual demographic parameters such as survival and population abundance requires long-term data collected with consistent field methodologies.

Even though intense harvest in the MCMU was a potential concern for sustainable management of cougars in this region, cougar densities assessed from the marked population indicated that densities rebounded and have been maintained at 3 adult cougars/100 km² over the last few years (Fig. 1). Immigration was a factor that we were not able to quantify, but the age structure indicated that an influx of cougars since 2006 has likely compensated for increased removal of cougar residents through hunting. Additional data on cougar movement in and out of the study area would be needed to quantify this influx, and the role immigration plays in maintaining stable dynamics (Sweaner et al. 2000, Robinson et al. 2008, Cooley et al. 2009). Abundance estimates obtained from the results of genetic mark-recapture procedures (Long et al. 2008, Kelly et al. 2012), and more sophisticated analytical methods such as dead recovery multi-state analysis (Koons et al. 2014) could help improve abundance estimates in the future. However, the question of whether a density of 3 adult cougars/100 km² is the target density that state wildlife agencies should manage for remains unresolved.

Densities ranged from 2 to 4 adult and independent subadult cougars/100 km² in the OSCMU and 1 to 3.5 adult and subadult cougars/100 km² in the MCMU (Fig. 1). According to the 2009–2021 Utah Cougar Management Plan (Utah Cougar Advisory Group 2011), high quality habitat was assigned a density range of 2.5–3.9 adult and subadult cougars/100 km², medium quality habitat was 1.7–2.5 adult and subadult cougars/100 km², and low quality habitat was 0.26–0.52 adult and subadult cougars/100 km². According to these standards, the OSCMU and MCMU cougar populations would be classed as high quality habitat. Because cougars have large home ranges, these numbers would be valid in locations where cougar home ranges are not constrained by human development and encroachment. This is not the case in the OSCMU, and might not hold true in the MCMU either.

Table 2. Correlations matrix between demographic parameters and harvest statistics in the Oquirrh-Stansbury Cougar Management Unit, 1997–2012, Utah, USA. Significant correlations ($P < 0.1$) are indicated with an asterisk.

Demographic parameter		Harvest statistics						
		Sport harvest	Male sport harvest	Female sport harvest	% permits filled	% harvest >6 years	% females harvested	No. cougars treed/day
Annual survival	<i>r</i>	0.192	0.052	0.329	0.063	0.552*	0.313	–0.093
	<i>P</i>	0.475	0.847	0.213	0.816	0.026*	0.237	0.742
Annual male survival	<i>r</i>	0.131			0.013	0.546*	0.307	–0.123
	<i>P</i>	0.627			0.961	0.028*	0.248	0.663
Annual female survival	<i>r</i>	0.132			0.029	0.550*	0.293	–0.099
	<i>P</i>	0.625			0.913	0.027*	0.271	0.726
Annual abundance index	<i>r</i>	0.218	0.284	0.104	0.600*	–0.199	–0.337	0.260
	<i>P</i>	0.453	0.325	0.723	0.023*	0.496	0.238	0.390
Annual harvest mortality	<i>r</i>	–0.435	–0.393	–0.396	–0.433	–0.441	–0.002	0.062
	<i>P</i>	0.209	0.261	0.258	0.211	0.202	0.996	0.864

Table 3. Correlations matrix between demographic parameters and harvest statistics in the Monroe Cougar Management Unit, 1996–2012, Utah, USA. Significant correlations ($P < 0.1$) are indicated with an asterisk.

Demographic parameter		Harvest statistics						
		Sport harvest	Male sport harvest	Female sport harvest	% permits filled	% harvest > 6 years	% females harvested	No. cougars treed/day
Annual survival	r	−0.237	0.035	−0.419*	0.630*	0.034	−0.453*	0.058
	P	0.359	0.893	0.094*	0.009*	0.896	0.067*	0.836
Annual male survival	r	−0.275			0.659*	−0.065	−0.370	−0.193
	P	0.275			0.050*	0.804	0.144	0.490
Annual female survival	r	−0.262			0.679*	0.030	−0.374	−0.131
	P	0.310			0.004*	0.908	0.139	0.641
Annual abundance index	r	0.308	0.249	0.248	−0.013	0.038	0.017	0.747*
	P	0.246	0.353	0.353	0.961	0.888	0.951	0.002*
Annual harvest mortality	r	0.370	0.463*	0.119	−0.393	−0.040	−0.046	−0.355
	P	0.144	0.061*	0.648	0.132	0.880	0.861	0.193

Specifically, dispersing cougars are potentially exposed to car collisions and Wildlife Services removal. Also, demographic stochasticity alone could lead to small populations of cougars in both locations. We suggest that the UDWR consider re-examining their density and habitat quality indices for future cougar management, and the size of management units for a species whose populations are predominantly regulated by source-sink dynamics (Robinson et al. 2008, Cooley et al. 2009).

The most intuitive finding of our analysis was the positive correlation between the percentage of permits filled and the minimum abundance index in the OSCMU. This was a fairly simple relationship indicating that hunters were more successful when cougars were more abundant. The fraction of females in the harvest is arguably the statistic most widely used by managers to monitor changes in cougar populations (Cooley et al. 2011). However, our analysis revealed no significant correlation between this metric and either annual female survival or annual abundance in the OSCMU,

possibly because this index combines a variable fraction of non-reproductive sub-adult females with adult females. Anderson and Lindzey (2005) noted that the sex ratio of harvested cougars alone is of limited value in identifying population change, but when combined with age structure, both provide a more reliable index to population change. This was substantiated by our findings that at least for the OSCMU population, the percent of the harvest >6 years was positively correlated with annual female survival. However, this metric generally served as a proxy for the age structure of the population and was likely indicative of a population that has experienced several years of high survival and a greater proportion of more fecund females in the population.

In the MCMU, overall annual harvest mortality was principally influenced by male annual harvest mortality, suggesting that males were more heavily targeted than females in the MCMU. We further observed a positive correlation between the percentage of permits filled and annual survival overall but also independently for both female

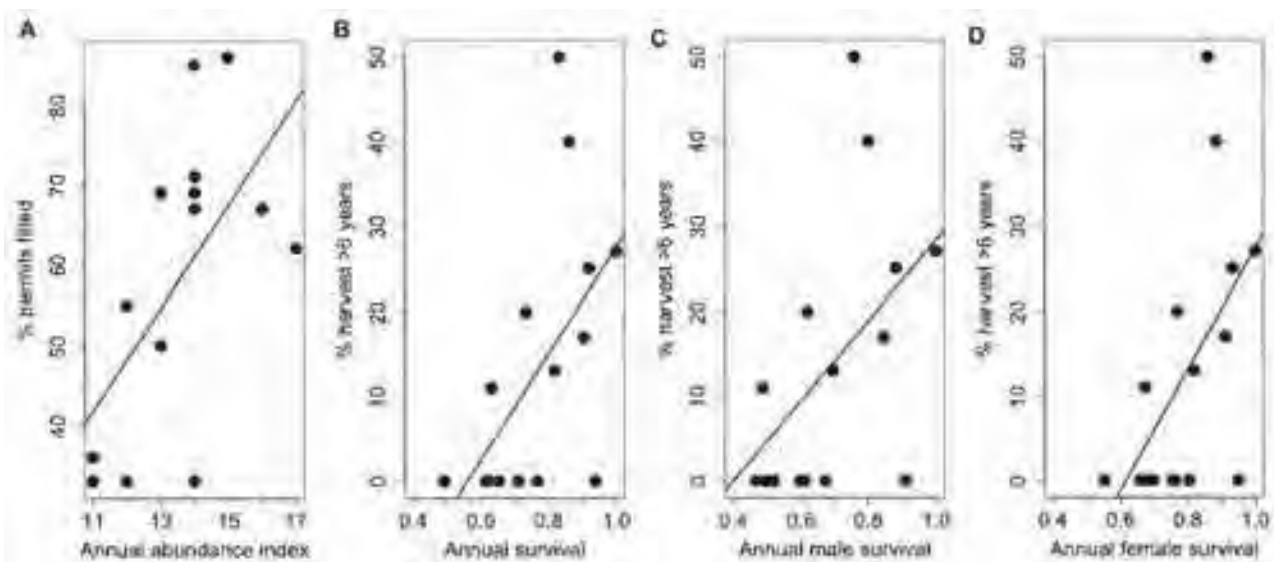


Figure 4. Significant correlations between A) % permits filled and annual abundance, B) % of harvested cougars >6 years old and overall annual survival, C) % of harvested cougars >6 years old and annual male survival, and D) % of harvested cougars >6 years old and annual female survival, for the Oquirrh-Stansbury Cougar Management Unit, 1997–2012, Utah, USA.

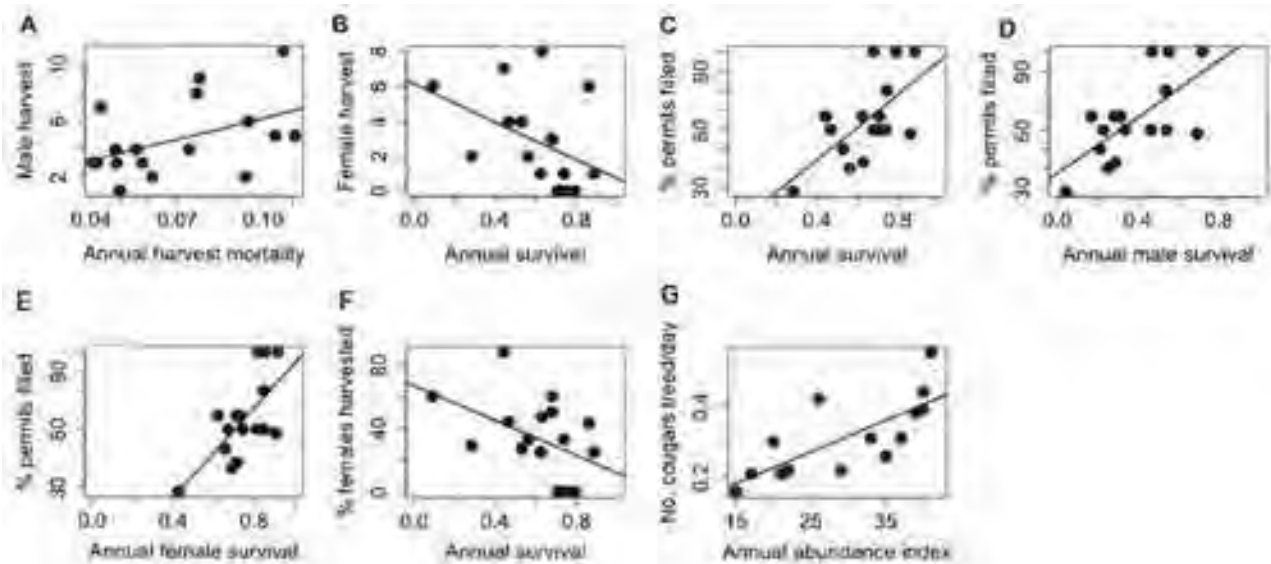


Figure 5. Significant correlations between A) male harvest rate and annual harvest mortality, B) female harvest and annual survival, C) % permits filled and overall annual survival, D) % permits filled and annual male survival, E) % permits filled and annual female survival, F) % females in the harvest and annual survival, and G) no. cougars treed/day and annual abundance for the Monroe Cougar Management Unit, 1996–2012, Utah, USA.

and male survival. This relationship indicates that hunters were more successful when annual cougar survival was high for the population as a whole, but also for females and males separately. The number of females harvested and the fraction of females in the harvest were negatively correlated with annual survival, suggesting that in this management unit, both statistics are relevant and their use is justified as the most widely used harvest index to monitor changes in cougar populations (Cooley et al. 2011). One of the more surprising results was the strong positive relationship between the number of cougars treed per day during the pursuit-season and the index of minimum annual cougar abundance on the MCMU. This index was arguably independent from harvest data because it is derived from the success of non-lethal pursuit permits. Choate et al. (2006) reported a weak ($P=0.13$) correlation from the same unit that was derived in the same manner but for a much shorter time span (6 years). As discussed by Whittaker and Wolfe (2011), this pursuit index is a catch-per-unit-effort estimator, and although easily obtained, this index is subject to several assumptions including demographic and geographic independence and constant catchability throughout the period of data collection. The latter assumption may be unrealistic because it implies that cougars do not learn to avoid capture. Despite these limitations, the relatively low cost of obtaining this index via phone surveys of sportsmen warrants further investigation and refinement.

MANAGEMENT IMPLICATIONS

Using harvest statistics that are already commonly collected from hunters in the state of Utah to determine harvest quotas for cougars was justified by our analyses. Specifically, the total number of females harvested and the fraction of females in the harvest were negatively correlated with annual survival; managers are right to pay particular attention to these harvest

statistics for monitoring cougar populations. In the MCMU, the percentage of permits filled was also a good proxy to changes in annual survival, annual female survival, and annual male survival. The highest correlation between cougars treed/day and the annual abundance of cougars suggests that pursuit indices may be an informative metric for wildlife managers to determine cougar population trends in intensely harvested management units. These harvest statistics may be suitable for cougar management units that have a similar hunting management regime as MCMU, with hunting being the predominant source of mortality.

In the OSCMU, the percentage of cougars in the harvest >6 years of age was correlated to overall annual survival, annual female, and male survival making them useful for monitoring changes in the demographics of cougar management units where harvest is not the only dominant cause of death (Wolfe et al. 2015). In such units, the percentage of permits filled tracked changes in annual cougar abundance, suggesting that this metric is a good indicator of population abundance in units that are not under intense harvest pressure.

Ideally, managers should also keep track of change in demographic rates, specifically survival and abundance, in key harvest management units that display contrasting harvest and mortality regimes. Our results illustrate the value of long-term data collection and suggest the possibility of expanding the scope of such comparisons to additional management units. Because the OSCMU and MCMU were subjected to contrasting mortality regimes (Wolfe et al. 2015), our results could be expanded to additional management units that share either the OSCMU or the MCMU characteristics. Ultimately, we suggest this analytical framework be extended to other harvested carnivore species for which harvest indices are available. When demographic information is available for certain harvest

management units, correlations between harvest indices and demographic rates can be used to assess which harvest indices are better proxies to changes in survival, abundance, and population dynamics.

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BLACK BEAR MANAGEMENT PLAN

1999-2010



Status and Objectives of Idaho's Black Bear Resource

Idaho Department of Fish and Game
600 South Walnut Street
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December 1998

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FOREWORD

Preserving Idaho's wildlife resources and hunting heritage will require cooperation from the citizens that are interested in black bears. This plan will provide the framework for the Department's management efforts for black bear and a solid foundation for ensuring the continued existence of viable black bear populations.

Many persons provided invaluable input to the Department during the development of this plan. A 9-member steering committee was formed early in 1998. Their charge was to propose a process for developing this plan that would involve a diversity of viewpoints regarding black bear management in Idaho. As a result of their efforts, a 20-member black bear planning team, composed of representatives from sporting interests and the general public, was convened on June 4, 1998. The planning team identified issues and strategies relevant to this plan and the decision criteria that would be used to evaluate the various management alternatives available to the Department.

The planning team identified several issues they believed the Department should address in this plan. Major issues included:

1. Methods of take
2. Management based on biological and/or sociological considerations
3. Management should be in the best interest of black bears
4. Provide for more flexibility to manage at the local or data analysis unit (DAU) level
5. Consider the impact of black bears on deer/elk populations
6. Develop criteria to indicate when black bears are abundant
7. Methods of gathering public input on black bear management program

General, recurring themes focused on customizing management to fit goals and objectives at the DAU level, using sound biology to establish those goals, improving public education and involvement, and evaluating biological and sociological implications of our management decisions. Decision criteria suggested by the planning team emphasized three general areas. They included:

1. Will the action have the desired effect?
2. Is the action feasible from a cost-effective and logistical standpoint?
3. What are the social implications?

Where appropriate, the Department has attempted to incorporate these suggestions into this plan.

1999-2010 BLACK BEAR MANAGEMENT

INTRODUCTION

Wildlife managers juggle many diverse issues in attempting to integrate the needs and desires of humans with the biological needs of black bears. The Idaho Department of Fish and Game periodically develops management plans that establish the Department's philosophy and management direction for black bears and serve as guidelines for setting black bear hunting seasons. This plan is the fourth plan written since 1980. Each plan represents a step forward in the development of a management program that will ensure the long-term viability of black bear populations and provide recreational opportunity for hunting and non-hunting resource users. Specific objectives are included in this plan to identify management direction for each DAU, which reflects the ecosystem management principle that predator and prey management should be linked to ensure a reasonable balance among species. The specifics regarding how the department will attempt to reach those objectives will be dealt with annually in the regular season setting process.

The Department is currently undergoing a transition in terms of responding to its constituency - the people of Idaho. As a result of current sociological trends, decisions about how the Department manages black bears have become very controversial. Many of Idaho's citizens disagree on issues such as spring black bear hunting seasons and using bait or hounds to hunt black bears. Although these issues have significant potential for influencing the general public's perception of the acceptability of hunting, in most cases they have only minimal biological impact on black bear populations. Habitat fragmentation and loss is far more important to the long-term survival of black bear populations and is, unfortunately, often lost in the debate over hunting methods.

The popularity of black bear as a big game animal to hunters using a variety of hunting techniques, and the concerns of some citizens about the use of those methods of take have combined to generate some controversy in the management of this species. This plan represents an attempt by the Department to consider the viewpoints of all Idahoans on how black bears should be managed in the state.

MANAGEMENT HISTORY

Although the black bear was classified as a game animal in 1943, with a bag limit of 1 per year, few protective laws were passed until 1973. Beginning in 1973, resident hunters were required to have a tag in their possession while hunting black bears in those Game Management Units (GMU) in northern Idaho that had summer hunting closures. Resident black bear hunters in much of southern Idaho, where seasons remained open to year-round hunting, did not need a tag. Non-resident black bear hunters were required to have a tag in all GMUs in the state.

In 1975, the Department allowed hunters to take 2 bears in 3 GMUs. The bag limit was increased to 2 bears in 21 additional GMUs in 1977. Females accompanied by cubs were protected during the spring season from 1973 through 1982. In 1983, females accompanied by

cubs were protected during the spring and fall seasons. Year round hunting seasons and 2 bear bag limits were eliminated in 1986.

The Department has relied on two primary methods to collect black bear harvest data: 1) the mandatory check and report program implemented in 1983, and 2) the annual telephone harvest survey. The mandatory check-in report program requires the hunter to bring the skull and hide (1992) of their harvested black bear to an official check point within 10 days of the kill date and to fill out a harvest report form. In most cases a premolar tooth is extracted from the skull for aging. Pertinent data including kill date, location of kill, and method of take are recorded on the harvest form. Compliance with the mandatory report program is unknown.

The telephone survey of hunting license holders provided a second estimate of the black bear harvest. This survey contacted approximately three percent of the black bear tag holders and it provided information from successful and unsuccessful hunters. A statewide harvest estimate, recreation days, and hunter success rates were estimated. The black bear portion of the harvest survey was discontinued in 1996 due to funding cutbacks.

POPULATION BIOLOGY

In 1972 the Department initiated a black bear research project to collect biological data for a comprehensive management program. Six black bear populations were studied. These studies were designed to determine the status of each population, although data were also collected on food habits, physical condition, denning requirements, activity patterns, and habitat use patterns. Research information collected from black bear populations in lightly hunted and heavily hunted areas was used by Department biologists to develop harvest criteria and to interpret harvest data collected through the mandatory check program.

Detailed information about black bear biology in Idaho can be found in a book authored by John Beecham and Jeff Rohlman titled: "A Shadow in the Forest - Idaho's Black Bear." The University of Idaho Press published this book in 1994.

HABITAT MANAGEMENT

Black bear distribution in Idaho corresponds closely to the distribution of coniferous forests. North of the Snake River plain they are found throughout the forested mountains and foothills. Few black bears occur south of the Snake River, except in southeastern Idaho. About 75% of black bear habitat in Idaho is administered by the US Forest Service; 20% is controlled by private interests; and the rest is administered by other agencies, such as the Bureau of Land Management, Idaho Department of Lands, and Idaho Department of Fish and Game.

Idaho has approximately 30,000 square miles of black bear habitat. Although it is difficult to estimate the size of black bear populations, Department research has shown that black bear densities vary among areas in Idaho. The black bear social system limits density to 1.5 to 2 black bears per square mile in the best habitats. However, even in good quality habitats, many factors can influence the size of the black bear population in any given year. Several years of

poor berry crops can result in reduced cub production and increased mortality of sub-adult black bears. Heavy hunting pressure can also reduce the population below the carrying capacity of the habitat.

Forest management practices, wildfires, and plant succession influence black bear habitat quality. The black bear's diet is primarily grasses and forbs during the spring and early summer. By mid-July, they begin adding fruits such as huckleberries, wild cherries, buffalo berries, hawthorn, and mountain ash to their diet. Approximately 10% of the black bear's annual diet is animal matter: insects comprise about 9% and vertebrates make up the remaining 1 percent. In many situations partial removal of the forest overstory helps black bear because it opens up the forest canopy and allows for increased plant production on the forest floor. However, increased human access into black bear habitats makes black bears more vulnerable to hunters. This factor partially offsets the benefits of logging activity.

Department-sponsored research on black bear habitat use patterns suggests that the following actions will maintain or enhance black bear habitat in areas where logging has been proposed.

Recommendations:

1. Minimize soil disturbance in areas where berry-producing shrubs are abundant by using rubber tired vehicles or logging over snow cover.
2. Use selection cuts to maintain black bear security cover. Retain 40-70% canopy coverage when huckleberry (Vaccinium sp.) is abundant in the understory.
3. Maintain relatively dense pole-sized timber stands in the overall vegetative mosaic on north and east aspects for use as bedding areas.
4. Retain some mature trees in logged areas to enhance their use by female black bears with cubs.
5. Maintain aspen stands in the overall vegetative mosaic.
6. Broadcast-burn slash or leave it untreated and minimize soil scarification to prevent damage to rhizomatous food plants.
7. Create leave patches or leave strips within cutting units for security cover. Clear-cuts should be small and have irregular borders to provide security cover.
8. Maintain a mix of different-aged cutting units to influence black bear density and distribution in an area.
9. Logging roads should be located out of creek/river bottoms where significant black bear foods occur.
10. Area closures to motorized vehicles should be implemented to reduce black bear mortality rates and increase habitat effectiveness.

Habitat loss and fragmentation due to human encroachment also has a subtle, yet permanent, impact on the long-term viability of black bear populations. Ultimately, the accelerating pace of habitat fragmentation and loss will dictate how long we can maintain black bear populations in some areas of the state. However, the prognosis for the future of black bears in much of the state

remains positive because a majority of the land base is publicly owned. As long as we continue to consider the wellbeing of Idaho's wildlife resources when making habitat management decisions, those habitats will continue to support viable black bear populations.

POPULATION MANAGEMENT

The vulnerability of black bear to harvest varies greatly because of differences in habitat and access. Bears are less vulnerable where cover is dense and expansive. They are particularly vulnerable in highly roaded areas and habitats that provide only patches of security cover. This often results in populations with fewer adult black bears, especially males.

The sex and age of a black bear also affects its vulnerability to harvest. Adult males are typically most vulnerable because they are bold (often use open areas) and have larger home ranges. Consequently, the adult male segment of a population is the first to be reduced under hunter pressure. Sub-adult males are slightly less vulnerable. Females are least vulnerable, especially if accompanied by cubs. A low percentage of adult males (≥ 5 years old) in the harvest may be an indication of over-harvest.

Hunting pressure affects harvest rate, which affects age structure, sex ratios, and densities of black bear populations. As harvest rates increase, the proportion of sub-adult black bears (those less than 4 years old) in the harvest typically increases, whereas the proportion of adult males declines. At higher harvest levels, the proportion of females in the harvest increases, and harvest may result in a population decline if a large area is affected or if there are no reservoir areas nearby to produce dispersing sub-adult black bears. In reservoir areas, black bear populations are limited by the capacity of the habitat to support black bears and their social structure. Some species compensate for excessive adult mortality by producing more young. However, black bears do not respond in this manner. In fact, high adult mortality results in a younger age population and lower productivity (average number of young per litter). Young male black bears disperse from their mother's home range when they are 1.5 to 2.5 years old and often travel long distances to occupy vacant habitat. However, young female black bears rarely disperse far. As a result, black bear populations far from reservoir areas are slow to recover from over-harvest.

The ages of black bear captured during Department-sponsored research projects indicated that lightly hunted populations had a high ratio of adults to sub-adults (70:30), a high percentage of adult males (35%), and a median age of 7.5 years. Data collected from heavily hunted populations showed adult:sub-adult ratios favoring sub-adults (40:60), fewer adult males (21%), and a median age of 2.5-3.5 years. Studies of black bear populations in Alaska, Virginia, and Arizona showed similar relationships between lightly and heavily hunted populations.

Department research demonstrated that age and sex data derived from trapping was closely correlated with that from the harvest. It follows, therefore, that harvest criteria have potential for monitoring population status.

HARVEST CHARACTERISTICS

Black bears in Idaho are long-lived, they mature late (4-7 years old), and they have low reproductive rates. Short-term changes in the size of black bear populations are related to changes in birth rates associated with the availability of nutritious foods, especially late summer and fall berry production. Long-term trends are directly related to changes in habitat quantity and quality.

The reproductive characteristics of Idaho black bears suggest that harvest rates must remain low to ensure sustainable harvest goals. Unfortunately, no easy or inexpensive methods exist for assessing the status of black bear populations. Therefore, Department biologists must rely on indirect measurements (harvest data) to evaluate the effectiveness of management actions. These limitations re-emphasize the need to implement conservative management strategies for black bear.

During the past planning cycle, black bear tag sales have increased slightly for resident black bear hunters and decreased for non-resident hunters (Figure 1). At least part of the increase observed for resident hunters can be attributed to increased sales of Sportsmen Pak and Deer, Elk, Bear Pak licenses which include a black bear tag. The decrease in non-resident black bear tag sales (75% since 1987) is probably associated with increased costs for those black bear tags (\$40.50 in 1987 and \$226.50 in 1998). The sale of baiting permits (\$1.50) was initiated in 1993. Sales of these permits increased from 1,195 in 1993 to 1,349 in 1995 and have since declined to about 1,200 in 1998. The sale of hound hunter permits has increased from 988 in 1993 to 1,257 in 1998 (Figure 2).

Black bear harvest during the last 12 years shows a cyclic pattern that is relatively stable or slightly increasing (Figures 3 and 4). During the 1986-1992 planning period, hunters took an average of 1,277 black bears. During 1993-1997, an average of 1,355 black bears was harvested. The Panhandle Region accounted for 34% of the harvest in the last planning period; 28% came from the Clearwater Region; 22% from the Southwest Region; 10% from the Salmon Region; and the remaining 7% came from the Magic Valley, Southeast, and Upper Snake Regions.

The emphasis of the 1992-2000 bear plan was to stabilize total harvest and reduce the harvest of female black bears. Management actions implemented by the Department resulted in a short-term reduction in total harvest and a shift in the seasonal harvest of bears, but did not influence the sex ratio in the harvest (Figures 5 and 6). Analysis of the harvest data suggests that shortening the spring hunting season did reduce the female harvest. However, eliminating hunting opportunity in early September (September 1-14) was ineffective in reducing total female harvest during September. Female black bears appear to be more vulnerable to harvest in the fall hunting season because many females are no longer accompanied by the previous years cubs and they have high energy demands.

The average number of days hunters used to successfully harvest a bear was less than 7 days for those using bait, hounds, incidental, or still hunting methods. Shortening long, 2-3 month spring and fall hunting seasons by 1-3 weeks would not affect the length of time that most hunters spend in the field pursuing bears. Analysis of harvest data suggest that shortening seasons

results in short-term reductions in harvest, but hunters quickly learn to adapt and harvest levels increase.

Black bear tag holders use 4 primary methods for harvesting a black bear: spot and stalk (still hunting), hound hunting, hunting over bait, and incidental hunting (hunting black bears while primarily engaged in some other activity like deer or elk hunting, wood gathering, fishing, or camping). During the 1986-1991 planning cycle and the 1992-2000 cycle, still hunters took slightly more black bears than hunters using other methods (Figure 7) did. However, bait and hound hunters experienced the highest success rates. No differences were observed in the percentage of female bears taken by hunters using bait (28%), hounds (35%), incidental (36%), or still (35%) hunting methods.

1999-2010 GOALS AND OBJECTIVES

Goal: To ensure the long-term viability of black bear populations in Idaho and to provide recreational opportunity for the hunting and non-hunting public.

Objectives:

1. To establish harvest objectives and management approaches for each DAU that reflects the unique characteristics of that area.
2. To distribute recreational opportunity throughout black bear habitat in a manner that is consistent with population objectives for each DAU.
3. To improve harvest information by improving compliance with the mandatory check and report program and by implementing a telephone or mail survey to generate information on hunter numbers, hunter success rates, hunter effort. Improving compliance level with the mandatory check program will provide insight into the non-reporting bias.
4. To use an adaptive management approach in developing harvest goals and objectives in select DAUs as a means to further evaluate management descriptors. In some DAUs, harvest objectives will be set to significantly increase harvest. In other DAUs, harvest pressure will be significantly reduced to serve as a comparison of the sensitivity of the harvest descriptors.
5. To monitor the response to changes in the black bear harvest using our biological criteria and take steps to increase or reduce harvest when data indicate the opportunity or need.
6. To manage black bears to reduce conflicts among competing user groups.
7. To consider initiating research to:
 - a. Develop a long-term population monitoring technique.
 - b. Establish the link between harvest criteria and the characteristics of the standing population by determining age- and sex-specific vulnerability to different harvest techniques.
 - c. Determine black bear mortality patterns and reproductive potential.
8. To work with the Outfitters and Guides Licensing Board to set outfitter quotas in DAUs where a harvest reduction is needed. This will include evaluating new license and renewal applications.

DECISION ELEMENTS

TELEPHONE SURVEY

Harvest data are the primary source of information used to make management decisions. Harvest trends derived from the mandatory check and report system are difficult to interpret without supporting data such as changes in hunter numbers or effort.

Therefore, the Department will develop an enhanced telephone survey that specifically targets black bear tag holders. Sampling effort will be focused on obtaining reliable harvest estimates at the DAU level, estimates of hunter numbers and effort expended by successful and non-successful hunters, and an estimate of compliance with the mandatory check and report requirement.

DAUs selected for intensive monitoring during this planning period will be sampled at a higher rate in an effort to evaluate the sensitivity of our harvest criteria.

MANDATORY CHECK AND REPORT

This program continues to provide most of the data that are collected on black bear in Idaho. Although compliance is unknown, we will continue to rely on this program to provide the data we need to evaluate harvest trends.

HARVEST CRITERIA

No economically feasible methods are available to monitor the abundance of black bears in Idaho. As a result, Department biologists have relied on a variety of indirect measures of harvest data to assess population trends. Management decisions are based upon harvest data collected through the mandatory check and report program. Although population trends are difficult to ascertain from harvest data, it is the only information available to biologists that can be collected in a systematic manner designed to minimize confounding variables such as hunter numbers, hunter effort, and season structure and length. When these variables are standardized or at least measured, harvest trends may have value in determining the effects of management actions.

During the last planning period (1992-2000), the Department used the percent females in the harvest, median age of harvested females and males, and, in limited areas, bait station survey results to monitor population trends. Specific criteria were established to indicate over-harvest and a desired level of harvest.

Further analysis of our harvest data suggest that median age is a useful tool to distinguish lightly hunted or unhunted populations from those that are hunted at moderate to heavy levels. However, median age does not appear to be very sensitive to population changes on a year-to-year basis. As a result, the Department is eliminating median age as a harvest criterion and will monitor the percent of males ≥ 5 years old in the harvest on a 3-year running average (Table 1).

This indicator appears to be a more sensitive measure of population harvest levels and is supported by data collected by the Department during 12 years of research on black bear ecology. The Department's bear team also recommended that the minimum threshold for adult males ≥ 5 years old in the harvest should not drop below 20% on a 3-year running average. However, the Department will try to evaluate the usefulness of this criterion in describing the status of a population, during this planning cycle, by attempting to push this threshold below 20% on an experimental basis in one or more DAUs. Harvest trends will be manipulated in other DAUs to further evaluate these population descriptors.

Table 1. Harvest statistics for black bears in Idaho, 1993-1997.

All DAUs	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	1,126	35	39	
1994	1,304	34	34	
1995	1,331	34	34	35%
1996	1,522	33	32	33%
1997	1,552	34	29	32%
Total	6,835	34	33	

The Department will implement a 3-tiered set of criteria to evaluate population trend in various DAUs (Table 2). The Department will continue to monitor trends in percent females in the harvest, calculated on a 3-year running average.

Table 2. Harvest descriptors for black bear in Idaho.

Criteria	Light Harvest	Moderate Harvest	Heavy Harvest
Percent Females	<30%	30-40%	>40%
Percent Males ≥ 5	>35%	25-35%	<25%
Bait Station Survey	Increasing	Stable	Decreasing

We also recognize that certain areas in Idaho provide extensive secure habitat (reservoirs) for black bears. Unroaded and/or wilderness areas are prime examples. Hunting pressure is light in these core areas, resulting in relatively high percent males ≥ 5 years old and low percent females in the harvest. Because population turnover is low, there is little vacant habitat and young black bears, especially males, are forced to disperse into surrounding less secure habitats where harvest rates are often high. These young dispersing males will dominate the harvest statistics in the surrounding areas. Age criteria for the DAU may be violated in these areas, even though the core or reservoir population is secure and will continue to supply a surplus of dispersing black bears. Current harvest criteria may not apply in these situations. The key is to ensure that the

harvest remains focused on the dispersing black bears and does not compromise the reservoir population. In such cases, management direction will be based on the Department's discretion and interpretation of a variety of factors including perceived black bear population status, social considerations, and other factors (i.e., weather patterns, changing road access, etc).

In some DAUs, black bear harvest is consistently low, resulting in small samples from which to monitor harvest parameters. This may lead to inaccurate conclusions. Hence, harvest criteria will be applied only to DAUs in which average annual harvest is at least 30 black bears. When harvest is <30 black bears, the criteria do not apply, and management decisions will be based on professional judgment.

SEASON FRAMEWORK

A variety of factors may influence black bear seasons locally. Increasing urbanization in black bear habitat, habitat characteristics, predation on deer and/or elk, and road densities are factors that will be considered on a local basis in the season setting process.

Black bear seasons will be structured to meet the management goals and objectives for each specific DAU. The Department recognizes that too much variation among DAUs in season length and timing, or in allowable methods of take, can create confusing, complex rules. It is the intent of the Department to minimize this complexity by standardizing seasons statewide in a manner consistent with the goals and objectives of the various DAUs.

BLACK BEAR - HUMAN CONFLICTS

The Department recognizes that black bears will occasionally damage private property, prey on domestic livestock, and jeopardize public safety. The improper storage of human foods and garbage is often the primary factor leading to bear-human conflicts. Other factors include inadequate supplies of natural foods, injuries, and, in the case of sub-adult bears, inexperience in locating natural foods. Human encroachment into black bear habitat is a major cause of many depredation problems. The Department has the responsibility for controlling black bears in nuisance and human safety situations. The U.S. Department of Agriculture's Wildlife Services program (Wildlife Services) may handle these complaints at the request of the Department, if mutually agreed upon by both parties. Wildlife Services has the responsibility for handling black bears involved in livestock depredation problems, including apiaries. The Department may handle these complaints at the request of Wildlife Services, if mutually agreed upon by both parties. Guidelines for handling bear-human conflicts can be found in Appendix I.

BLACK BEAR - DEER\ELK RELATIONSHIPS

Extensive studies of black bear food habits throughout their range clearly show that vertebrates (primarily deer and elk) make up a very small part of the bear's yearly diet (<2%). Black bears rarely prey on adult deer or elk. However, black bears do prey on deer and elk neonates (fawns and calves) in some localities where favorable conditions exist for taking these animals.

The *fact* of predation (black bears do kill and consume deer fawns and elk calves) has never been disputed in discussions about black bear predation on other big game species. The major area of debate has involved the *effect* of that predation on populations of deer and elk.

Predator-prey interactions are extremely complex and involve many factors such as weather conditions, status of the prey population, availability of alternate prey, presence and density of other predators, and habitat conditions. As a result, it is difficult to determine what the effect of predation may be in any specific situation. In situations where the prey population is at or near the carrying capacity of its habitat, predation on deer or elk neonates probably has very little effect on prey population size or growth rate, and efforts to regulate predator numbers will not result in a larger prey base. However, when adverse weather or habitat deterioration results in a prey population decline, predation may increase the rate of decline and even result in a lower population level than would occur in the absence of predation. If issues of scale, logistics, and economics allow, reducing predator numbers in this situation may decrease the rate of decline and provide some benefit to the prey population.

The Wildlife Manager must evaluate all of these factors and the prevailing social environment before determining a course of action that serves the best interests of both the predator and its prey.

CONFLICTS WITH GRIZZLY BEARS

The U.S. Fish and Wildlife Service classified the grizzly bear as a “threatened” species in 1975. The Department currently restricts use of dogs and bait to hunt black bears in grizzly bear recovery areas (Units 1, 62, 62A, and part of 61). This approach, in conjunction with intensive public relations work and selected road closures, seems to be effectively reducing grizzly bear mortality. This strategy will be continued and its effectiveness monitored. Additional steps that could be taken if deemed necessary include:

1. Separating black bear season from general big game seasons in grizzly bear recovery areas.
2. Require hunters hunting in grizzly bear recovery areas to view a bear identification video.
3. Implementing controlled black bear hunts in grizzly bear recovery areas to limit the number of black bear hunters.
4. Changing or eliminating black bear seasons to reduce grizzly bear mortalities in grizzly bear recovery areas.

At this point in time, we do not recommend incorporating these steps in our black bear management program because the current approach seems to be effective. If the current program proves inadequate, we will consider the actions listed above. Additionally, controlled hunts similar to the one implemented in DAU 1A will be considered in seasonally unoccupied areas currently designated as grizzly bear recovery areas.

HOUND HUNTING

Approximately 1,100 hunters in Idaho practice hound hunting and they harvested about 16% of the bears taken during 1993-1997.

Hound hunting permits will be required for every member of a hound hunting party during take seasons. This permit requirement applies to residents and non-residents, but does not apply to the clients of licensed outfitters or up to 4 immediate family members of a permit holder. Immediate family is defined exclusively as the parents, spouse, children, and grandchildren of the hound hunting permit holder.

A quota on non-resident hound hunters will be maintained during this planning period for the black bear take season. In those areas where the Department's management objective is to increase the harvest, the Department may consider liberalizing or removing the quota. The Department will also consider removing the quota during the dog-training season. The Department will continue to prohibit hound hunting in designated grizzly bear recovery areas.

HABITAT MANAGEMENT

Because black bears are an important wildlife resource, the Department desires to elevate their profile among wildlife biologists, land managers, and the public. Bears and their habitat will play a more significant role in land management decisions, and good black bear habitats will be managed as such. Biologists will use specific knowledge of black bear habitats to develop interim guidelines and will provide technical support to public land management agencies and private corporations to identify and manage important black bear habitats.

The Department recognizes that valuable black bear habitat has been inundated, and associated wildlife populations have been lost, because of hydroelectric projects in Idaho. The Department will seek funding for full compensation for the loss of this habitat and associated wildlife from the Bonneville Power Administration under the Columbia Basin Fish and Wildlife Program, and from Idaho Power Company and other hydropower developers and responsible project operators under other programs.

PUBLIC OPINION SURVEYS

Current information on the public's perception of our black bear management program can be obtained from periodic surveys of public attitudes. The Department will sponsor or conduct surveys, designed by professional social scientists, to gather pertinent information that will enhance the Department's ability to manage black bears.

LAW ENFORCEMENT

During the public review process, the Department documented a strong desire by the public for the aggressive prosecution of all fish and game violators and for stiffer penalties. The Department will continue to encourage the public to use the Citizens Against Poaching (CAP)

program to report violations. We will continue to work with legislators, prosecutors, and judges to achieve significant penalties for those individuals convicted in the courts. The Department will also use undercover (covert) operations to address this problem.

PUBLIC EDUCATION

It is apparent that the public was eager to have more information about black bear biology and wildlife management principles in general. The Department will continue to provide information on the consumptive and non-consumptive values of black bears to the public. In 1994, the Department published a book based on Department-sponsored research on black bear ecology. That book, titled "A Shadow in the Forest - Idaho's Black Bear," is available at local bookstores. The Department also published a teacher's guide in 1995 that provides information on the biology of black bears and activities to help students learn important concepts about ecological factors affecting Idaho black bear populations.

WATCHABLE WILDLIFE

There is some public demand to view black bears in their natural environment. Therefore, the Department will provide opportunity in portions of some Units for viewing black bears. The Department may select areas for non-consumptive use where: 1) area closures on black bear hunting currently exist to protect threatened grizzly bear populations or to accommodate research; 2) road access exists into relatively open habitats where black bears can easily be seen; and, 3) where conflicts with other resource users in the area are minimal.

BAITING

About 1,250 hunters in Idaho used baiting as a method of take, and they were responsible for approximately 18% of the bears harvested during 1993-1997. Over 90% of the harvest by hunters using bait occurred during the spring season.

The Department will continue to allow hunters to use bait in those DAUs where the practice is consistent with the management objectives for that area. However, the Department will continue to prohibit baiting in designated grizzly bear recovery areas. The Department will also consider changes in the baiting rules that will reduce or alleviate conflicts between hunters using baits and campers and hikers, and in areas with nearby summer home developments. IDFG-recommended standards for baiting can be found in Appendix II.

STATEWIDE MANAGEMENT PROGRAM

Idaho is divided into 5 areas for purposes of managing black bear populations (Figure 8). Area 1 includes habitats that vary from dense, semi-coastal forests to patchy forest habitats along dry river breaks. Abundant road access and proximity to human population centers characterize Area 1 GMUs. Area 2 includes habitats similar to Area 1, but not as accessible by road and not as close to major population centers. Area 3 has limited access and much of it is officially designated as Wilderness. Area 4 includes a variety of habitats that are generally dry shrub and grass types with few berry-producing plants. The livestock industry is a major resource user of public lands in Area 4. Area 5 includes most of the irrigated lands in southern Idaho and the drier, desert portions of the state. Habitat quality in Area 5 is marginal for black bear and few black bears occur there. Based on similarities in habitat, road access, and proximity to urban population centers, 3 of the 5 black bear management areas (Area 1, 2, and 4) are divided into smaller groups, DAUs, to facilitate analysis of harvest information (Figure 1). The DAU concept was developed in 1985 to enhance the Department's ability to interpret harvest data and to simplify the rules regulating black bear harvest.

MANAGEMENT ACTIONS

The Department has two basic options available to influence harvest rates: adjusting 1) hunting opportunity (season length and timing), and 2) methods of take. Each approach has advantages and disadvantages and the preferred choice should be dictated by current conditions in the DAU and management objectives. First and foremost, management objectives must address the biological requirements of black bears. Once those are satisfied, harvest regulations are developed that reflects differences in vulnerability, hunting pressure, and road access among areas.

Season length and timing are ineffective approaches for regulating the total harvest of black bears. However, adjusting season length and timing can be an effective means of regulating harvest sex-ratios and in some cases, age structure. The vulnerability of black bears to hunting is influenced by extrinsic (weather, etc.) and intrinsic (seasonal behavior) factors. Adult males are the first bears to leave their winter dens, followed by sub-adult males and single females. Closing spring hunting seasons in early to mid-May focuses most hunting pressure on males and females unaccompanied by cubs or yearlings. It also provides additional protection for female bears accompanied by cubs-of-the-year because they are often the last bears to leave their winter dens. Adult males are the last bears to enter dens in the fall; females generally enter their dens in early to mid-October. As a result, late fall hunting seasons also focus hunting pressure on male black bears.

Regulating the methods of take that are used by hunters can be effective in adjusting total harvest, and potentially the sex and age composition of the harvest. Options available to the manager using this approach include: 1) unrestricted opportunity; 2) taking actions to reduce the efficiency of hunters using bait, hounds, or still hunting methods; and, 3) eliminating the activity as a legal method of take.

The Department will use one or more of the following management options as needed for regulating black bear harvest.

To increase harvest in a DAU:

- Maximize hunting opportunity.
- Increase bag limit to two black bears per year.
- Increase bag limit to one black bear in spring season and one black bear in fall season.
- Increase/eliminate non-resident hound quota.
- Increase spring season length - maximum allowed 4/1 - 6/30.
- Increase fall season length - maximum allowed 9/1 - 11/15.
- Reduce tag cost.
- Contract with the U.S. Department of Agriculture, Wildlife Services Division to kill black bears in areas where sport hunting is not effective in reaching management goals.

To reduce harvest in a DAU:

- Eliminate baiting as a legal method of take.
- Eliminate hound hunting as a legal method of take.
- Eliminate black bear hunting during D/E seasons.
- Eliminate spring season.
- Eliminate fall season.
- Allow baiting in fall only.
- Allow hound hunting 4/1 - 5/15 and 9/1 - 9/30.
- Close spring season on 5/15.
- Implement controlled hunts.

Harvest management objectives for each of the 21 DAUs is summarized in Table 3.

Table 3. Harvest characteristics and management objectives for 21 DAUs in Idaho based on the percent males ≥ 5 years old in the harvest.

DAU	CURRENT STATUS	MANAGEMENT OBJECTIVE
1A	Light	Light
1B	Moderate	Heavy
1C	Heavy	Heavy
1D	Heavy	Heavy
1E	Heavy	Heavy
1F	Heavy	Heavy
1G	Light	Moderate
1H	Moderate	Light
1I	Light	Heavy
1J	Light	Moderate
1K	Moderate	Moderate
1L	Moderate	Light
2A	Light	Heavy
2B	Light	Moderate
3A	Light	Moderate
3B	Moderate	Moderate
4A	Heavy	Moderate
4B	Light	Moderate
4C	Light	Moderate
4D	Moderate	Moderate
4E	Light	Moderate

Black Bear Hunters

Bear Tag Sales

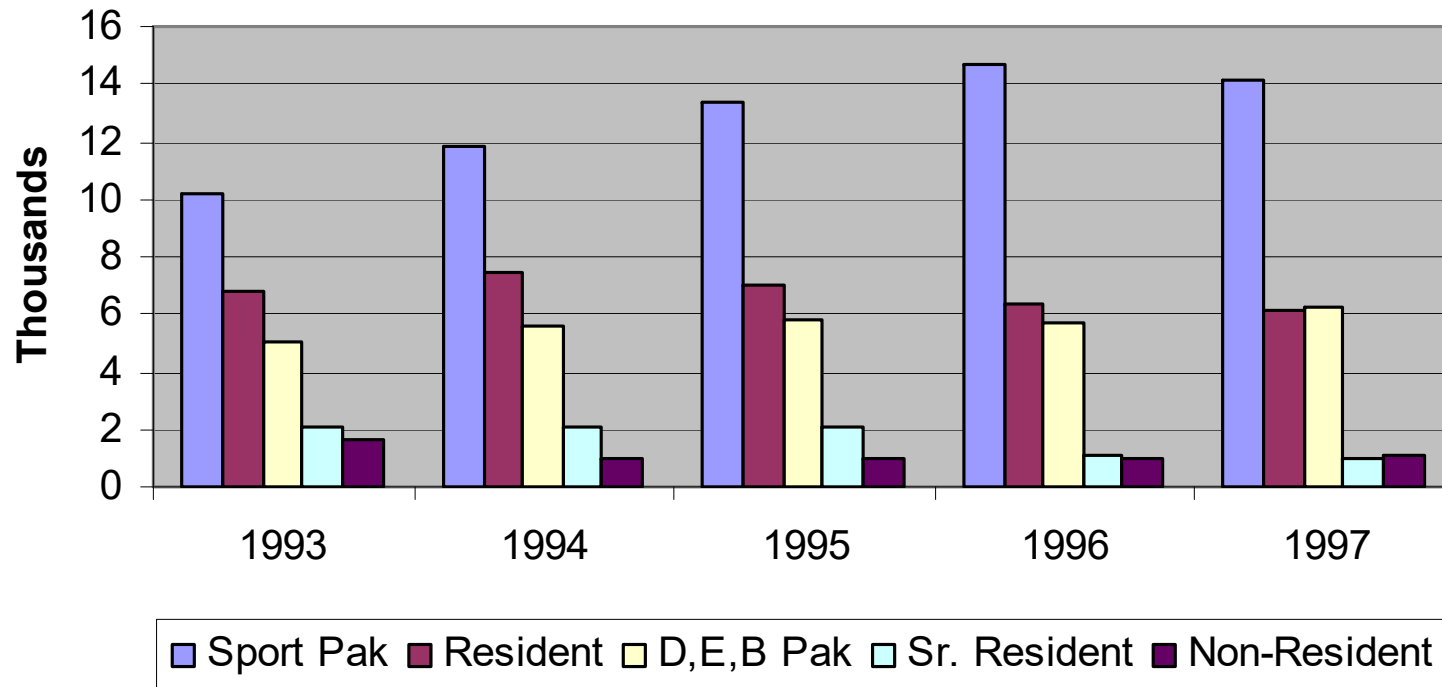


Figure 1. Black bear tag sales in Idaho, 1993-1997.

Black Bear Hunters Hound and Baiting Permits

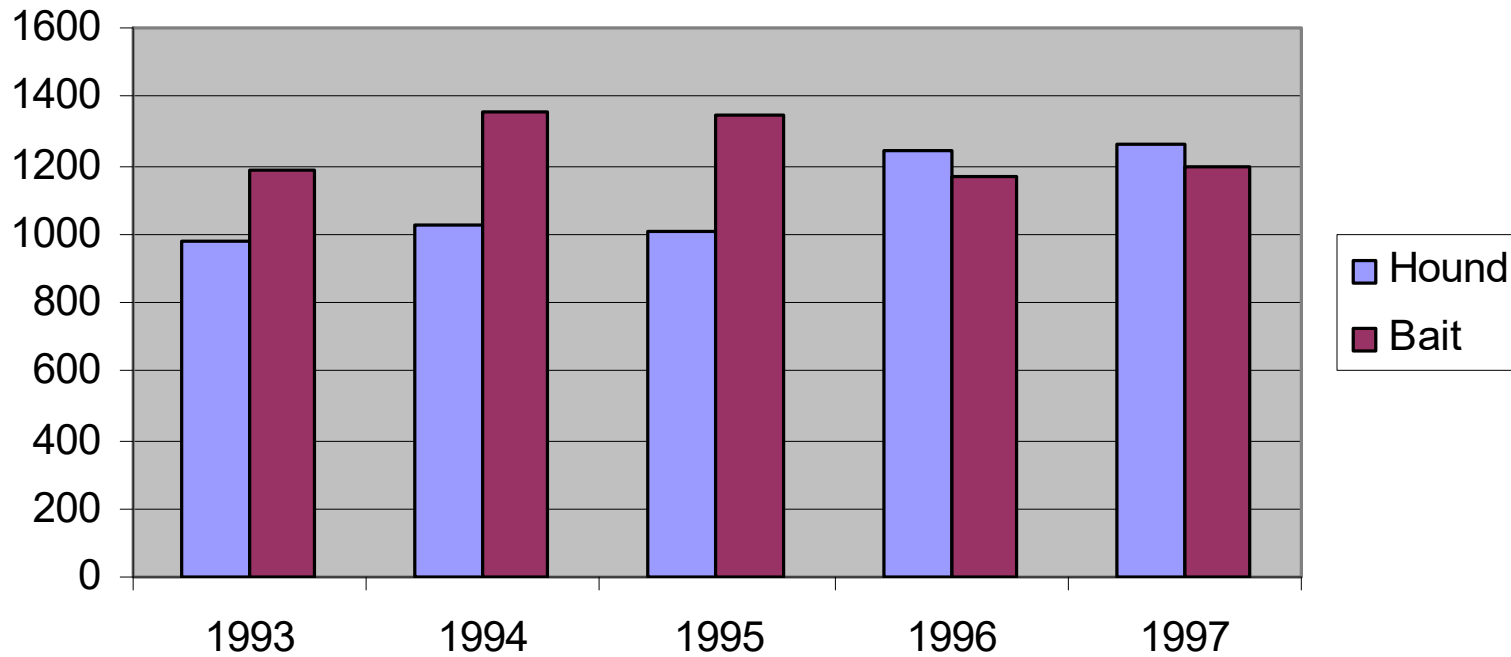


Figure 2. Hound hunter and baiting permits issued in Idaho, 1993-1997.

Total Black Bear Harvest Mandatory Check

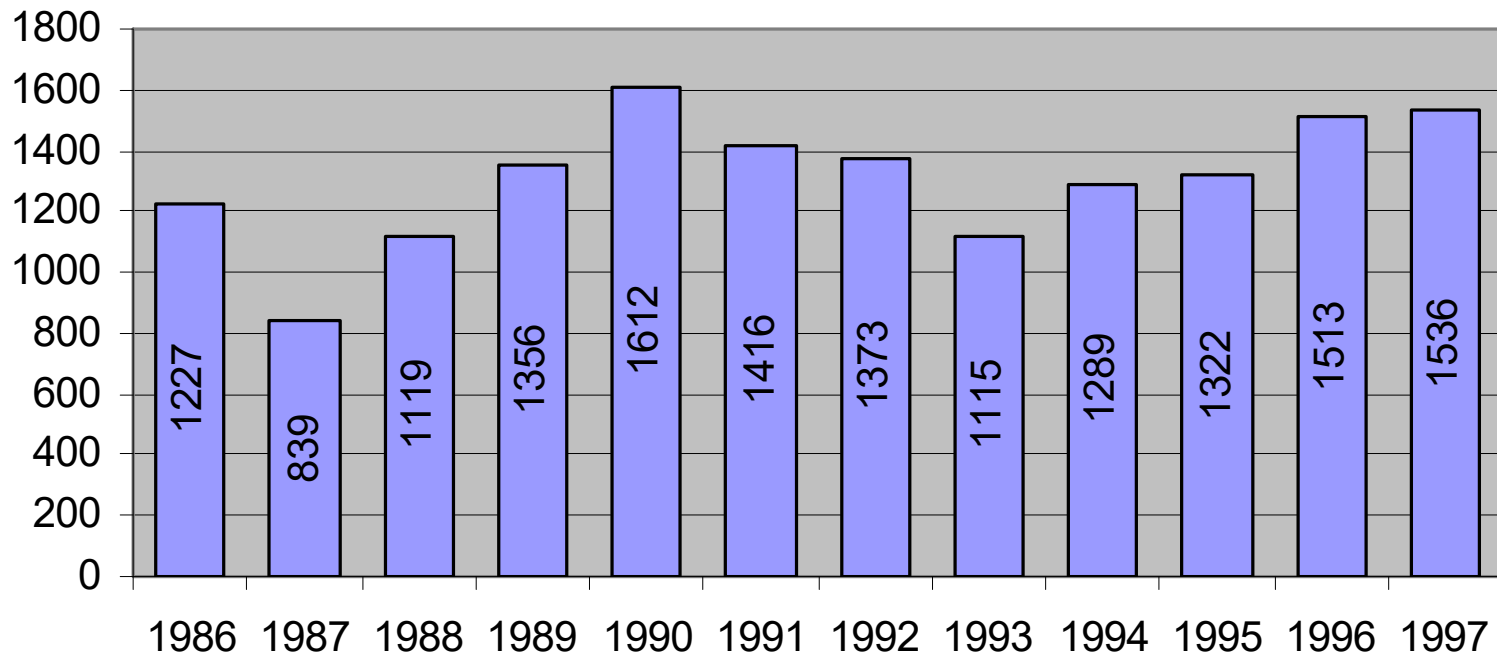


Figure 3. Number of black bears checked by hunters, 1986-1997.

Total Black Bear Harvest Mandatory Check

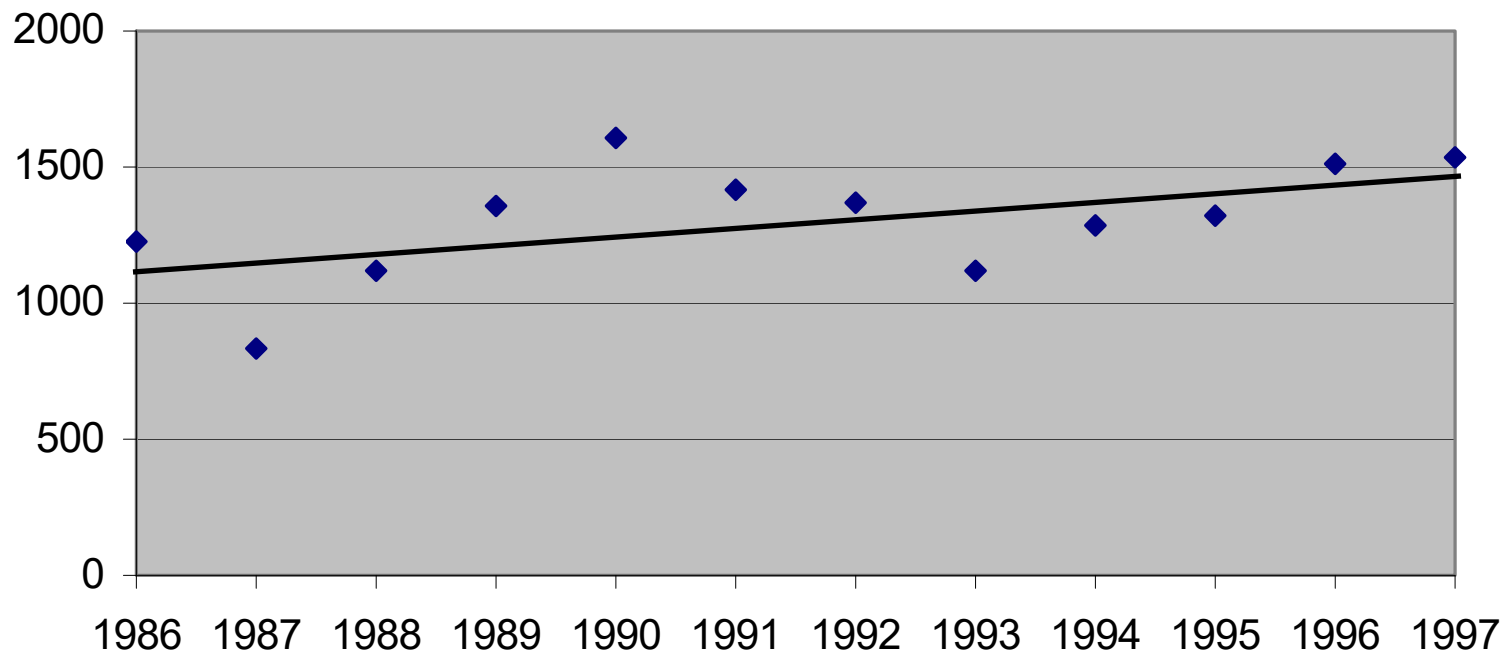


Figure 4. Trend in number of black bears checked by hunters, 1986-1997.

Black Bear Harvest Season

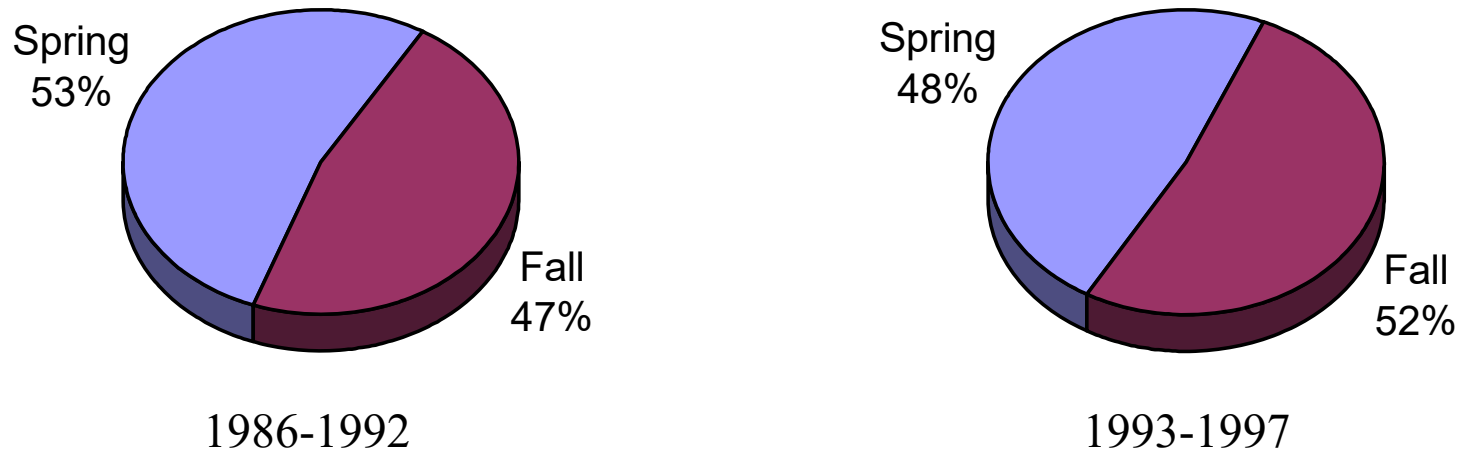


Figure 5. Comparison of black bear harvest, by season, between the 1986-1992 and 1993-1997 planning periods.

Black Bear Harvest

Sex

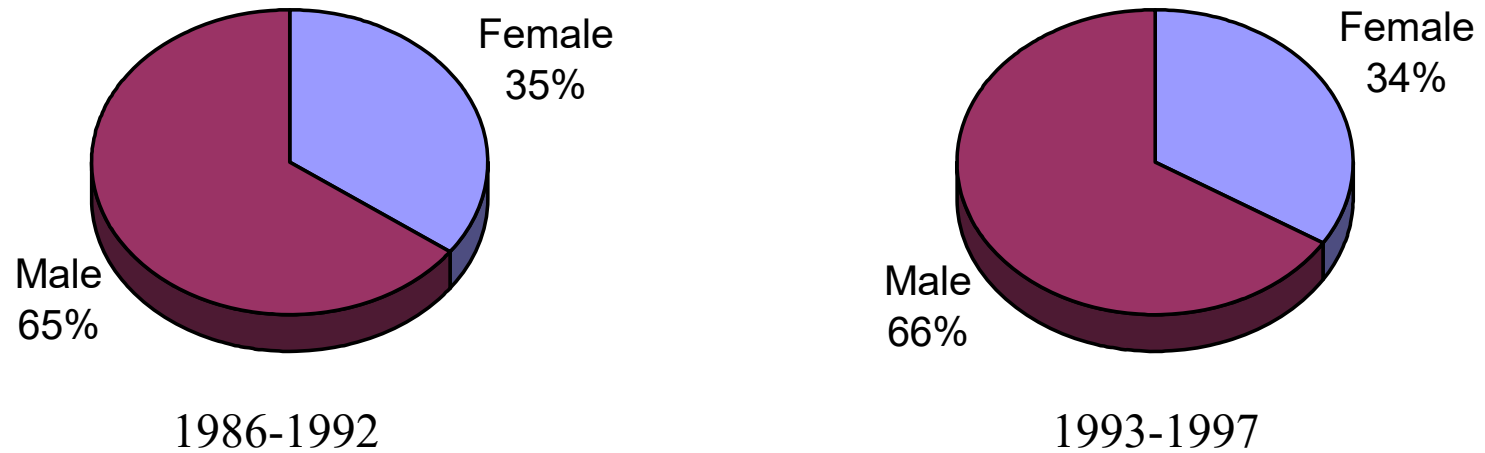


Figure 6. Comparison of black bear harvest, by sex, between the 1986-1992 and 1993-1997 planning periods.

Black Bear Harvest Method

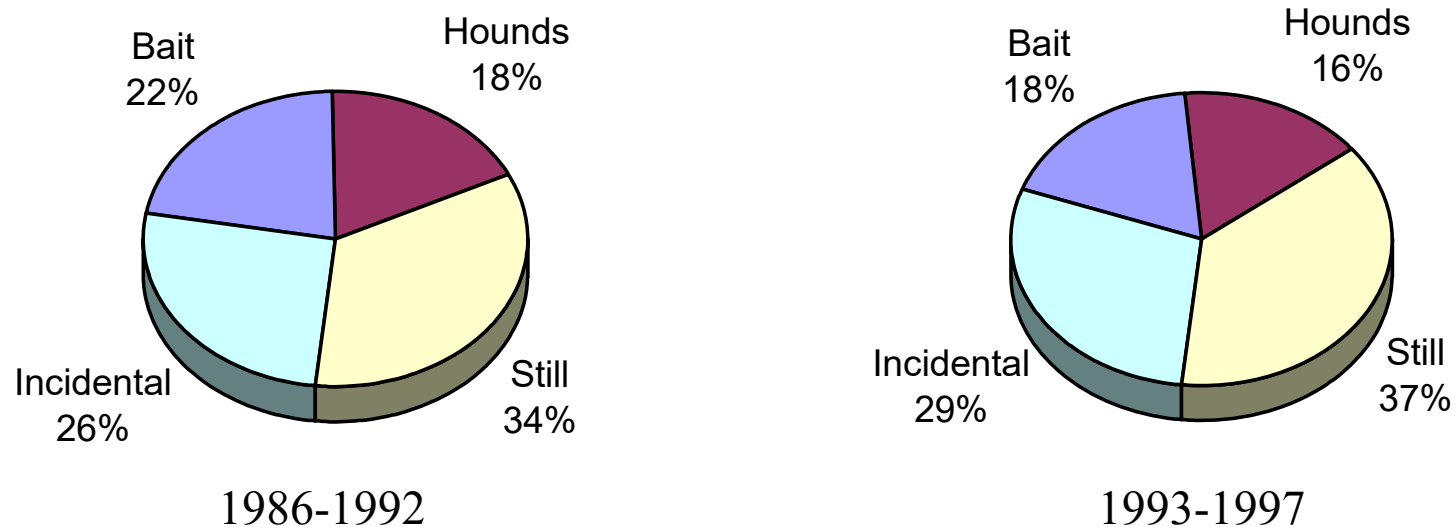


Figure 7. Comparison of black bear harvest, by method of take, between the 1986-1992 and 1993-1997 planning periods.

DATA ANALYSIS UNITS

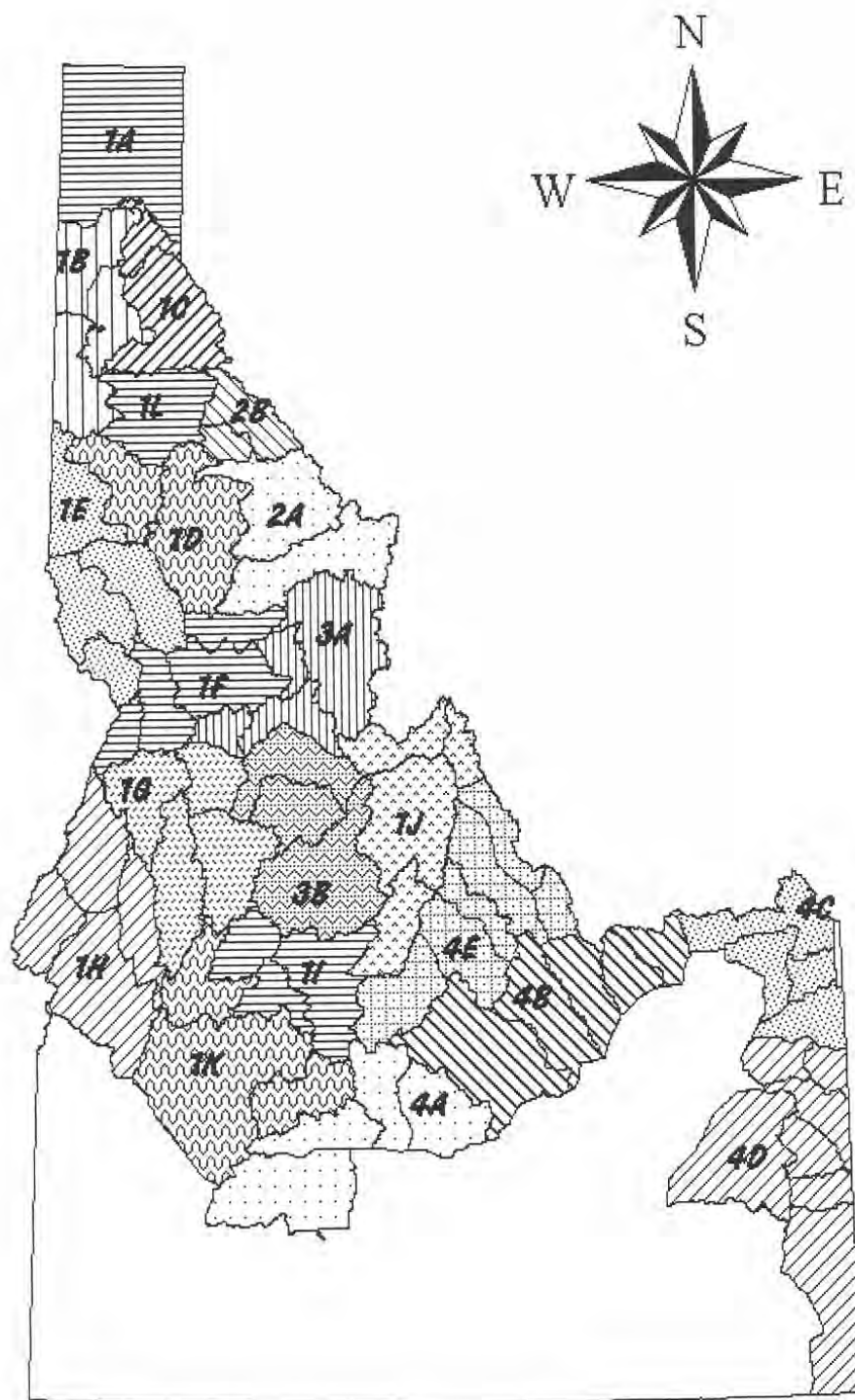


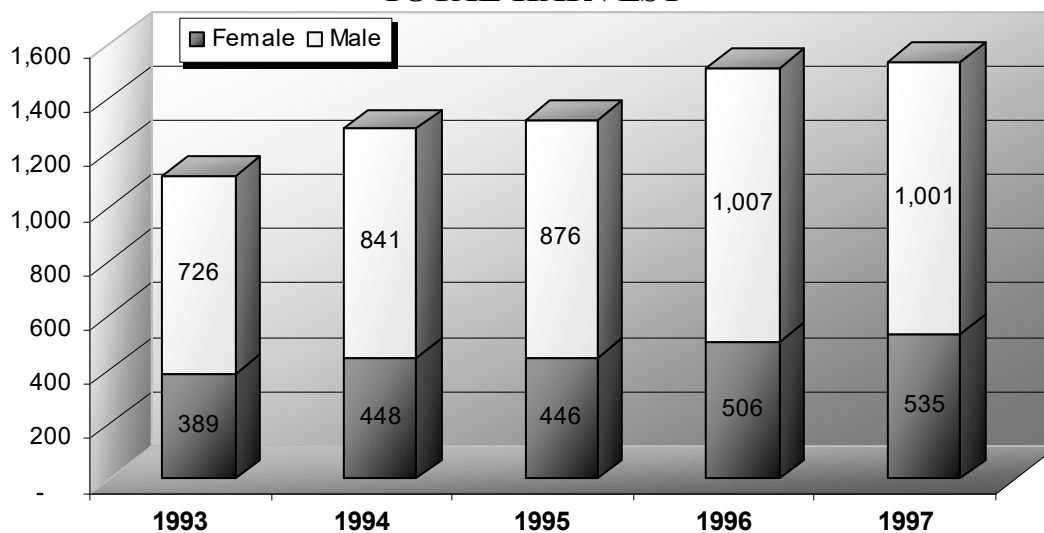
Figure 8. Twenty-one (21) data analysis units (DAUs) for black bear management in Idaho.

ALL DAUs

Harvest Statistics

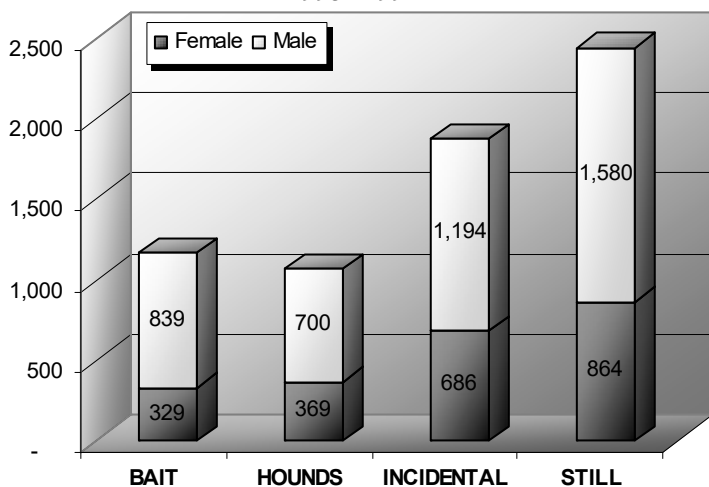
All DAUs	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	1,126	35	39	
1994	1,304	34	34	
1995	1,331	34	34	35%
1996	1,522	33	32	33%
1997	1,552	34	29	32%
Total	6,835	34	33	

TOTAL HARVEST



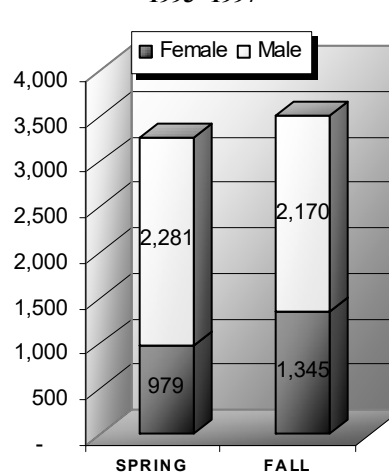
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 1A

Game Management Unit 1

DESCRIPTION

Black bear management is heavily influenced by grizzly bear management needs in this DAU as it includes parts of the Selkirk and Cabinet-Yaak Grizzly Bear Recovery areas. Consequently, this DAU has been closed to use of bait since 1984 and to the use of hounds since 1988. Since 1991, a small controlled hunt allowing use of hounds has been allowed in a portion of DAU 1A outside of these recovery areas. During 1993 the season was shortened from 108 to 80 days and has since been increased to the current 96 days.

In general, this DAU is characterized by dense conifer habitat types. Portions of the Selkirk, Cabinet, and Purcell mountain ranges are included in this DAU, with the broad Kootenai River Valley providing the only substantial agriculture area. Overall, DAU 1A contains some of the highest quality black bear habitat in Idaho.

Total harvest in DAU 1A has averaged 173 bears from 1993 to 1997. Mature males (≥ 5 years old) make up over 35% of the harvest. Harvest has increased significantly in the past 2 years. However, the percent of mature males and percent of females in the harvest has not changed and indicate a moderately harvested population.

MANAGEMENT OBJECTIVES

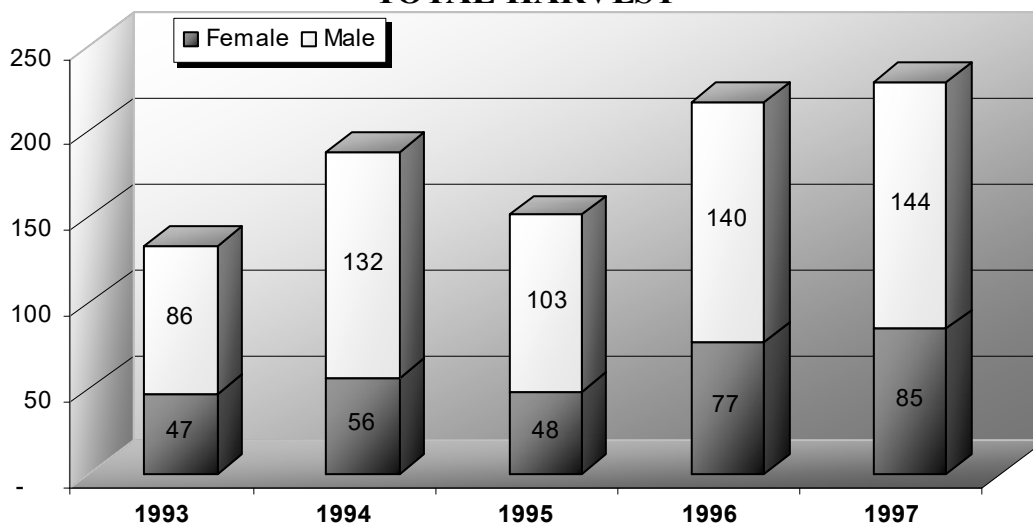
DAU 1A will be managed to maintain the light harvest targets of $>35\%$ age 5+ bears in the male harvest and $<30\%$ females in the total harvest.

DAU 1A

Harvest Statistics

DAU 1A	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	134	35	46	
1994	190	29	29	
1995	151	32	41	37%
1996	220	35	39	36%
1997	229	37	37	39%
Total	924	34	38	

TOTAL HARVEST



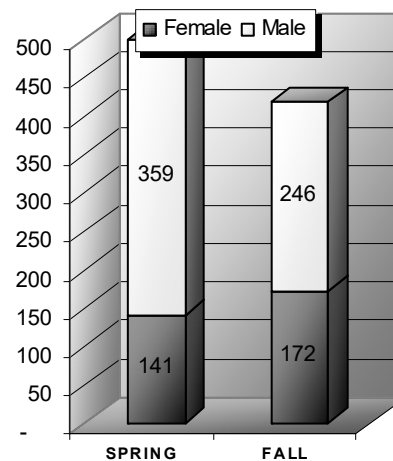
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 1B

Game Management Units 2, 3, and 5

DESCRIPTION

DAU 1B consists largely of developed and highly accessible areas. Mountains in this DAU are not particularly high or rugged. Depredations have been a substantial problem in this DAU, particularly in Unit 2, which consists largely of second-growth coniferous forest under private ownership. Unit 3 is typified by publicly owned coniferous forest with high road densities in close proximity to Coeur d'Alene. Unit 5 is similar to Unit 2 in the northern third, but the remainder consists largely of open agricultural land with stringers of coniferous forest. Much of Unit 5 is within the boundaries of the Coeur d'Alene Indian Reservation.

Use of baiting and hounds is substantial in DAU 1B. Thirty-five percent of the black bears harvested in this DAU are taken with one of these aids. Still hunting and incidental harvest accounted for 32% and 29% of the harvest, respectively.

Harvest in DAU 1B has averaged 83 bears from 1993 to 1997. The lower harvest associated with new season restrictions that began in 1993 has since returned to previous highs. Harvest increased significantly in 1996 and 1997, but the percent of mature males and mature females in the harvest has remained constant. Harvest statistics indicate a moderate to highly harvested population.

MANAGEMENT OBJECTIVES

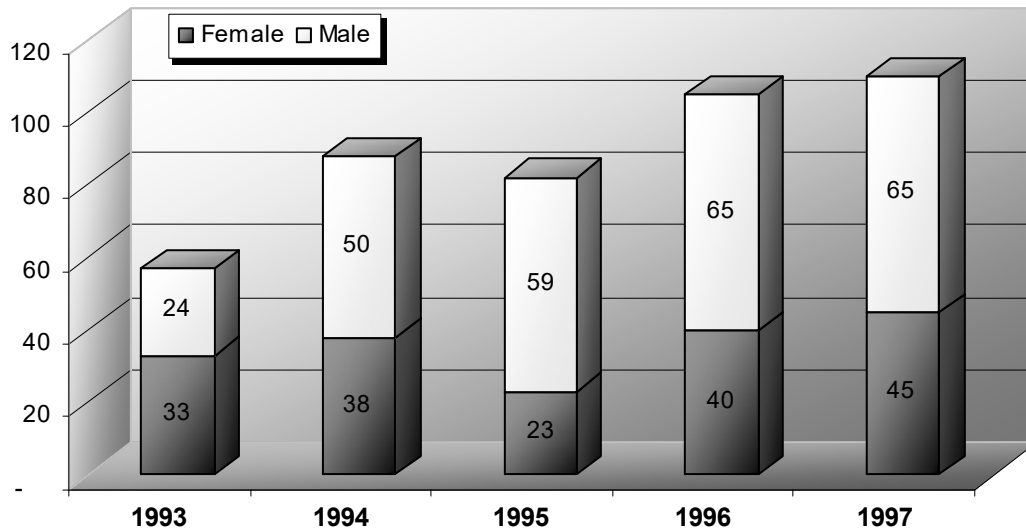
To address depredation concerns, DAU 1B will be managed to maintain the heavy harvest targets of <25% age 5+ bears in the male harvest and >40% females in the total harvest.

DAU 1B

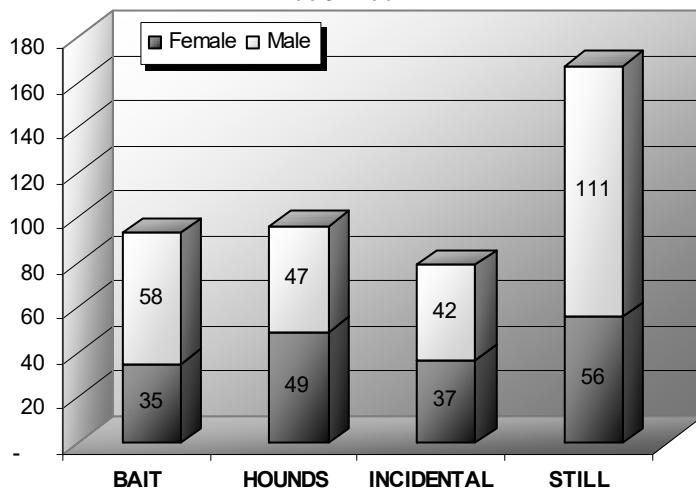
Harvest Statistics

DAU 1B	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	57	58	25	
1994	88	43	29	
1995	85	27	25	27%
1996	107	37	25	26%
1997	112	40	24	25%
Total	449	40	26	

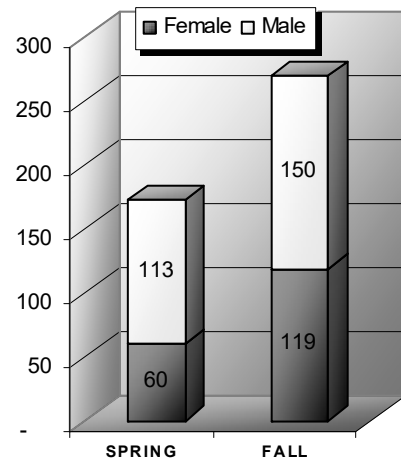
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1C

Game Management Units 4 and 4A

DESCRIPTION

DAU 1C consists mainly of US Forest Service property and a belt of private property in Silver Valley. Much of this DAU has been burned by wildfires since the early 1900s. It is a popular hunting area for Coeur d'Alene and Silver Valley big game hunters. Road densities are moderate to very high.

This DAU has traditionally supported a substantial harvest for hunters using hounds. This type of use declined abruptly during 1992, concurrent with an increase in other categories. Only 11% of the black bears harvested in this DAU are now taken with the aid of hounds and/or bait. Still hunting and incidental kills made up 54% and 42% of the 1997 harvest, respectively.

Total harvest in DAU 1C has averaged 75 bears from 1993 to 1997. Mature males (≥ 5 years old) have shown a decline over the past 5 years and in 1997 the 3-year average was 20%. Mature females also have shown declines. Harvest has increased moderately in the past two years. Harvest statistics indicate a moderate to heavily hunted population.

MANAGEMENT OBJECTIVES

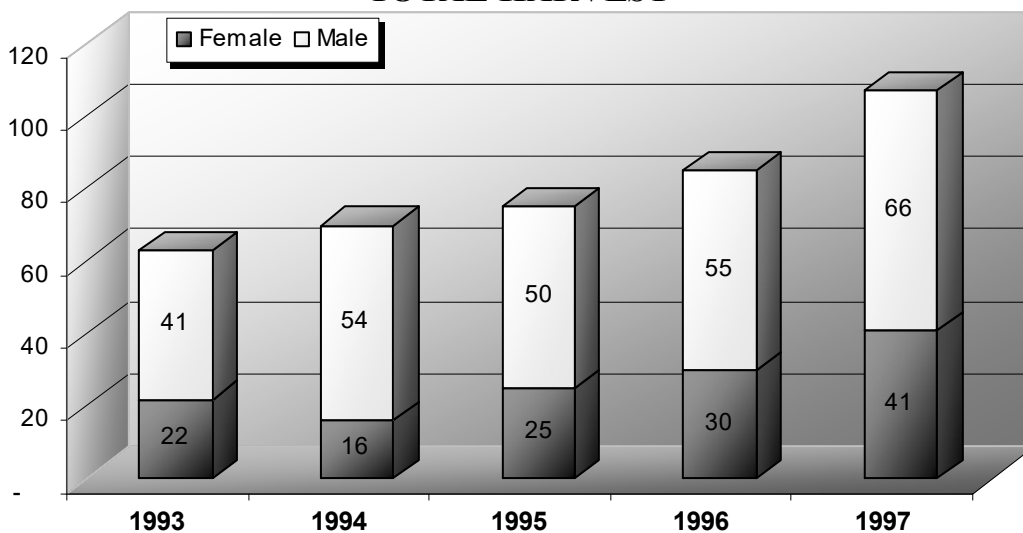
To test the validity of the bear harvest indicators, DAU 1C will be managed to maintain the heavy harvest targets of $<25\%$ age 5+ bears in the male harvest and $>40\%$ females in the total harvest.

DAU 1C

Harvest Statistics

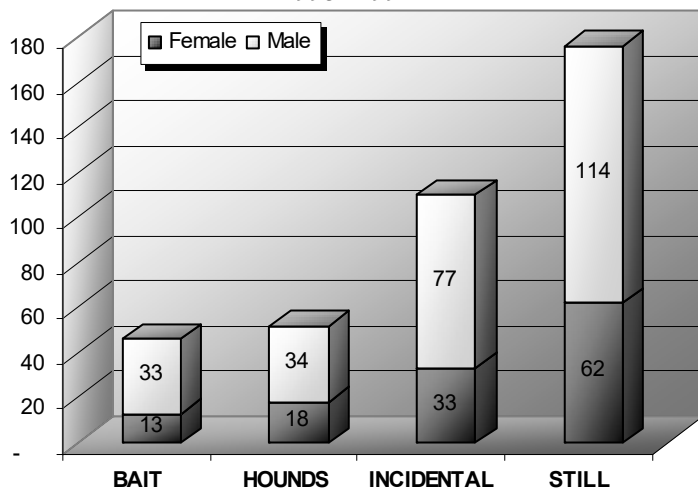
DAU 1C	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	63	35	42	
1994	70	23	35	
1995	75	33	33	36%
1996	86	35	11	26%
1997	108	38	16	20%
Total	402	33	26	

TOTAL HARVEST



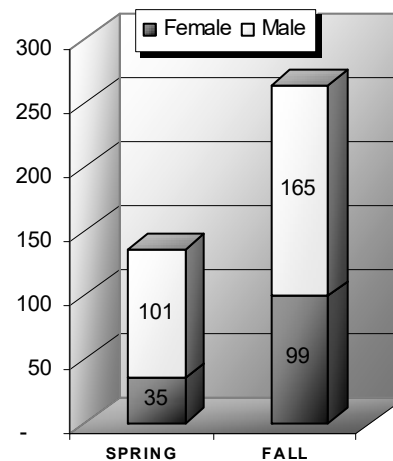
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 1D

Game Management Units 8A and 10A

DESCRIPTION

The first wave of timber harvest in this DAU occurred during the early 1900s and consisted mostly of removing the most commercially valuable timber species and largest trees. During the 1970s, timber harvest increased fairly dramatically, and new roads provided access to previously inaccessible areas. In 1971, Dworshak Reservoir flooded approximately 45 miles of North Fork Clearwater River corridor with slack water, permanently removing thousands of acres of prime low elevation winter range for big game and spring range for bears.

DAU 1D is three-quarters timberland and one-fourth open or agricultural lands and is bisected by canyons leading to the Clearwater River. The timberland is owned predominantly by Potlatch Corporation, IDL, and the USFS. Access is very good throughout the DAU and timber harvest occurs on most available timber ground. High open and closed road densities contribute to high vulnerability for big game species. During the 1980s and 1990s, timber harvest occurred on almost all available state and private land as demand and management of these lands intensified. Despite the reservoir, extensive logging along the river corridor improved winter range in this unit. South aspect forests were cleared to provide timber products and inadvertently provided quality berry brush fields and spring range for bears. The warm and moist maritime climate contributes to rapid plant growth and decay, providing optimal habitat conditions for bears.

Bears occasionally cause damage to fruit trees and apiaries throughout the agricultural lands of this DAU.

MANAGEMENT OBJECTIVES

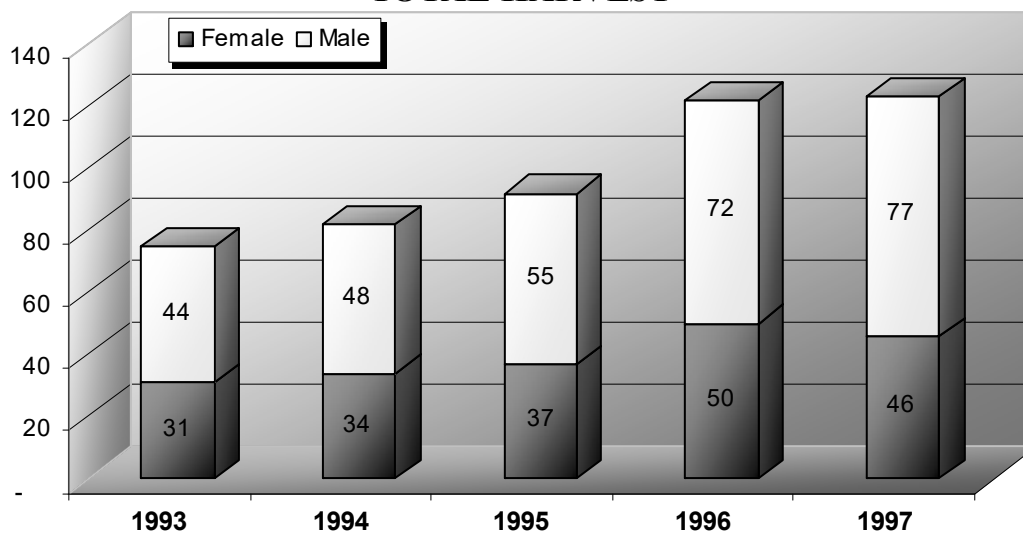
DAU 1D will be managed to maintain the heavy harvest targets of <25% age 5+ bears in the male harvest and >40% females in the total harvest.

DAU 1D

Harvest Statistics

DAU 1D	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	77	40	22	
1994	82	41	21	
1995	92	40	24	22%
1996	122	41	24	23%
1997	124	37	15	20%
Total	497	40	21	

TOTAL HARVEST



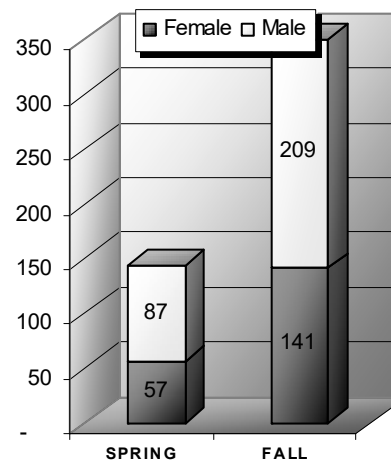
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 1E

Game Management Units 8, 11, 11A, and 13

DESCRIPTION

This DAU contains portions of the highly productive Palouse and Camas prairies, as well as the canyon lands along the Snake and Salmon rivers. Currently, virtually all non-forested land in Units 8 and 11A is either tilled or grazed, and only small, isolated patches of perennial vegetation remain. Cattle grazing occurs on almost all of the available timber ground.

This DAU contains mostly private and some publicly owned land. Unit 11 is mostly private land except for the Craig Mountain Wildlife Management Area (CMWMA) along the Snake and Salmon rivers. Unit 13 has been mostly under private ownership since settlement, and is managed mostly for agriculture and livestock.

Habitat productivity varies widely throughout the DAU with steep, dry, river canyon grasslands having low annual precipitation, to higher elevation forests having good habitat productivity and greater precipitation. Late successional forest cover types have become fragmented within the DAU. Various berry species occur in canyon draws and hillsides providing a diversity of fall foods for bears. Road density is moderate, and access is restricted in many areas.

Bears occasionally cause damage to fruit trees and apiaries located near canyon draws and forest stringers.

MANAGEMENT OBJECTIVES

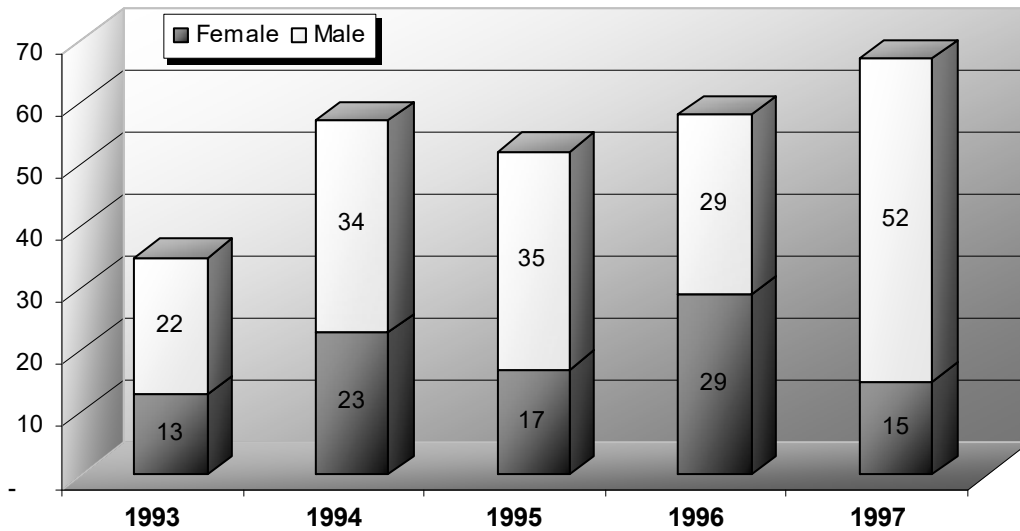
DAU 1E will be managed to maintain the heavy harvest targets of <25% age 5+ bears in the male harvest and >40% females in the total harvest.

DAU 1E

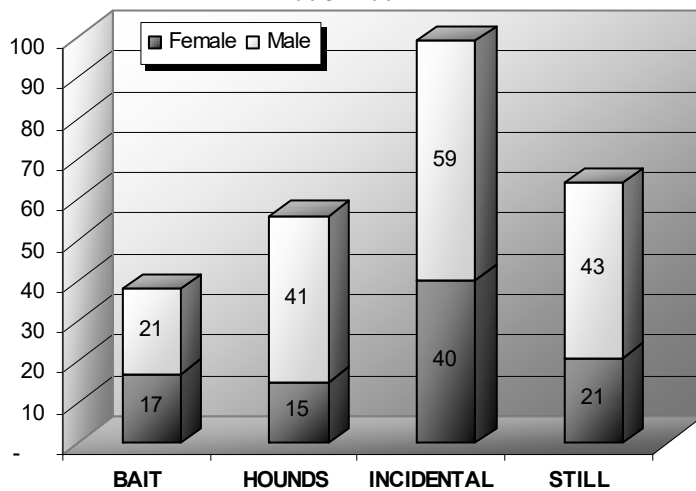
Harvest Statistics

DAU 1E	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	36	36	26	
1994	59	39	24	
1995	52	33	27	26%
1996	59	49	17	23%
1997	68	22	20	21%
Total	274	35	22	

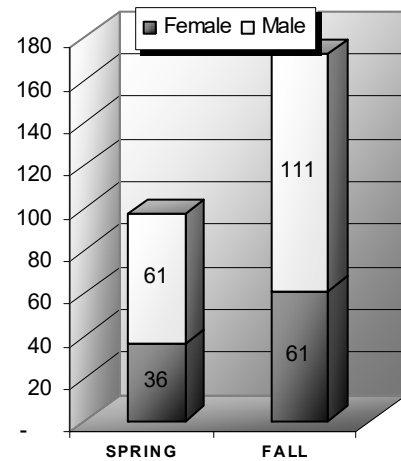
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1F

Game Management Units 14, 15, 16 and 18

DESCRIPTION

The prairie regions of this DAW were converted to agriculture & ranching by early settlers. In 1862, gold was discovered near the current location of Elk City in Unit 15. After the readily available gold was depleted, miners turned to dredging activities where rivers ran through meadows. Crooked, American, and Red rivers were channelized and rerouted several times during the extraction processes, which continued commercially until the 1950s. Logging began with mining activities to supply wood for the mines, but in the 1940s, logging activities became commercial and resulted in an extensive network of roads throughout a large portion of this DAW. In 1964, with the passage of the Wilderness Act, a small portion of Unit 16 was designated as a part of the Selway-Bitterroot Wilderness. In 1978, portions of Units 14 and 15 were included in the Gospel Hump Wilderness. Unit 18 is two-thirds public land with the remaining private land located at lower elevations along the Salmon River. The majority of the Hells Canyon Recreation Area and Wilderness, which was designated in 1975, is in Unit 18.

Land ownership in this DAW is approximately 80% publicly owned with the remaining 20% private. The privately owned portions are at lower elevations along the Clearwater and Salmon rivers. Approximately 10% of this DAW is Wilderness. Habitat productivity for bears is moderate in comparison to most other Clearwater Region big game units. The majority of this DAW is characterized by productive conifer forests with intermixed grasslands. Many forested areas have become overgrown with lodgepole pine and fir due to fire suppression during the past 40 years. Both open and closed road density is high within the DAW contributing to significant big game vulnerability during hunting season.

MANAGEMENT OBJECTIVES

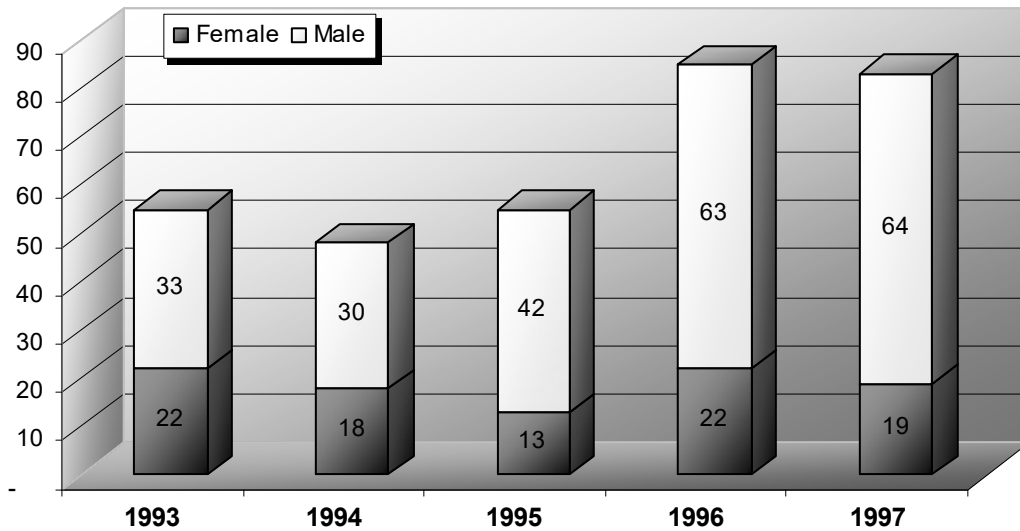
DAU 1F will be managed to maintain the heavy harvest targets of <25% age 5+ bears in the male harvest and >40% females in the total harvest.

DAU 1F

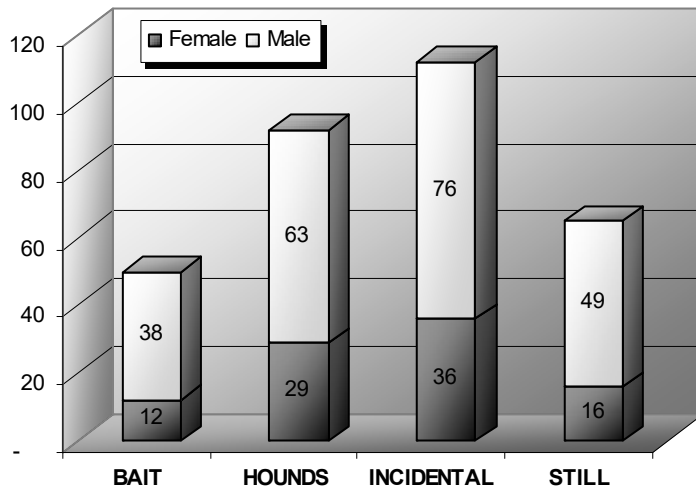
Harvest Statistics

DAU 1F	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	55	40	22	
1994	48	38	32	
1995	55	24	21	24%
1996	85	26	17	22%
1997	84	23	29	23%
Total	327	29	24	

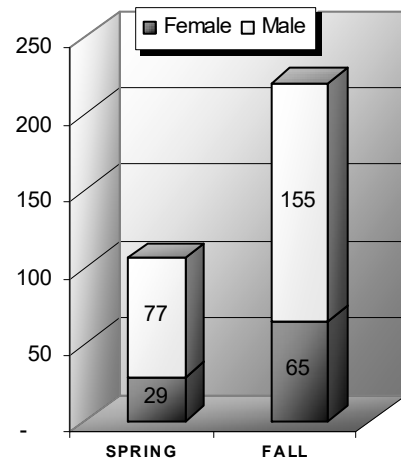
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1G

Game Management Units 19A, 23, 24, and 25

DESCRIPTION

Extra bear tags and liberal seasons were common in this DAU until the mid-1980s. More restrictive seasons and a one bear limit were implemented with the 1986-90 Black Bear Species Management Plan. Since then, bear harvest has been stable.

Approximately 70% of DAU 1G is in public ownership. Most land is managed by the USFS. Open, scattered shrub communities at lower elevations and mixed-conifer forests at mid to upper elevations characterize habitat. The wide valley bottoms of the upper Little Salmon River and North Fork Payette River are dominated by agri-business and housing developments. Bear habitat is considered good in this DAU.

High road densities exist in the western half of the DAU. Few roads (less than .25 mile per square mile) are found in the rest of the DAU. The Rapid River, Patrick Butte, French Creek, and Needles roadless areas occur in this area.

Livestock depredations and bear nuisance complaints are common in DAU 1G. Bear kills by Wildlife Services in response to sheep depredations average about 5 bears a year. Bear nuisance complaints are mostly related to poor garbage disposal practices and have been numerous during years with poor berry crops.

MANAGEMENT OBJECTIVES

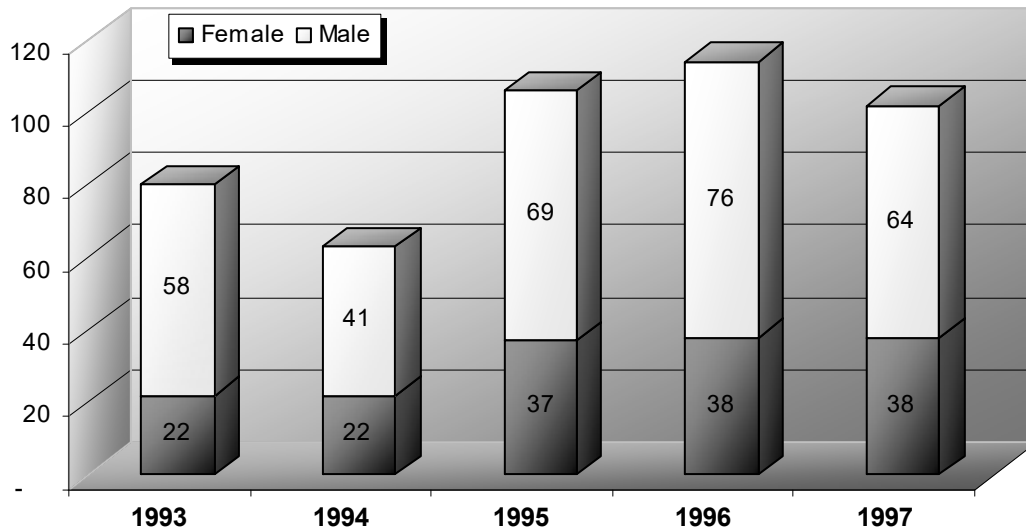
DAU 1G will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 1G

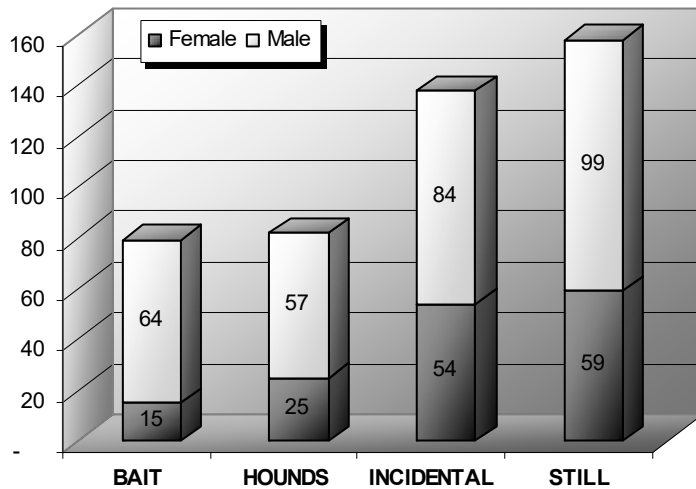
Harvest Statistics

DAU 1G	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	80	28	40	
1994	66	33	28	
1995	107	35	42	38%
1996	114	33	33	35%
1997	102	37	38	38%
Total	469	33	37	

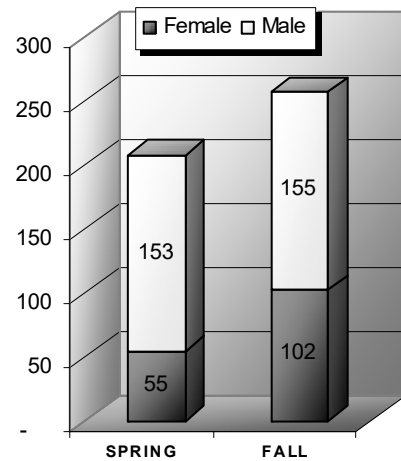
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1H

Game Management Units
22, 31, 32, and 32A

DESCRIPTION

High vulnerability of bears to hunting in this DAU has been a continual concern to sportsmen. Historically, baiting and hunting bears with the use of hounds have been restricted in DAU 1H. Bear seasons became increasingly more conservative with the implementation of each of the last three black bear species management plans. In 1993, general seasons were eliminated in favor of controlled hunts.

Approximately 60% of DAU 1H is not productive bear habitat, consisting of desert and irrigated agricultural lands. Over 90% of the bear habitat in this DAU is publicly owned and managed by the U.S. Forest Service. Road densities often exceed 3.0 miles per square mile. Bear habitat is characterized by open, scattered shrub communities at lower elevations and mixed-conifer forests and scattered onion beds and shrubfields at mid to upper elevations. Where present, bear habitat is considered excellent in this DAU.

Livestock depredations by bears are rare in this DAU, as cattle occupy most grazing allotments. Depredations on apiaries were infrequent in the past, but have been increasing recently as a result of apiary businesses expanding into bear habitat. Education of apiary owners and installation of electric fences is reducing this concern.

MANAGEMENT OBJECTIVES

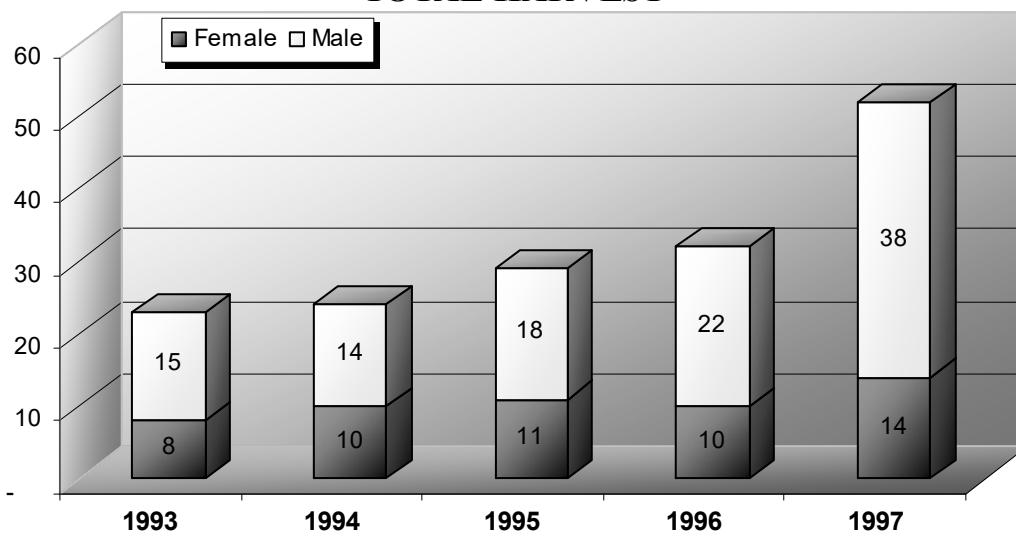
DAU 1H will continue to be managed as a controlled hunt area because of the popularity of this area for bear hunting. Baiting and the use of hounds will continue to be restricted in this DAU. DAU 1H will be managed to maintain the light harvest targets of >35% age 5+ bears in the male harvest and <30% females in the total harvest.

DAU 1H

Harvest Statistics

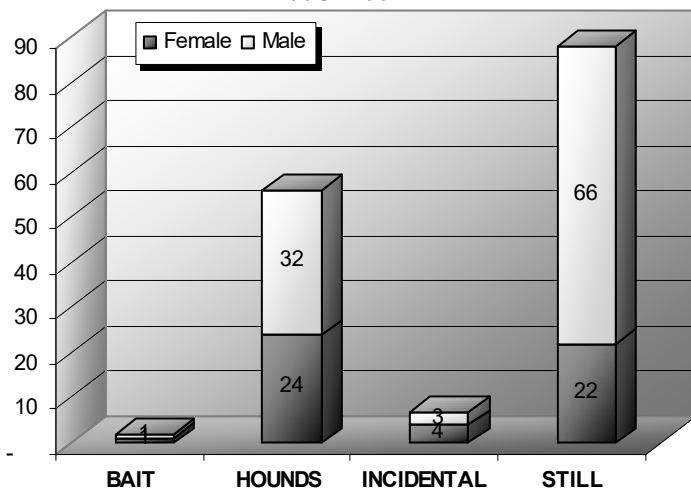
DAU 1H	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	23	35	9	
1994	25	40	31	
1995	30	37	31	24%
1996	32	31	22	27%
1997	53	26	32	29%
Total	163	33	27	

TOTAL HARVEST



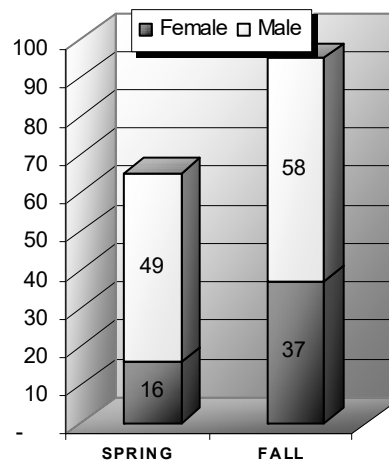
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 1I

Game Management Units 34, 35, and 36

DESCRIPTION

These units contain almost continuous, good quality bear habitat; most of which is forested public land. Topography varies from large areas of flat to gently rolling terrain to the extremely rugged and rocky Sawtooth Mountains. Much of the area is lightly roaded or roadless; some is designated Wilderness, and the large Frank Church River of No Return Wilderness is adjacent to the north and east.

Over the past decade, DAU 1I has averaged about 33 bears harvested per year, or about 1.8 bears per 100 square miles. Relatively short spring seasons, limited road access, and distance to major human populations (2-3 hours driving time) have combined to produce a lightly harvested bear population. Age five and older bears consistently comprise over 40% of the male harvest, averaging 53% over the past decade. Similarly, females average 33% of the total harvest.

DAU 1I, particularly Unit 36, attracts considerable human recreational activity through most of the year. During the peak summer and early fall months, bear depredations are an almost constant concern at campgrounds and summer homes. Unit 36 also experiences an occasional bear attack on domestic sheep. Depredation problems multiply during dry summers when range forage cures early and/or when berry production is low.

MANAGEMENT OBJECTIVES

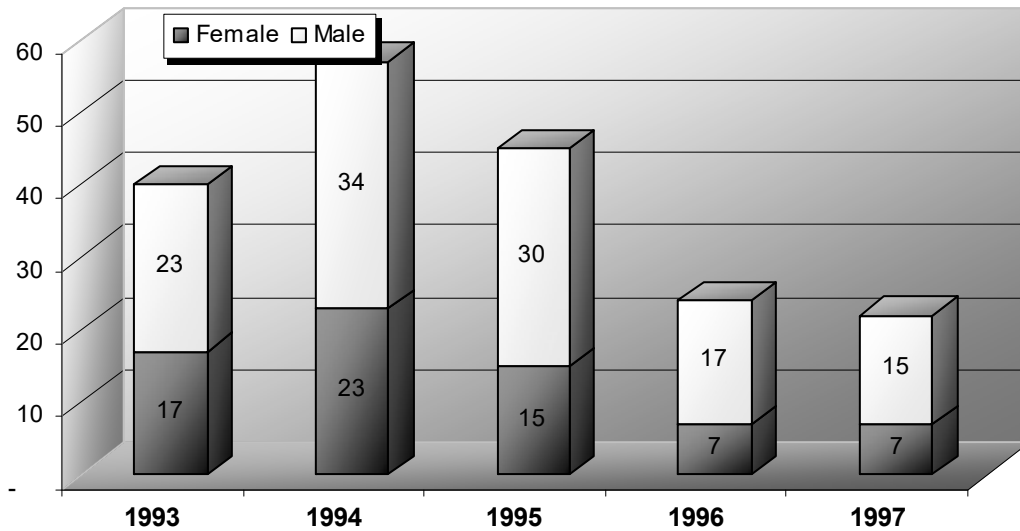
To address depredation concerns and to test the validity of bear harvest rate indicators. DAU 1I will be managed to meet the heavy harvest targets of <25% of the male harvest comprised of age 5+ bears and females comprising >40% of the total harvest.

DAU 1I

Harvest Statistics

DAU 1I	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	41	41	62	
1994	57	40	43	
1995	45	33	48	50%
1996	24	29	40	44%
1997	22	32	29	41%
Total	189	37	46	

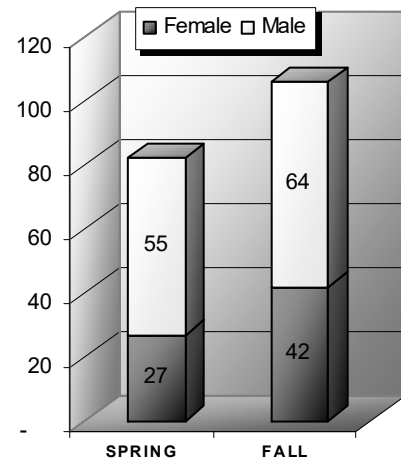
TOTAL HARVEST

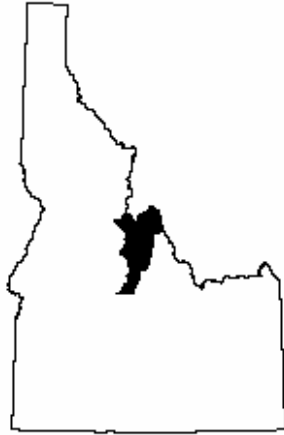


METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1J

Game Management Units
21, 21A, 28, and 36B

DESCRIPTION

The vegetation in DAU 1J varies from dry river breaks and sagebrush grasslands to subalpine, with most of the area in dry to moderately moist coniferous forests. Berry-producing habitats occur as isolated stringers along lower elevation riparian zones; where *Ribes* sp, serviceberry, chokecherry, and elderberry are common; or more generally widespread huckleberry stands at higher elevations in the north end of the DAU. Overall, the topography is steep and rugged, although more gently rolling terrain does exist in some areas. Access is somewhat limited, but varies from unroaded Wilderness to a few logged areas with high road densities. Bear densities are low to moderate, reflecting habitat capacity, and probably could not substantially increase.

Over the past decade, DAU 1J has averaged about 64 bears harvested per year, or about 2.4 bears per 100 square miles. Rugged terrain, limited access, and distance to major human populations (3+ hours driving time) tend to moderate bear harvest. Age five and older bears consistently comprise 35-45% of the male harvest, averaging 40% over the past decade. Similarly, females average 36% of the total harvest. During years with a dry summer and fall, bear harvest significantly increases as bears more actively forage for food in the fall, particularly along streamsides where roads and hunters often occur.

Depredations regularly occur in this DAU every year, typically involving campgrounds, garbage, pet food, beehives, and fruit orchards. Depredation problems multiply during dry summers when range forage cures early and/or when berry production is low.

MANAGEMENT OBJECTIVES

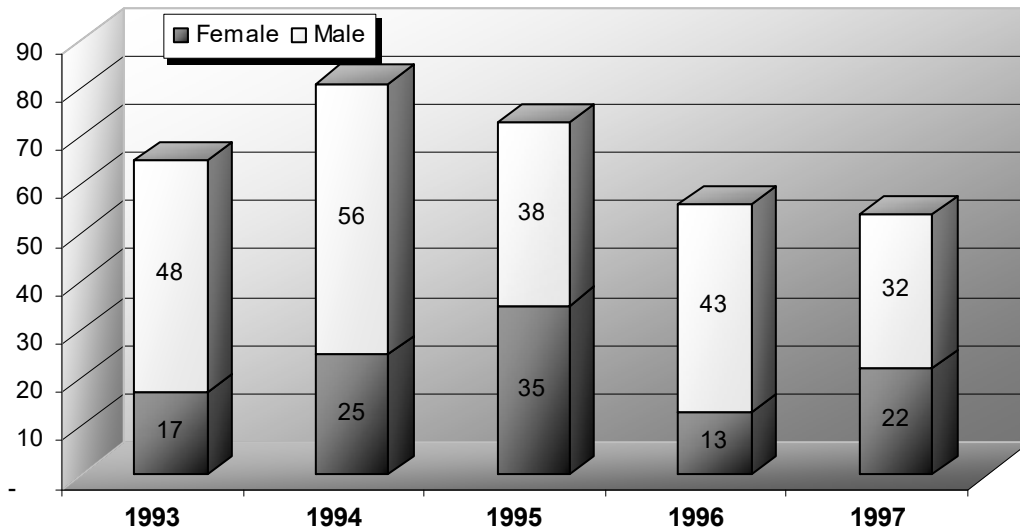
DAU 1J will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 1J

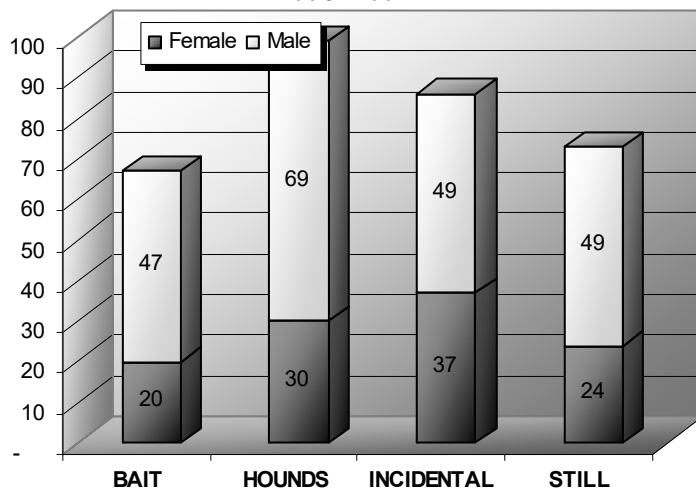
Harvest Statistics

DAU 1J	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	65	26	28	
1994	82	30	31	
1995	73	48	41	33%
1996	56	23	39	36%
1997	54	41	43	41%
Total	330	34	35	

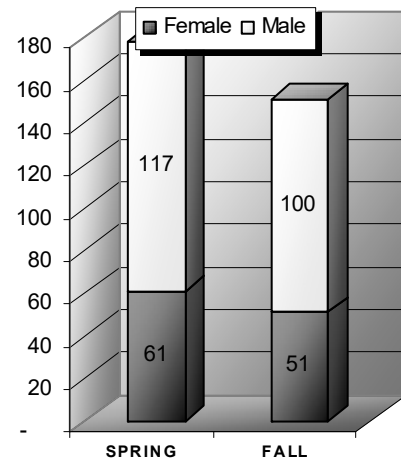
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1K

Game Management Units
33, 39, and 43

DESCRIPTION

These units are made up of drainage that runs to the south and west. The topography is mainly ridges that run southwest. There is the south side mainly dry and covered with grass-shrub communities. The north sides are treed with conifers and have wetter communities. There are plant communities that have berry producers, there is not a constant supply since drought conditions significantly influence the production levels. All three units have areas that are highly roaded. They all have areas that can be considered reserve areas that hunters do not get into. The units are within easy distance of the Boise metropolitan area and the large number of hunters that are located there. In all units there are some level of depredations. They range from livestock depredations to campground raiders. Another major problem is the movement of bears into the urban areas such as Boise.

Over the past decade, DAU 1K has averaged 133 bears harvested per year. Seasons have gone from long with multiple bear tags to shorter seasons.

MANAGEMENT OBJECTIVES

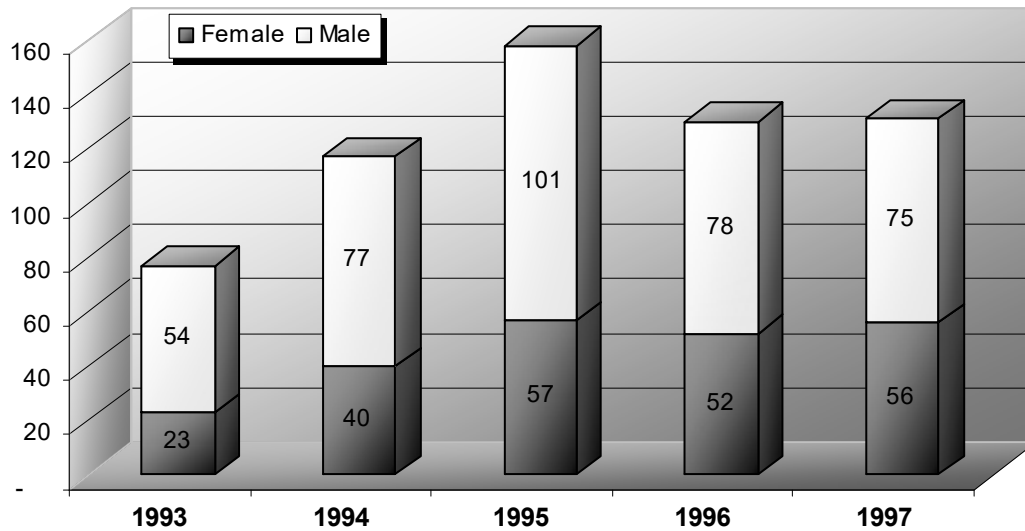
DAU 1K will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 1K

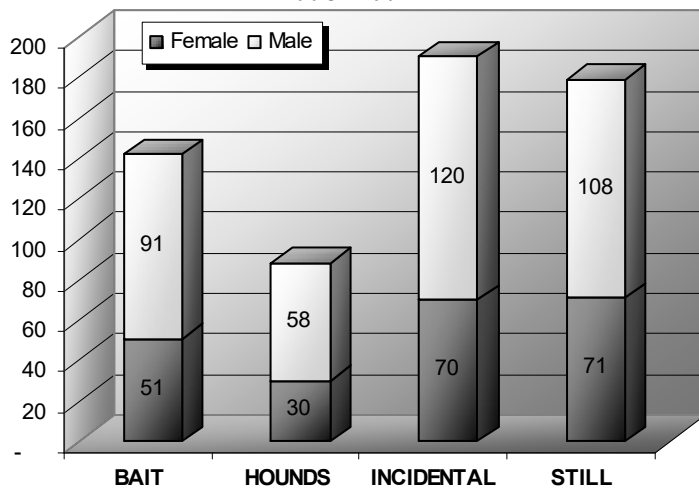
Harvest Statistics

DAU 1K	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	77	30	36	
1994	119	34	39	
1995	161	35	28	33%
1996	130	40	24	30%
1997	134	42	35	29%
Total	621	37	32	

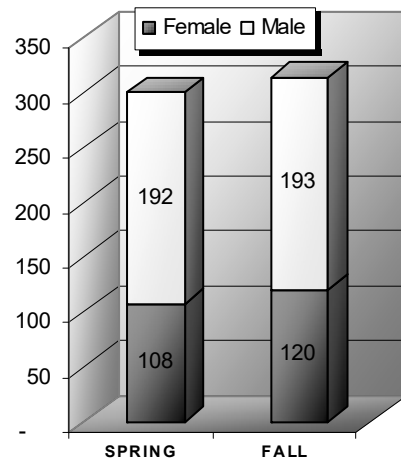
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 1L

Game Management Unit 6

DESCRIPTION

This DAU is a mix of private property, mainly timber company lands, with a mix of US Forest Service, Bureau of Land Management, and Idaho Department of Lands property. This area has been influenced heavily by logging and, to a lesser extent, by the large fires of the early 1900s.

Road densities range from moderate to high. Black bear densities are low, and baiting of black bears has not been allowed since 1983 because of low densities.

Total harvest in DAU 1L has averaged 54 bears from 1993 to 1997. Mature males (≥ 5 years old) make up 25% to 45% of the harvest and in 1997 the 3 year average was 31%. The harvest has increasingly been made up of females and the percent of mature females in the harvest is fairly high. Harvest statistics indicate a fairly heavily hunted population.

MANAGEMENT OBJECTIVES

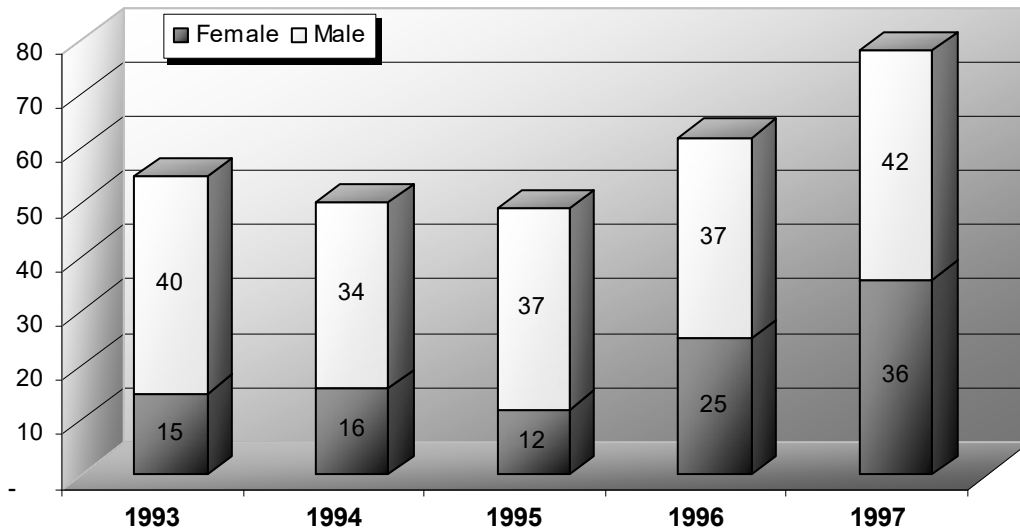
DAU 1L will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 1L

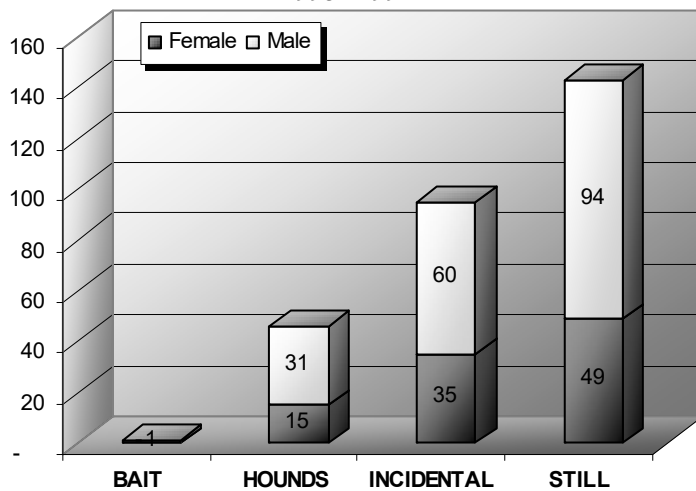
Harvest Statistics

DAU 1L	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	56	27	26	
1994	50	32	22	
1995	49	24	27	25%
1996	62	40	45	32%
1997	78	46	22	31%
Total	295	35	28	

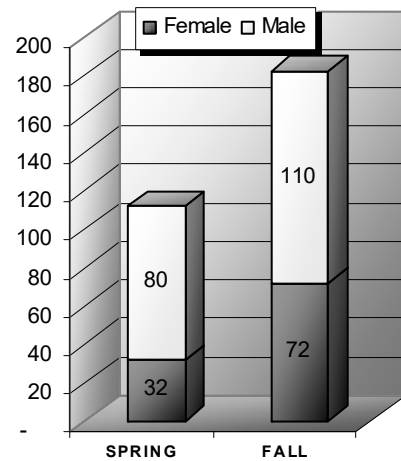
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 2A

Game Management Units 10 and 12

DESCRIPTION

Until the 1930s, wildfires were the primary habitat disturbance mechanism in this DAU. Between 1900 and 1934, approximately 70% of the Lochsa River drainage was burned by wildfires creating a diversity of habitat and shrub species. Between 1926 and 1990, over 1,900 km of roads were built in this area to access marketable timber. State Highway 12 along the Lochsa River was completed in 1962 and became the primary travel corridor. In 1964, most of the southern portion of Unit 12 was designated as part of the Selway-Bitterroot Wilderness.

Land ownership within this DAU is almost entirely publicly owned forest. The southern portion of the DAU is within the Selway-Bitterroot Wilderness Area. Historically, habitat productivity was high in this DAU and remains so in the western portion due mainly to publicly logged forest creating early successional forest with intermixed brush. The remaining portion of the unit has decreased in habitat productivity mainly due to fire suppression. Approximately one-third of the DAU has good access for motorized vehicles with medium road densities. The remaining portion has low road densities with good trails contributing to medium to low big game vulnerability.

The warm maritime climate provides the most productive bear habitat in the Clearwater Region. High precipitation levels, dense forests, and roadless areas allow for relatively dense bear populations.

MANAGEMENT OBJECTIVES

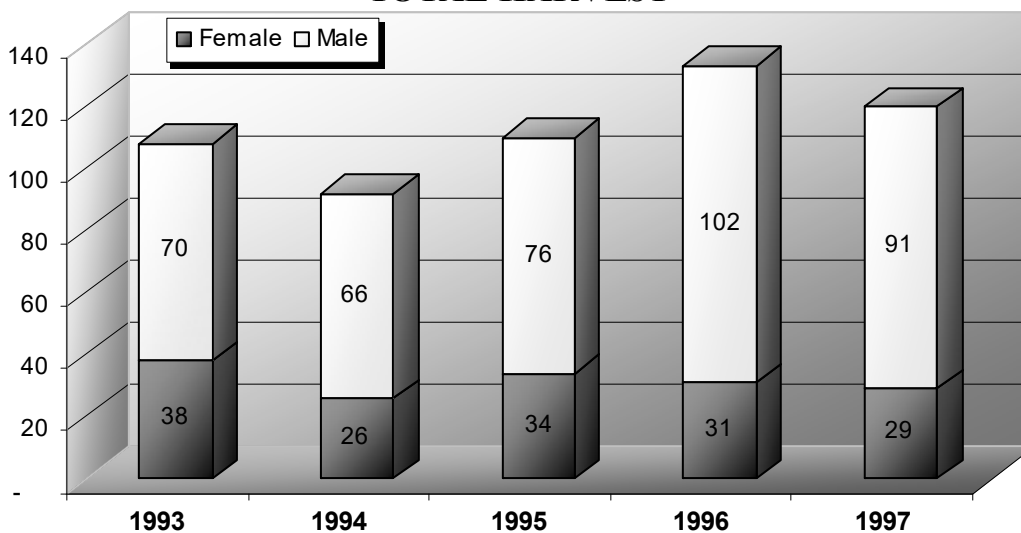
DAU 2A will be managed to maintain the heavy harvest targets of <25% age 5+ bears in the male harvest and >40% females in the total harvest.

DAU 2A

Harvest Statistics

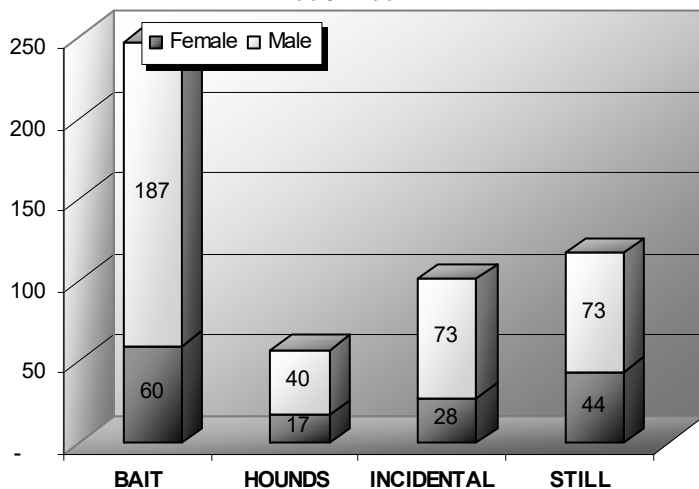
DAU 2A	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	111	34	57	
1994	93	28	42	
1995	110	31	42	47%
1996	133	23	43	42%
1997	122	24	33	39%
Total	569	28	43	

TOTAL HARVEST



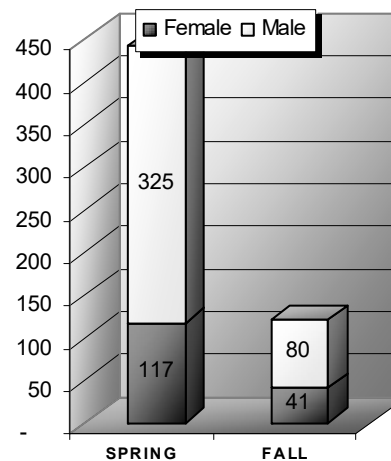
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 2B

Game Management Units 7 and 9

DESCRIPTION

This DAU is the most remote from human population centers of any DAU in the Panhandle Region. In addition, persistent snowdrifts make spring travel difficult, and substantial roadless areas preclude high levels of use. The US Forest Service manages most of the habitat in this DAU.

Total harvest in DAU 2B has averaged 41 bears from 1993 to 1997. Mature males (≥ 5 years old) make up nearly 40% of the population but have shown a decline in the past 5 years. However, small sample sizes in this DAU can lead to variable results. Females make up a small percent of the harvest and mature females do not appear to be heavily harvested. Harvest statistics indicate a light to moderate harvest level in this DAU.

MANAGEMENT OBJECTIVE

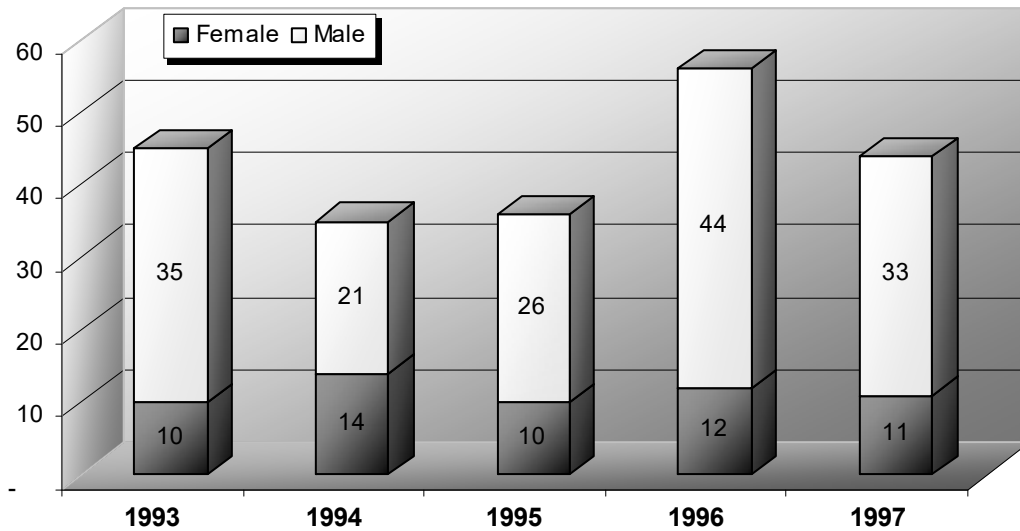
DAU 2B will be managed to increase harvest to the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 2B

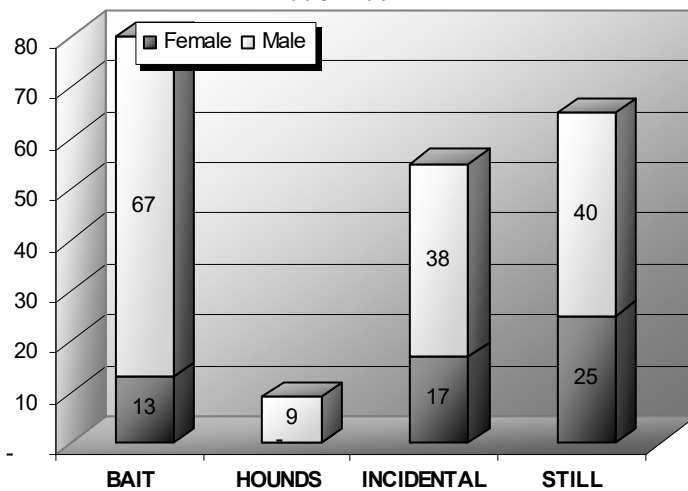
Harvest Statistics

DAU 2B	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	46	22	63	
1994	35	40	71	
1995	36	28	35	56%
1996	57	21	48	49%
1997	45	24	26	38%
Total	219	26	47	

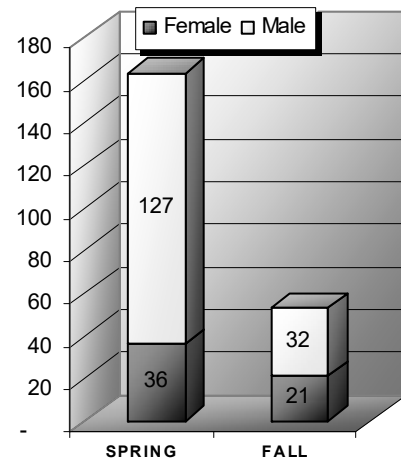
TOTAL HARVEST

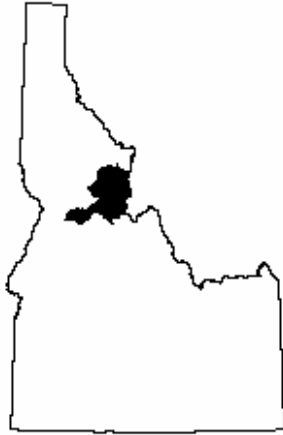


METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 3A

Game Management Units 16A, 17, 19, and 20

DESCRIPTION

Due to the rugged and remote nature of this DAU, human impacts have been very limited. In 1964, almost all of Unit 17 and a small portion of Unit 16A were included in the Selway-Bitterroot Wilderness. Most of Unit 19 became part of the Gospel Hump Wilderness in 1978, and in 1980, part of Unit 20 was included in the Frank Church River of No Return Wilderness.

Habitat productivity varies throughout the DAU from high precipitation forested areas along the Lower Selway River to dry, steep, south-facing ponderosa pine and grassland habitat along the Salmon River. High elevation habitats in the southern portion are dominated by Whitebark Pine, an important bear food. Many areas along the Salmon River have a good mix of successional stages due to frequent fires within the Wilderness. Fire suppression within portions of the Selway River drainage has led to decreasing forage production for big game. Road densities are low, contributing to low vulnerability for big game. Large proportions of hunters in this DAU are nonresident.

MANAGEMENT OBJECTIVES

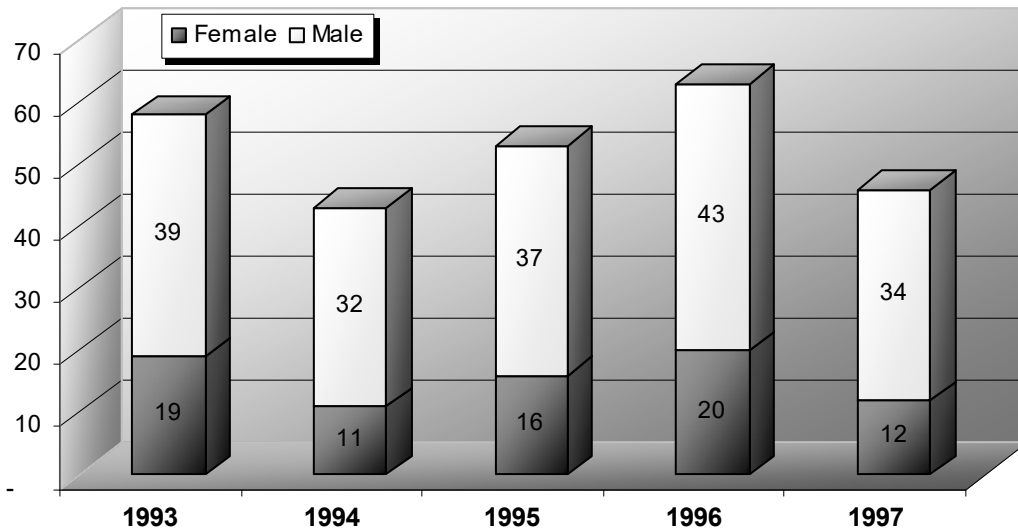
DAU 3A will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 3A

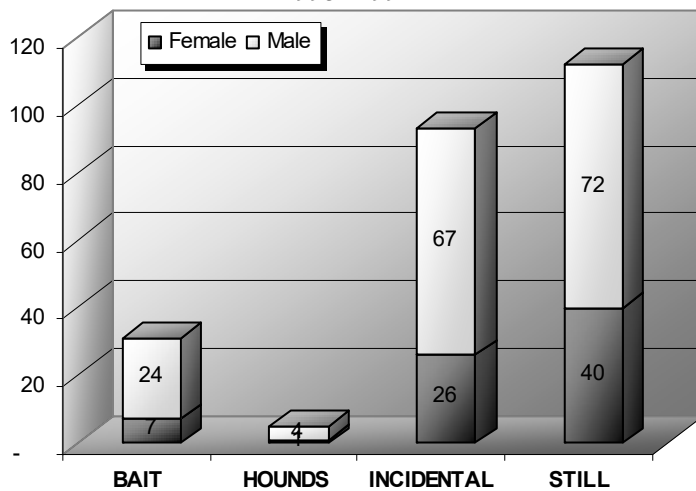
Harvest Statistics

DAU 3A	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	58	33	53	
1994	44	25	50	
1995	53	30	53	52%
1996	63	32	34	45%
1997	46	26	45	44%
Total	264	30	47	

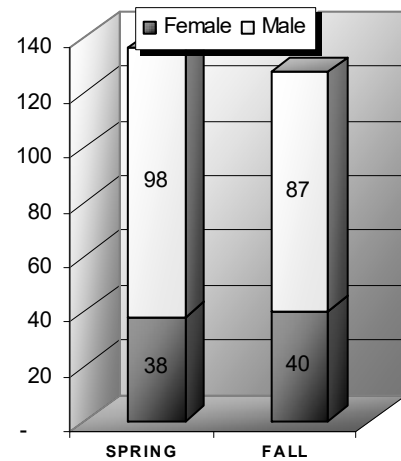
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 3B

Game Management Units 20A, 26, and 27

DESCRIPTION

Extra bear tags and liberal seasons were common in this DAU until the mid-1980s. More restrictive seasons and a one bear limit were implemented with the 1986-90 Black Bear Species Management Plan. Season lengths still remain the most liberal in Idaho. Bear harvest has been light, dominated by young, dispersing bears or occasional older bears, and occurs mostly along river corridors and backcountry landing strips.

Most of DAU 3B is in public ownership, roadless, and lying within wilderness boundaries. Except for a few mining roads penetrating the periphery, access in these units is restricted to airplane, packstring, or foot travel. The steep canyon breaks of the Middle Fork Salmon and main Salmon rivers characterize the lower elevations of this DAU. Mid to upper elevations are dominated by mixed conifer forests. Bear habitat is of moderate productivity in this area.

Livestock depredations and human/bear conflicts generally do not occur in this DAU.

MANAGEMENT OBJECTIVES

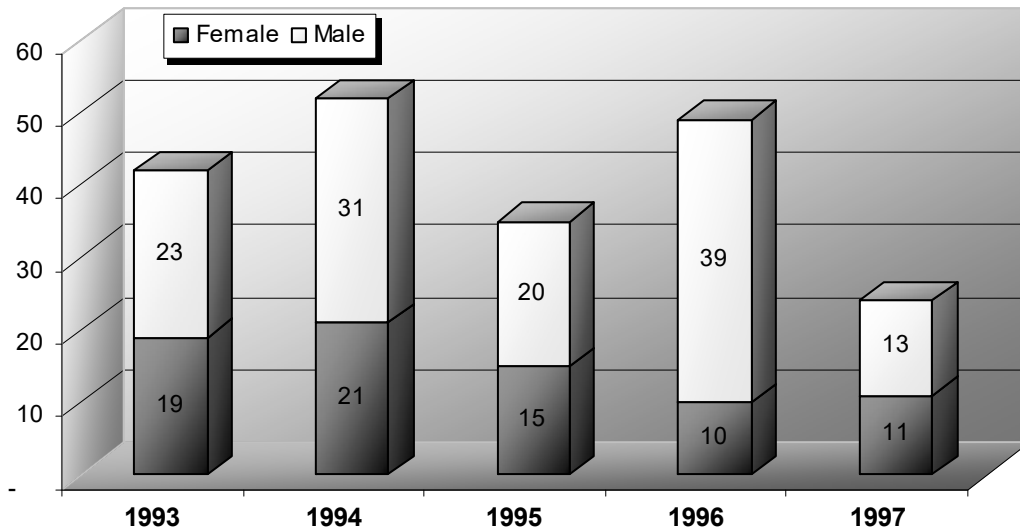
DAU 3B will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 3B

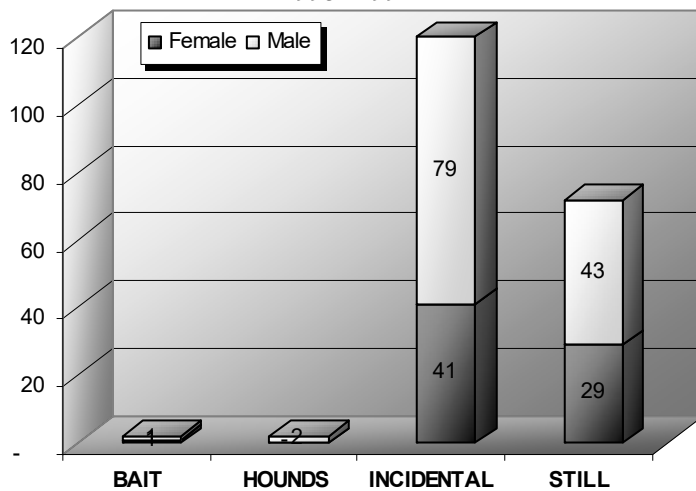
Harvest Statistics

DAU 3B	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	42	45	55	
1994	53	40	55	
1995	36	42	21	48%
1996	49	20	34	40%
1997	24	46	18	28%
Total	204	37	40	

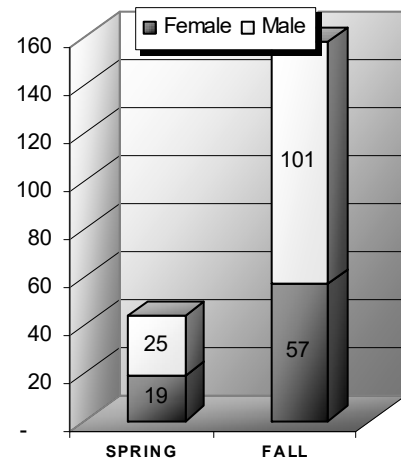
TOTAL HARVEST

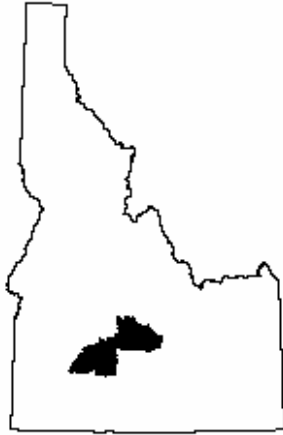


METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 4A

Game Management Units 44, 45, 48, and 49

DESCRIPTION

Units comprising DAU 4A are located in the Magic Valley Region in south central Idaho, north of the Snake River. The population centers of Boise, Twin Falls, Sun Valley-Ketchum and Burley are within 100 miles of this area. Elevations range from 2,800 feet in the Bennett Mountains (Unit 45) to over 12,000 feet in the Pioneer Mountains (Unit 49).

The area has moderately long, cold winters and hot, dry summers. Annual precipitation ranges from 10 inches in the lower elevations to 32 inches in the higher elevations and occurs primarily as snow from November to February.

At lower elevations, vegetative communities are composed mostly of sagebrush, aspen, hawthorn, and chokecherry in riparian areas, and some sparse stands of Douglas fir. Middle and high elevation areas are characterized by open, mountain sagebrush on south and west slopes, and ponderosa pine and Douglas fir on north and east slopes. Berry-producing plants are very limited throughout area.

Major land uses affecting this DAU are livestock grazing and year-round recreational activities. Logging was a predominate use in the 1960s and 1970s but is uncommon now because most merchantable timber has been removed. Access throughout most of the DAU is good, except the upper Little Wood River drainage, which is roadless.

MANAGEMENT OBJECTIVES

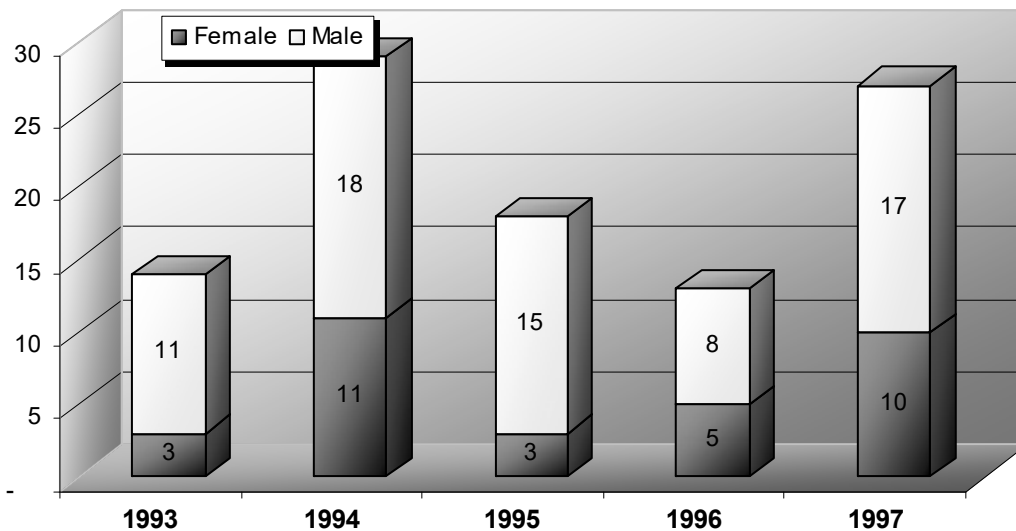
DAU 4A will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 4A

Harvest Statistics

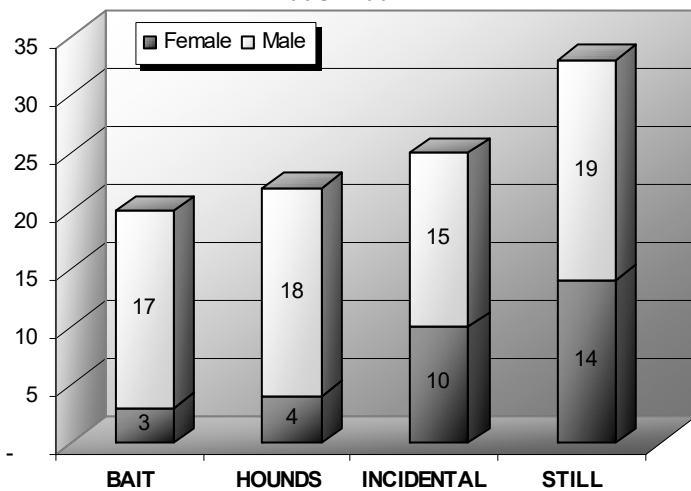
DAU 4A	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	14	21	22	
1994	30	37	29	
1995	18	17	14	23%
1996	13	38	43	26%
1997	27	37	24	24%
Total	102	31	25	

TOTAL HARVEST



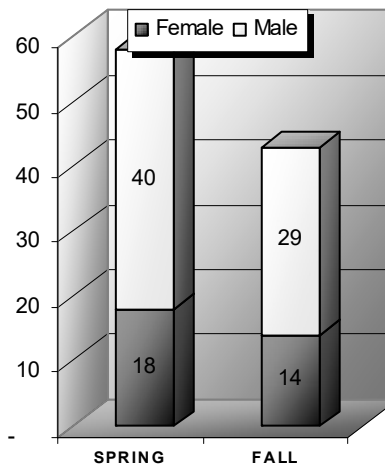
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 4B

Game Management Units
50, 51, 58, 59, and 59A

DESCRIPTION

Data Analysis in Unit 4B is comprised of Big Game Management Units 50, 51, 58, 59, and 59A in eastern/east central Idaho. These mountain and valley units are bisected by the Pioneer, White Knob, Lost River, Lemhi, and Beaverhead mountain ranges.

Elevations range from 4,824' at Howe to 12,662' on Mount Borah. The higher elevations are glacial cirque basins and lakes are surrounded by rocky mountain peaks. These peaks give way to alpine basins, flats and benches, and finally more gently sloping hills at lower elevations. Numerous canyons with steep, rocky slopes dissect these mountain ranges.

DAU 4B contains relatively dry bear habitats where timber stands are generally distributed on moister north and east aspects. The majority of this timber is over-mature Douglas fir and lodgepole pine scattered within a sagebrush/grass community. Engelmann spruce and subalpine fir are the most abundant of the secondary species, in addition to quaking aspen, mountain mahogany and some whitebark pine. Wet sedge meadows are common in some portions of the DAU. These habitats are marginal for black bear because they grow few berry-producing shrubs.

Approximately 85 percent of the DAU is publicly owned. Most of the bear habitat occurs on lands administered by the US Forest Service. Some lower elevation habitat occurs on BLM and privately owned lands. Both cattle and sheep allotments occur throughout the area.

There is a sparse human population living within the DAU, and the area receives fairly heavy recreational use on a year-around basis. However, the relatively long distance to major population centers probably keeps bear hunting activity at low to moderate levels.

Although much of the topography in the DAU is rugged and largely unroaded, concern has developed regarding ever increasing ORV use throughout all management units.

MANAGEMENT OBJECTIVES

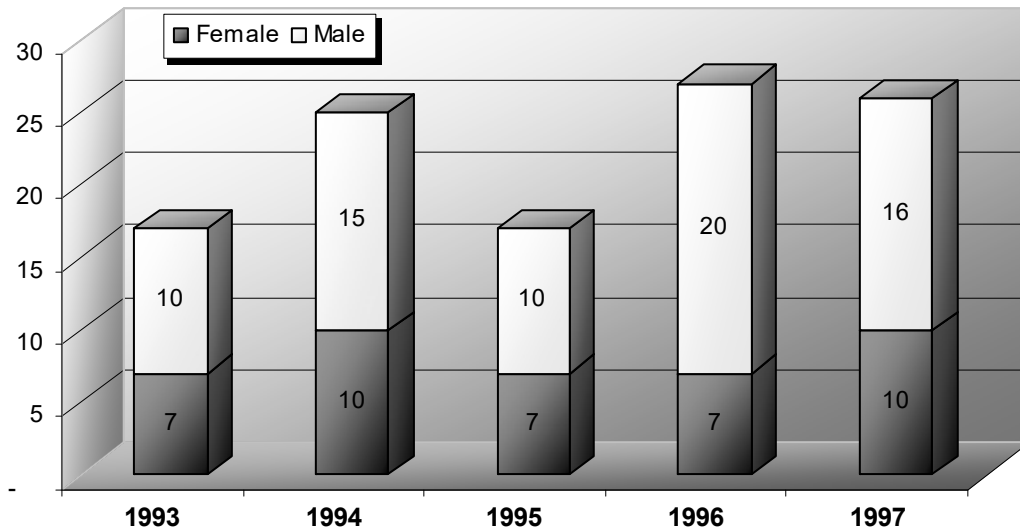
Maintain harvest levels consistent with the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 4B

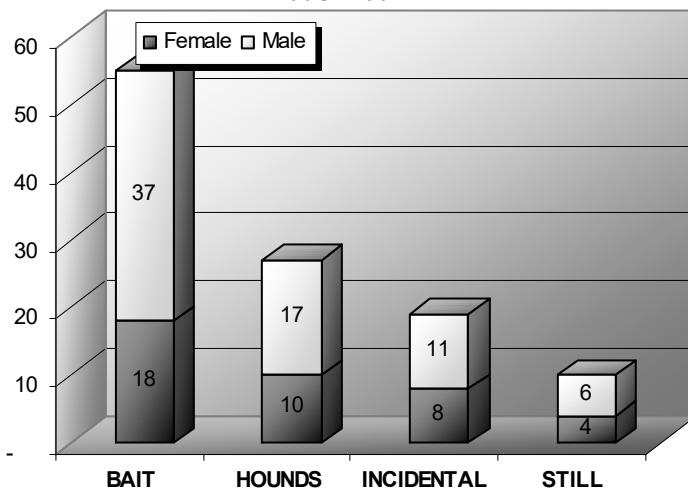
Harvest Statistics

DAU 4B	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	17	41	20	
1994	25	40	33	
1995	17	41	40	31%
1996	27	26	39	37%
1997	26	38	29	36%
Total	112	37	33	

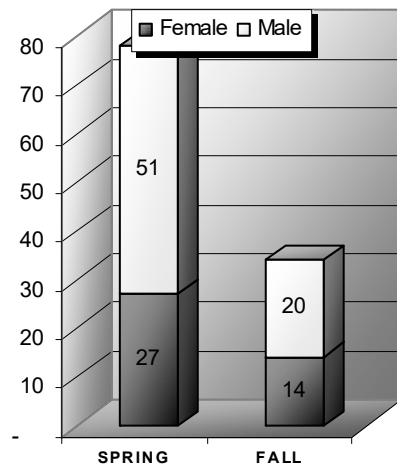
TOTAL HARVEST

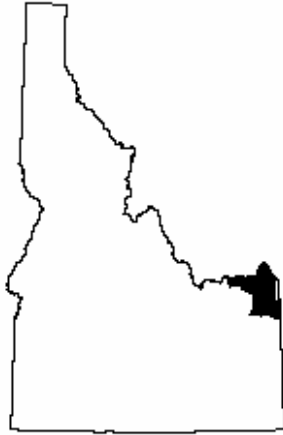


METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 4C

Game Management Units 60, 61, 62, and 62A

DESCRIPTION

Data Analysis Unit 4C consists of Big Game Management Units 60, 61, 62, and 62A in eastern Idaho. The most prominent geographical features in DAU 4C include the Centennial Mountain Range, the Island Park Caldera, and the Fall River Ridge. Elevations range from below 5,000' in the southwestern portion of the DAU to many peaks in the 9,000-10,000' range along the Idaho-Montana border.

A large percentage of the black bear habitat in DAU 4C occurs on public land administered by the US Forest Service. DAU 4C contains relatively dry bear habitats that grow few berry-producing plants. Lodgepole pine and Douglas fir communities are common in lower elevation sites. Spruce and subalpine fir communities are prevalent along drainage bottoms. Subalpine fir and whitebark pine communities occur at higher elevations.

DAU 4C has an extensive network of roads and clearcuts throughout the eastern portion of the DAU. Recent implementation of road and area closures in some areas should help to offset some of these affects in the future.

The livestock industry is a major resource user in DAU 4C. Both sheep and cattle allotments occur in the area.

There is a sparse human population living within the DAU on a permanent basis. However, cabins and summer homes are plentiful on the private inholdings in the Island Park area and tourist traffic is heavy. The DAU is readily accessible from the nearest population centers of Rexburg, Idaho Falls, Blackfoot, and Pocatello. However, the distances from population centers keeps bear hunting activity at relatively low to moderate levels.

MANAGEMENT OBJECTIVES

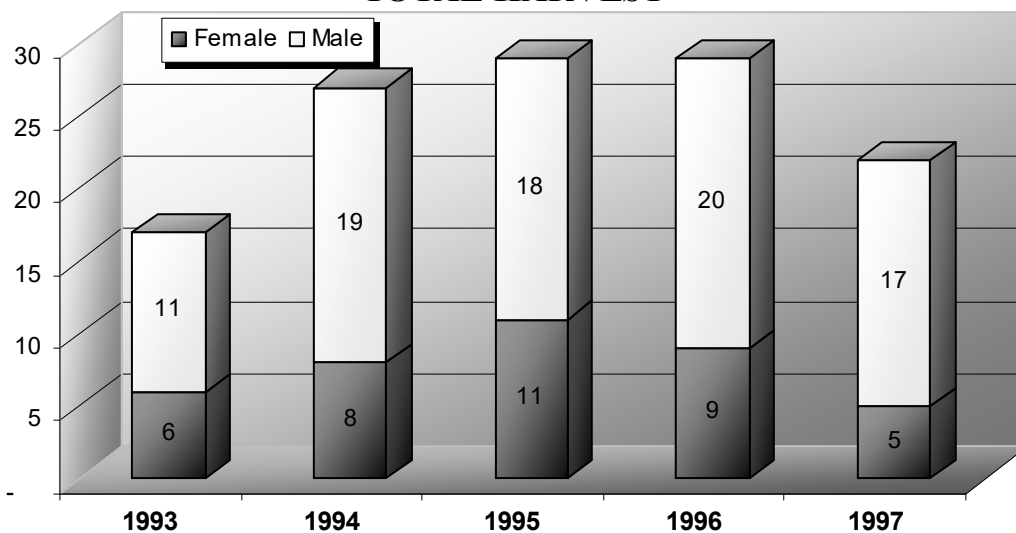
Management options are somewhat limited in DAU 4C due to the existence of an established grizzly bear population in the Greater Yellowstone Ecosystem. This area will continue to be managed to protect this threatened grizzly population by prohibiting baiting and the use of hounds to hunt black bear. Maintain harvest levels consistent with the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 4C

Harvest Statistics

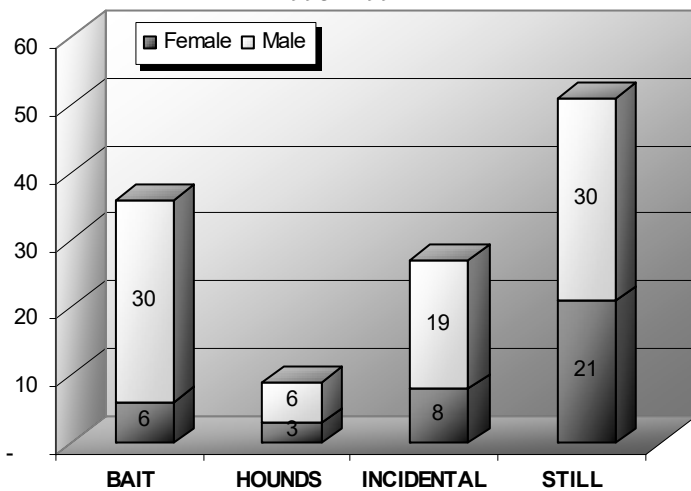
DAU 4C	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	17	35	64	
1994	27	30	29	
1995	29	38	38	41%
1996	29	31	42	37%
1997	22	23	41	40%
Total	124	31	41	

TOTAL HARVEST



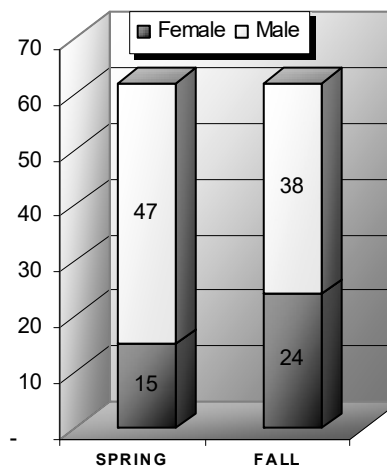
METHOD OF TAKE

1993 - 1997



SEASON

1993 - 1997





DAU 4D

**Game Management Units
64, 65, 66, 66A, 67, 69, and 76**

DESCRIPTION

Data Analysis Unit 4D is comprised of Big Game Management Units 64, 65, 66, 66A, 67, 69, and 76 on the Targhee and Caribou National Forests in eastern and southeastern Idaho.

Elevations range from approximately 4,500' at Blackfoot to 10,025' on Mt. Baird in the Snake River Range. The Big Hole Mountains and Snake River Range comprise the northern portion of the DAU. The Big Holes are characterized by steep mountains, rocky slopes, and lush subalpine meadows. The Snake River Range consists of high elevation alpine glaciated mountain peaks, cirques, talus slopes and moraines that connect through numerous steep, parallel canyons, ridges and slopes. The foothills consist of glacial outwash terraces and extensive areas of colluvial deposition. Vegetation varies with elevation and exposure. Scattered stands of subalpine fir, Engelmann spruce and timber pine are interspersed through the alpine meadows in the higher elevations. Intermediate elevations contain grasses, forbs, low growing shrubs and aspen on south and west exposures while dense stands of aspen, spruce, Douglas fir, and lodgepole pine grow on north and east aspects. Lower elevations consist of sagebrush/grass communities. The Caribou Range comprises the southern portion of the DAU. Major vegetation cover types consist of lodgepole pine, Douglas fir, aspen, mountain brush, and sagebrush/grass. DAU 4D provides only marginal bear habitat because it is relatively dry and grows few berry producing plants.

Most of the bear habitat in DAU 4D is found on public land administered by the US Forest Service. Some lower elevation habitat occurs on BLM and privately owned lands. Both cattle and sheep allotments occur throughout the area.

A relatively large human population resides in and immediately adjacent to DAU 4D. Major population centers include Rexburg, Idaho Falls, Blackfoot and Pocatello. The area is characterized by plentiful road access. The combination of easy access and proximity to human population centers results in at least moderate bear hunting activity levels, especially in the northern portion of the DAU.

MANAGEMENT OBJECTIVES

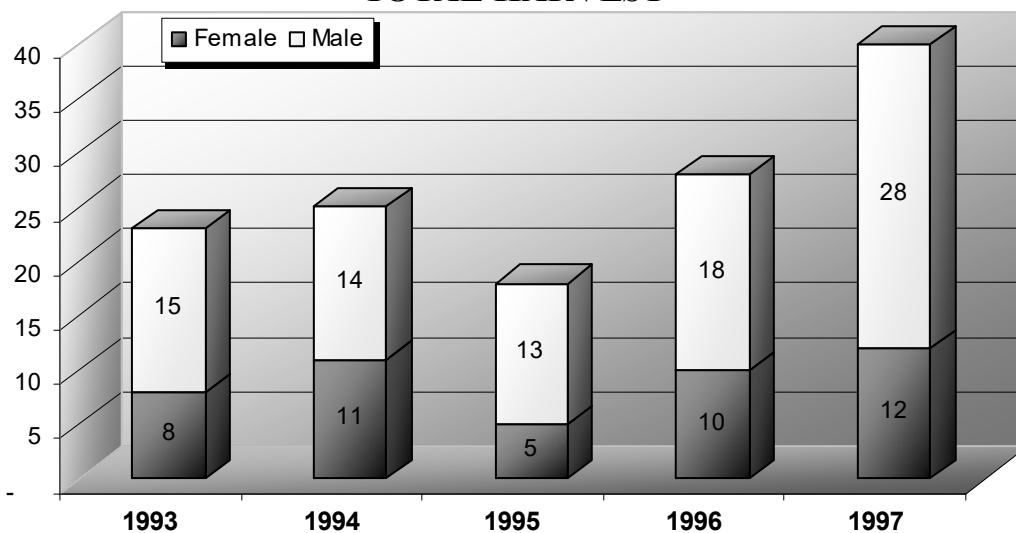
Maintain harvest levels consistent with the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 4D

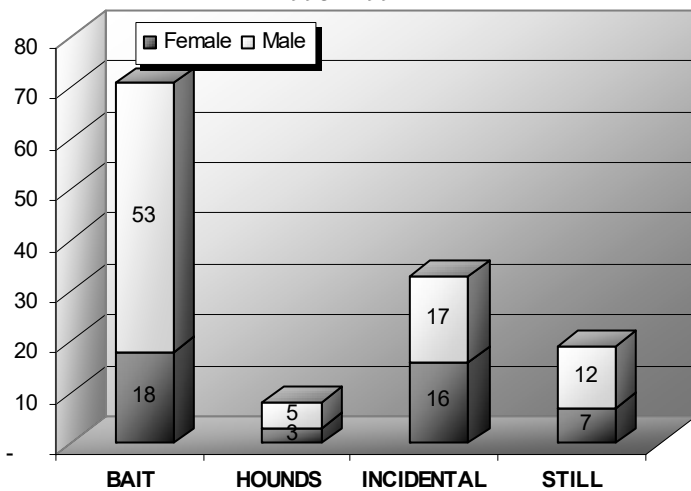
Harvest Statistics

DAU 4D	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	23	35	46	
1994	25	44	0	
1995	18	28	27	24%
1996	29	34	28	19%
1997	42	29	30	29%
Total	137	34	27	

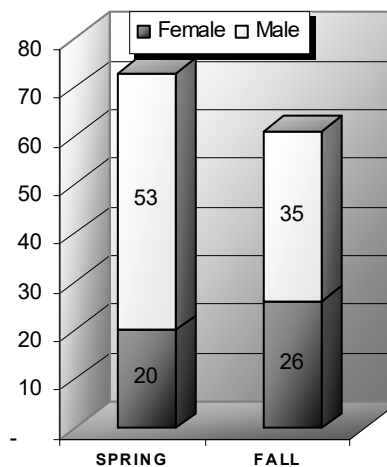
TOTAL HARVEST

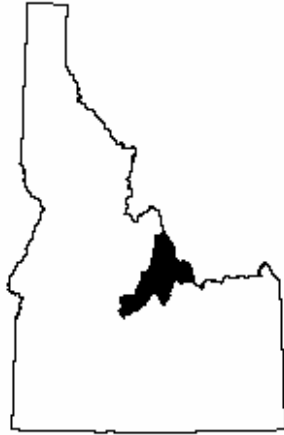


METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997





DAU 4E

Game Management Units
29, 30, 30A, 36A, 37, and 37A

DESCRIPTION

DAU 4E is in general a low precipitation zone with broad, treeless valleys and scattered pockets of bear habitat in the mountains. Much of the DAU is in marginal sagebrush-grassland habitats or agricultural ground. Good quality bear habitat is limited. Consequently, bear populations tend to be low density and isolated. Although the highest elevations in the mountains are extremely rugged and rocky (too much so to be good bear habitat), much of the area is flat to moderately rugged. Most canyon bottoms are roaded, and much of the rest of the relatively gentle topography is accessible to all-terrain vehicles.

Over the past decade, DAU 4E has averaged about 30 bears harvested per year, or about 0.9 bears per 100 square miles. Although moderately distant from major human populations (2-3 hours of driving time), bear populations in these units can be vulnerable to over-harvest because of the limited, isolated habitats and relative ease of motorized access. However, age five and older bears consistently comprise 30-40% of the male harvest, averaging 36% over the past decade. Similarly, females average 35% of the total harvest

Depredations occasionally occur in this DAU, typically involving campgrounds or beehives. Depredation problems multiply during dry summers when range forage cures early and/or when berry production is low.

MANAGEMENT OBJECTIVES

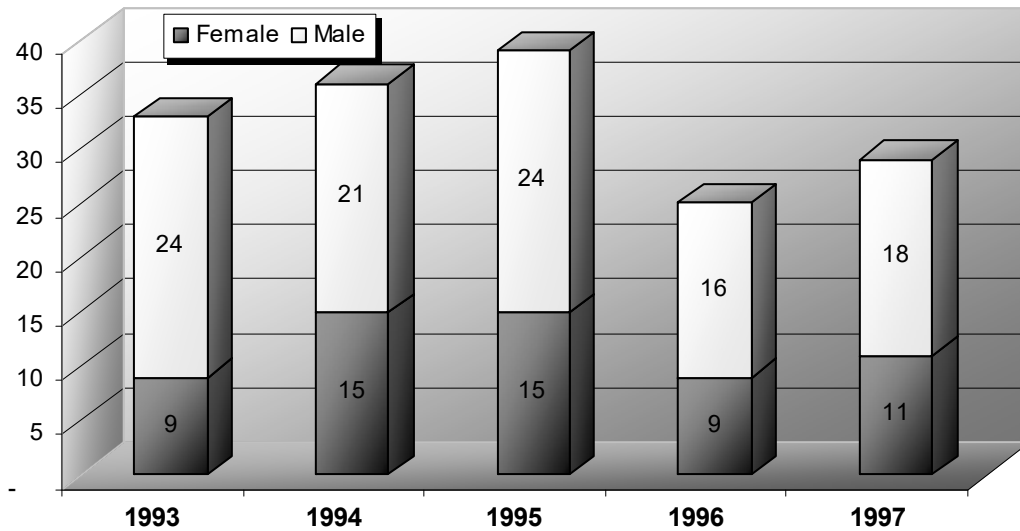
DAU 4E will be managed to maintain the moderate harvest targets of 25-35% age 5+ bears in the male harvest and 30-40% females in the total harvest.

DAU 4E

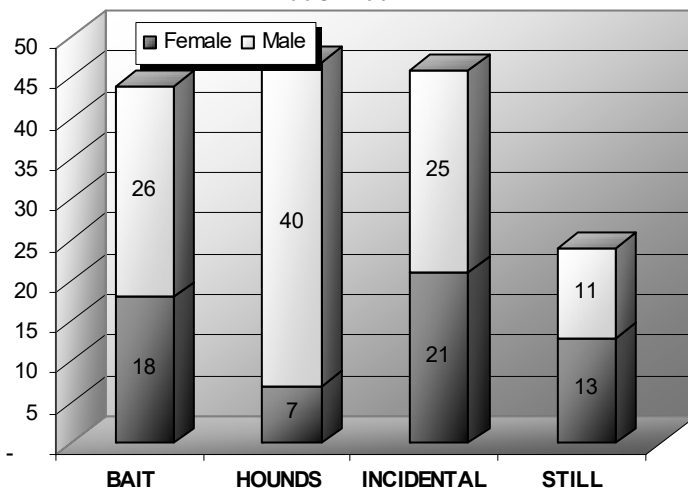
Harvest Statistics

DAU 4E	Total Harvest	Percent Female	Percent Males ≥ 5	3-Year Average Males ≥ 5
1993	34	26	24	
1994	36	42	24	
1995	39	38	33	24%
1996	25	36	38	31%
1997	30	37	39	38%
Total	164	36	31	

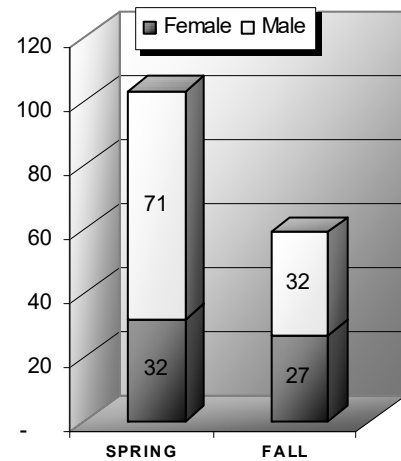
TOTAL HARVEST



METHOD OF TAKE 1993 - 1997



SEASON 1993 - 1997



APPENDIX I

GUIDELINES FOR HANDLING BLACK BEAR - HUMAN CONFLICTS:

The Department recognizes that black bears occasionally damage private property, prey on domestic livestock, and jeopardize public safety. The improper storage of human foods and garbage is often the primary factor leading to bear-human conflicts. Other factors include inadequate supplies of natural foods, injuries, and, in the case of sub-adult bears, inexperience in locating natural foods. Human encroachment into black bear habitat is a major cause of many depredation problems. The purpose of this section is to establish guidelines for minimizing damage to private real property and livestock, reducing the potential for public safety concerns regarding black bears, and to provide guidance to Department employees on how to handle situations in which black bears become nuisance or public safety problems.

Areas of Responsibility:

By Memorandum of Understanding, the Department (IDFG) and the U. S. Department of Agriculture's Wildlife Services Program have agreed to share the responsibility for handling depredation situations using the following guidelines:

1. IDFG has the responsibility for controlling black bears in nuisance and human safety situations. Wildlife Services may handle these complaints at the request of IDFG if mutually agreed upon by both parties.
2. Wildlife Services has the responsibility for controlling black bears that commit livestock (including apiaries) depredation problems. IDFG may handle these complaints at the request of Wildlife Services, if mutually agreed upon by both parties.
3. Wildlife Services has the responsibility to investigate all black bear depredation payment claims involving domestic sheep, cattle, apiaries, and berries.
4. In areas where public safety is a concern and in non-livestock agricultural complaints, Wildlife Services and IDFG will use non-lethal methods, preferably culvert traps or trailing dogs, whenever practical.
5. IDFG and Wildlife Services will use culvert traps in classified grizzly bear habitat unless determined to be impractical. Snares used in classified grizzly bear habitat must be sufficient to hold any grizzly bear caught.
6. Any black bear killed in a depredation situation by IDFG or Wildlife Services must be reported to an IDFG Regional office within 14 days of the date of the kill. The skull and a completed Big Game Mortality Report form must be submitted to the Department. All salvageable parts remain the property of the Department and must be submitted to the Regional Office for disposal. Where practical, the meat from any black bear killed in a depredation situation should be salvaged and handled according to Policy E-24.00 in the Department's policy manual.

7. The Regional Supervisor is responsible for assigning personnel to handle black bear depredations and to ensure that they are properly trained and equipped, including training in the use of appropriate immobilization drugs. The responsible employee has the ultimate responsibility for deciding how to handle each depredation situation.

Response and Reporting Requirements:

1. IDFG regional personnel will respond to all reported black bear depredation incidents **within 24 hours**, either by phone or in person. The type and level of response will depend upon the nature of the complaint. Incidents involving human safety or significant property damage will receive high priority and the personal attention of the responsible employee. Those incidents involving low risk situations may be handled by phone, if an obvious solution is available.
2. The responsible employee, under authority of the Regional Supervisor, will verify the validity of each complaint, determine the appropriate action, and, if necessary, initiate control actions.
3. The responsible employee should provide the complainant with specific recommendations on how to prevent depredation problems, document any actions taken, and convey to the complainant that they may be held liable if someone is injured or incurs damage as a result of their providing attractants to nuisance bears.
4. Within seven (7) days of the conclusion of the problem, a report, using form D-3, will be submitted to the Regional Landowner Sportsman Coordinator or Regional Wildlife Manager by the person handling each depredation complaint.

Response Categories and Remedial Actions:

The **prevention** of black bear depredations is the primary goal of these guidelines. To that end, Department personnel are encouraged to work with state and federal land management agencies and the public to eliminate attractants for bears. In situations where chronic bear depredation problems are occurring, Department personnel should be prepared to recommend permanent solutions that will eliminate the attractants.

Category 1 Situations: These situations involve black bears that have caused minimal or no damage and appear to be first time offenders. These situations are characterized by bears involved in **nocturnal** visits around occupied homes to feed in garbage cans or dumpsters, eating pet foods (or the pets themselves), or climbing domestic fruit trees in or adjacent to good habitat or travel corridors. In these situations, attractants should be removed or secured by the landowner (picking fruit and feeding pets indoors) and the bear allowed to resume its natural feeding habits. Hazing and other non-lethal techniques (using hounds, etc.) are appropriate methods to use on bears in these situations. If the bear is located in an area that is not suitable habitat, the bear should be removed from the area using appropriate capture methods and released in suitable habitat.

Category 2 Situations: These situations involve black bears that have become conditioned to human foods or habituated to humans and are nuisance problems. These bears are often involved in repeated **nocturnal** incidents involving garbage cans and dumpsters, feeding on dog or horse food near residences, disturbing campsites, or damaging commercial fruit trees or apiaries. Black bears that have been previously captured and have returned to areas of human habitation are included in this category. **In these situations, increased emphasis should be placed on eliminating attractants from the area.**

Category 2 bears should be trapped, ear-tagged (when practical), removed from the area, and released in areas where they are not expected to return to the original capture site.

Category 3 Situations: These situations involve black bears that have caused significant real property damage to a dwelling, structure, vehicle, are a threat to human safety (the bear is demonstrating aggressive behavior towards humans, is showing little fear of humans, or is causing depredation problems during daylight hours), or are chronic offenders (involved in 3 or more depredation situations). Corrective action in these situations requires that the offending animal be destroyed (euthanized) using the most expedient means. The Regional Supervisor or immediate supervisor should be consulted and concur with the recommendation to destroy any problem bears.

Category 4 Situations: These situations involve black bears that meet the criteria described in Category 3, but involve unique circumstances where the use of culvert traps and snares is not practical or has been ineffective. In these situations, Depredation Kill Permits may be issued to private landowners to assist the Department in solving a depredation problem. In all instances, the Regional Supervisor or his/her designee shall inspect the site prior to issuing the permit to insure there are no obvious human safety concerns in issuing the permit. Depredation Kill permits shall be issued only during the closed season for black bear and should not be issued to landowners if they cannot be safely administered. Depredation Kill permits should not be issued in situations involving female bears accompanied by young. These situations should be handled by trapping and removing the offending animals. If circumstances require the female to be euthanized, the cubs should be taken to a rehabilitation facility and released when their body condition is good and sufficient natural foods are available or, dened in a natural or artificial den. Black bears killed under Depredation Kill Permits remain the property of the state.

GUIDELINES FOR TRAPPING, HANDLING AND RELEASING DEPREDATING BEARS:

1. Only IDFG personnel are authorized to capture and relocate nuisance black bears, except that Wildlife Services personnel may capture bears involved in livestock depredations (including apiaries) as indicated in the MOD between IDFG and Wildlife Services.
2. Any black bear that is trapped and handled by IDFG in a depredation situation should be ear-tagged or otherwise marked (i.e. paint) prior to release.
3. All black bears captured and immobilized during or less than 2 days before an open bear season should be held in a culvert trap or other suitable facility for 24 hours before being released to allow the animal to metabolize any residual drugs from its system. Black bears should be held in captivity in a secure area with adequate water. The person responsible for trapping or caring for the bear should provide shelter from extremes in weather. Biologists using Capture all-5 or Ketamine hydrochloride, alone or in conjunction with a tranquilizer to immobilize captured bears, should administer Yohimbine hydrochloride (antaganil) to reverse the effects of the tranquilizer on the animal.
4. Culvert traps and snares set for black bear should be checked by the person that is responsible for handling the complaint or his/her designee prior to 1000 hours each day the trap is set. Drop-door culvert traps and snares should not be left unattended or set in or adjacent to campgrounds or private residences if there is any concern for human safety in the area.
5. Snares should be anchored to fixed objects (live trees) using a car hood spring or tire (with back-up safety configuration) to minimize the potential for injury to the bear during the period between capture and immobilization.
6. Adequate signs should be posted around all culvert traps and snares to warn people that nuisance bears are in the area and that traps have been set to capture these animals. These signs should be posted near the trap sites and along trails and roads entering the area.
7. As a guideline, black bears should be released not less than 30 (sub-adults) to 50 airline miles (adults) from the capture site in suitable habitat.
8. Release sites for captured nuisance black bears should be selected in advance and must be coordinated with the appropriate land management agency (Idaho Code 36-1109a) and be approved by the Regional Supervisor.
9. To address potential human safety concerns, Department employees are encouraged to request that land management agencies close or restrict the use of campgrounds where nuisance black bears are active until the source of the problem (attractant) has been removed and the offending bear has moved on or is trapped.
10. Black bears that are captured in depredation situations that have serious injuries or disease conditions should be euthanized in a humane manner rather than released.
11. Orphaned cubs of the year should be placed in an approved rehabilitation facility. These cubs should be released only when their body condition has improved to the

point where they have a reasonable probability of surviving on their own and natural food supplies are abundant. If natural foods are scarce, black bear cubs should be retained in a rehabilitation facility until they can be placed in a natural or artificial den or until adequate spring foods are available.

12. Any black bear that has bitten a person will be euthanized and tested for exposure to rabies. Any bear that has injured a person will be euthanized in a humane manner.
13. Black bears involved in killing livestock will be killed in a humane manner. If the offending animal is a female accompanied by young of the year, the young should be captured and relocated or turned over to a wildlife rehabilitator, if it is unlikely that they would survive on their own.

APPENDIX II

BAITING STANDARDS

The following standards are recommended for implementation in this planning period.

1. Timing of the baiting season:
 - a. No baits may be placed for the purposes of attracting or taking black bear prior to the opening of the black bear take season.
 - b. All structures, bait containers and materials must be removed and excavations refilled when the site is abandoned or within seven (7) days of the close of the black bear take season.
2. Location of bait sites:
 - a. No bait site may be located within 200 yards of any free water (lake, pond, reservoir, spring, and stream); maintained trail; or any road.
 - b. No bait site may be located within one mile of any designated campground or picnic area, administrative site, or dwelling.
3. Types of bait:
 - a. No parts of or whole game animals, game birds, or game fish may be used to attract black bear.
 - b. The skin must be removed from any mammal parts or carcasses used as bait.
4. Bait containers:
 - a. No bait may be contained within paper, plastic, metal, wood, or other non-biodegradable materials, except that a single, metal container with a maximum size of 55 gallons may be used if securely attached at the bait site.
 - b. Baits may be contained in excavated holes if the diameter of the hole does not exceed 4 feet.
5. Establishment of bait sites:
 - a. Any structures constructed at bait sites using nails, spikes, ropes, screws, or other materials must be removed when the site is abandoned by the permit holder or within seven (7) days of the close of the black bear take season.
 - b. All bait sites must be visibly marked at the nearest tree or on the bait container using a tag supplied by the Department.

6. Baiting permit administration:

- a. All persons placing or hunting over bait must possess a baiting permit issued by the Idaho Department of Fish and Game.
- b. Each hunter (except licensed guides and clients of outfitters) may possess only one Idaho Department of Fish and Game baiting permit each year and may maintain up to three (3) bait sites.
- c. No person may hunt over an unlawful bait site.
- d. Limits on the number of bait sites that can be established by outfitters operating on public lands must be specified in their operating plans. Licensed outfitters operating on private lands must have a letter authorizing a specified number of bait sites from the owner of those lands.
- e. Guides and clients of outfitters are not required to obtain a baiting permit, but they must have a copy of the outfitter's permit in their possession while hunting over a bait site.
- f. Baiting permits will be issued by mail or in person at Idaho Department of Fish and Game regional and sub-regional offices beginning March 1 each year.
- g. Permits will be valid for the calendar year in which they were issued.
- h. Possession of an Idaho Department of Fish and Game baiting permit does not exempt the permit holder from any restrictions placed on users of federal, state, or private lands.

MONTANA MOUNTAIN LION

MONITORING & MANAGEMENT STRATEGY



— *DRAFT, OCT. 2018* —



MONTANA FISH, WILDLIFE & PARKS







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MOUNTAIN LION CONSERVATION AND MANAGEMENT GUIDELINES

With the publication of this document, Montana Fish, Wildlife & Parks (FWP) reaffirms its commitment, on behalf of the public, to the conservation and responsible management of mountain lion populations in Montana.

Many FWP wildlife biologists might find it redundant to first state that we are committed to conserving mountain lions. We tend to skip instead to describing specific strategies for mountain lion management, while taking our professional dedication to wildlife conservation for granted.

But we've learned over the years that an intensely interested and engaged public does not always accept FWP's commitment to mountain lion conservation as a given, and may not recognize FWP's management strategies as being consistent with conservation. Although our society has a long and evolving heritage of valuing wildlife, we

acknowledge that Montana and other western states have risen relatively recently to the challenge of actively conserving mountain lions.

Many Montanans can still remember the bounty years when antagonistic public attitudes toward predatory wildlife were common. Since then, questions and concerns surrounding the management of mountain lions have increased as more people with a stake in mountain lion management come to the table.

One measure of Montana's commitment to wildlife conservation is the abundance, diversity, and distribution of our large predators. Wolves are now biologically and legally recovered, grizzly bear populations exceed restoration milestones, and the mountain lion has re-occupied its historic statewide habitat.

But with this success comes increased management complexity. Local declines in elk abundance and hunting opportunities, concerns about public safety, sharply responsive mountain lion hunting regulations, and uncertainties about management's effects on lion populations have sometimes strained a consensus about our values and management direction.

And conservation itself, we understand, is in the eye of the beholder. So, we strive to be clear. The following are the conservation and management guidelines that will direct FWP's decisions, and against which more specific management objectives will be measured.

FWP will conserve mountain lions as a functional and valued part of Montana's wildland ecosystems.

FWP will help manage suitable and connected habitat at a landscape scale for mountain lions and their prey.

FWP will responsibly manage mountain lions as a public trust resource and consistent with state law.

FWP will maintain and enhance public acceptance of mountain lions by helping landowners, homeowners, and the recreating public prevent conflicts with mountain lions. FWP will respond promptly and professionally when conflicts occur.

FWP will enhance public appreciation for mountain lions by providing information and insight about the role of mountain lions in the ecosystem and on practices for living and recreating in lion habitat.

FWP recognizes that mountain lion hunting is a highly valued recreational pursuit and that hunting plays a critical role in maintaining public advocacy and tolerance for the species. FWP will therefore manage for limited and sustainable mountain lion hunter-harvest opportunity on most lands within its jurisdiction. FWP will allocate hunting opportunities and experiences fairly among Montana resident, nonresident, and outfitted mountain lion hunters using simple and consistent regulations.

FWP will use an adaptive harvest management framework to develop and evaluate most mountain lion management decisions. Potential management objectives will be made explicit to all stakeholders throughout the decision-making process and the best available information will be used to evaluate whether those objectives are being met.

FWP will maintain a balance between mountain lion populations, their prey, and humans by directing local harvest of mountain lions, if and as needed, to manage prey survival and reduce human-lion conflicts. FWP specifically recognizes that mountain lion populations are most effectively conserved at the landscape scale, rather than within smaller individual Lion Management Units where prey survival or points of conflict may be concerns worthy of management.

FWP will develop informed public consent regarding the conservation status of mountain lions and the potential consequences of FWP management actions by instituting a credible, science-based system for estimating and monitoring Montana's lion populations.

FWP will consider, monitor, and conserve mountain lions at a landscape scale, consistent with the species' ecology. Specific management objectives will encourage sustainable and well-connected mountain lion populations within these landscapes.

EXECUTIVE SUMMARY

Despite historic persecution, mountain lions are thriving once again in Montana. Lions have reoccupied their historic statewide range and dispersing individuals now contribute to expanding populations across the western and midwestern U. S. This recovery is a testament to Montana's tradition of protecting habitat, conserving native wildlife populations, and investing in research that provides the scientific basis for sound wildlife management decisions.

The number of lion hunters and hound handlers has also increased during the last 40 years. These sportsmen and women became the state's most effective advocates for lion conservation and they have consistently encouraged FWP's efforts to improve lion management. Montanans, hunters and non-hunters alike, now expect assurances from FWP that lion populations remain healthy and that lion

management decisions are informed by objective data instead of emotion.

Unfortunately, many past lion management decisions were controversial. Because it was impossible to precisely count lions or monitor population trends, Montanans who care deeply about lions and their prey often disagreed about the effects of lion harvest on both.

FWP clearly realized the need for better methods to track lion population changes and for a scientific framework upon which to base management recommendations. Over the last 25 years FWP made significant investments in field research that had improved our understanding of lion ecology and the way lions interact with their prey. FWP biologists and partners also developed new methods to monitor lion populations and built innovative population models that predict the effect of past and future harvest.

FWP intends to maintain sustainable lion populations across all suitable habitats within its jurisdiction. An important goal of this Strategy is to provide the public

West Fork Bitterroot River FWP Mountain Lion Study Area



and the Department with accurate and timely information so that both populations and harvest are more stable over time. Accurate monitoring and modeling data will enable simpler harvest regulations, improve our ability to reduce conflicts, and allow FWP to better manage local lion densities while protecting regional populations.

Research in Montana and other states has revealed that lion ecology is remarkably similar across the species' western North American range. Populations in western North America are well connected and generally resilient to moderate harvest. However, hunter harvest is often additive to other forms of mortality and should be limited to prevent unwanted population declines. Critically, we now understand that lion populations are most effectively managed at large spatial scales.

For this management strategy FWP used a habitat model, built using Montana-based research and harvest data, to describe four biologically meaningful mountain lion "ecoregions" within the state. These ecoregions will be the spatial basis of FWP's lion management. FWP will periodically develop estimates of mountain lion abundance within most ecoregions using genetically-based field sampling.

Managers will then include these population estimates, our understanding of lion ecology, and lion harvest data to inform statistical models that predict the effects of lion harvest on statewide populations. Over time, this monitoring program will reduce uncertainty about the effects of lion harvest and will improve FWP's ability to meet lion management objectives.

An adaptive harvest management process will guide most of Montana's mountain lion harvest decisions. FWP will work with the public to develop clear and measurable population objectives at the ecoregion scale, as well as hunting seasons and harvest prescriptions that are most likely to meet those objectives. The effects of lion harvest will be regularly monitored so that harvest can be adjusted based on current information.

Although overall management objectives and harvest prescriptions will be developed at a large (ecoregional)



scale, harvest limits will generally be distributed across an ecoregion's lion management units to address social concerns, reduce hunter crowding, and focus or limit harvest where needed.

The following chapters describe FWP's mountain lion monitoring program and methods to produce periodic estimates of mountain lion abundance across the state. This Strategy includes a population model that will allow managers to effectively use those field-based estimates and other information to make predictions about the effect of future mountain lion harvest. We present policies detailing how FWP will reduce and respond to human-lion conflicts. Finally, we describe an adaptive harvest management process that will help FWP and the public build realistic lion management objectives and how to evaluate whether those objectives are being met.

This Management Strategy represents FWP's long term commitment to use the best available scientific information to ensure that mountain lion management decisions are as objective, transparent, and adaptive as possible.

ACKNOWLEDGEMENTS

This document is a synthesis, and practical application, of fundamental mountain lion field research conducted over decades in western North America. We sincerely thank the many wildlife biologists, technicians, and managers whose efforts have contributed to our understanding of lion ecology. Their body of work specifically informed this effort and will help ensure the continued conservation of mountain lions in Montana.

Several biologists made specific and fundamental contributions to this strategy. Dr. Hugh Robinson of Panthera guided important Montana lion field research to publication and built lion habitat models that became critical components of this strategy.

Dr. Josh Nowak and Dr. Paul Lukacs, both with the University of Montana, worked with FWP to construct an interactive model that describes how harvest affects mountain lion populations. This model, and the web-based interface they built, will allow FWP to make better lion management decisions going forward.

FWP research scientist Dr. Kelly Proffitt developed innovative field and statistical methods to estimate local lion abundance and to extrapolate those estimates more broadly. Dr. Proffitt's work, and good advice, made this strategy possible.

FWP Game Management Bureau Chief John Vore patiently guided this strategy from its inception. His council and critical reviews vastly improved this document.

Justin Gude, FWP's Wildlife Research Chief, effectively advocated for and helped implement many of the projects that developed core components of this strategy. It would not have been possible without his vision and support.

FWP's Mike Thompson helped make clear that this strategy is intended to conserve Montana's mountain lions, not simply manage them. We sincerely appreciate both his perspective and eloquence.

Many FWP biologists and managers reviewed earlier drafts of this strategy and it was much improved by those efforts. Julie Cunningham, Adam Grove, Jessy Coltrane, Heather Harris, Elizabeth Bradley, Howard Burt, Ben Jimenez, James Jonkel, Jay Newell, Scott Eggeman, Justin Gude, Kelly Proffitt, Nick DeCesare, and Brent Lonner contributed and/or compiled particularly thorough and valuable comment.

Members of the Montana State Houndsmen Association, Northwest Houndsmen Association, Ravalli Co. Fish and Wildlife Association, unaffiliated hound handlers, and others with a stake in lion management provided important input during the development of this draft. Their continued engagement as the strategy is finalized and implemented will be critical.



Mountain lion hunting in snow, D. Neils

CHAPTER 1

MOUNTAIN LIONS IN MONTANA

Mountain lions were historically found in most of Montana except on its open plains and prairies (Young & Goldman 1946). Like other predators, Montana mountain lions had a bounty placed on them from 1879 to 1962. The number of bounties paid declined from a high of 177 in 1908 (at \$8) to fewer than 5 per year by 1925 (at \$25; \$350 in 2016 dollars). At least 1,562 lion bounties were paid between 1900 and 1930 (Riley 1998). Mountain lions were nearly extirpated from the state by 1930 due to widespread persecution and the severe depletion of their ungulate prey.

Mountain lions began to recover in core Montana habitats during the 1950s as deer and elk numbers increased. Lions were designated as a predator from 1963 until 1971 when the state legislature reclassified the species as a game animal and transferred their management to the Fish and Game Commission.

Martin Bright and Ed Lord, Bitterroot Valley, 1890.



Lions expanded their range, and legal harvest increased, over the next 20 years (Figure 1, Table 1). In western Montana during the mid- to late-1990s the number of public lion sightings grew, human-lion conflicts became increasingly common, and harvest quotas filled quickly.

After the severe winter of 1996-97 caused white-tailed deer herds in west-central and northwest Montana to decline by as much as 50% (Montana Fish, Wildlife and Parks 2006), human-lion conflicts (including several nonfatal attacks)

Figure 1. Montana statewide mountain lion harvest, 1971 – 2016.

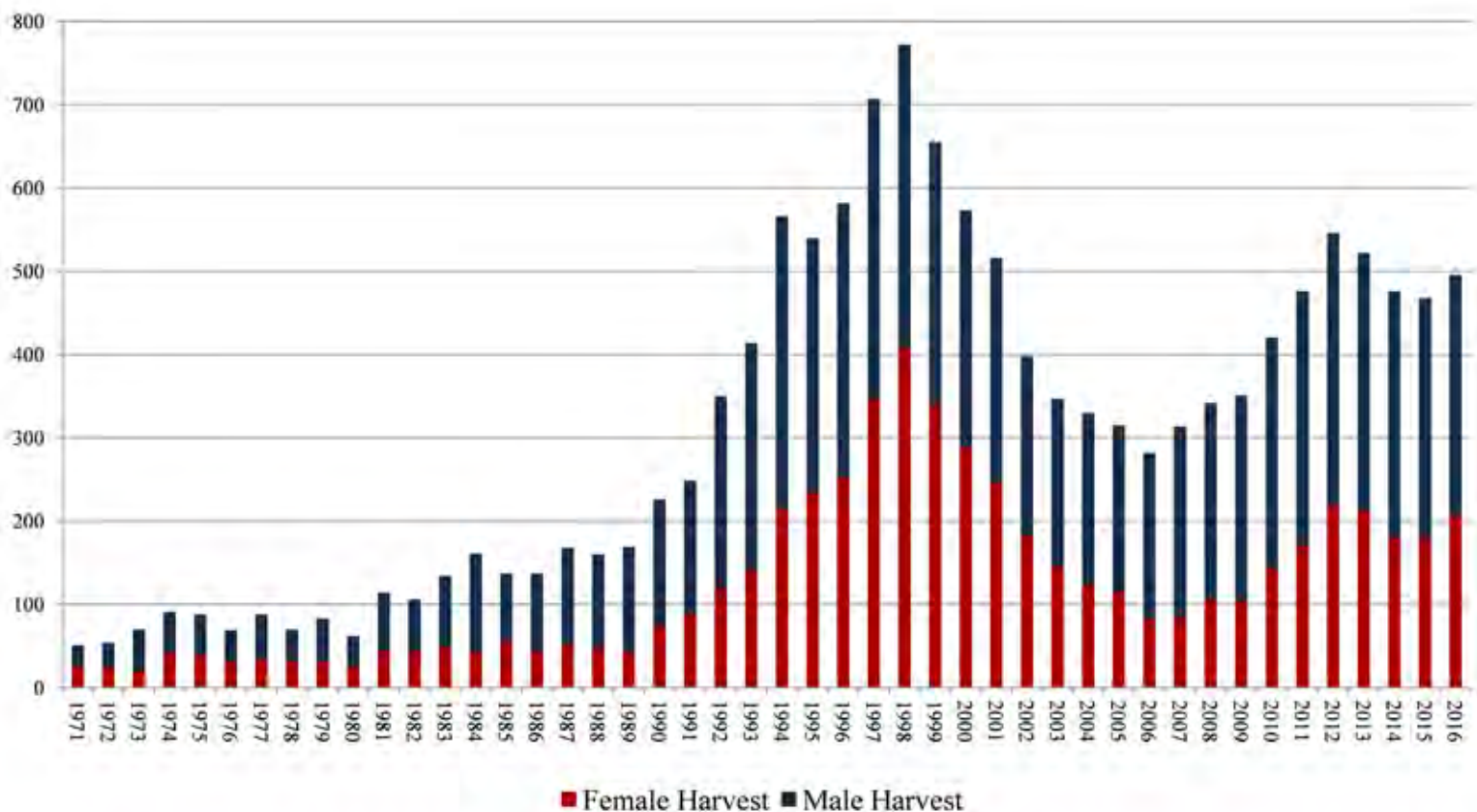


Figure 2. Distribution of Montana mountain lion harvest, 1988 – 2015 (unshaded counties have had no harvests).

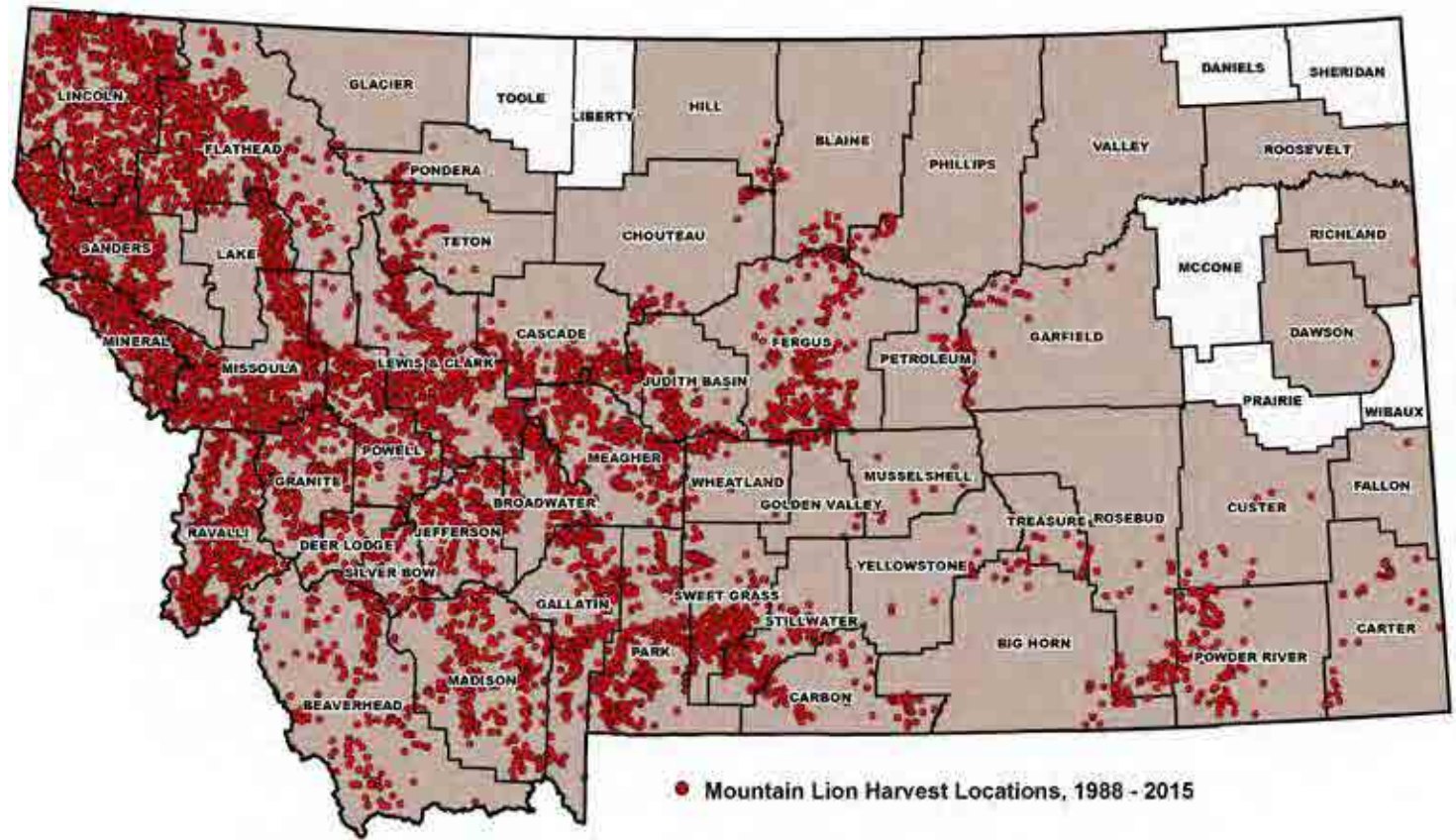


Table 1. Montana statewide mountain lion harvest, 1971 – 2016.

License Year	Statewide			
	F	M	Unk	Tot.
1971	26	25	0	51
1972	24	30	0	54
1973	19	51	2	72
1974	43	48	1	92
1975	40	48	0	88
1976	31	38	1	70
1977	35	53	0	88
1978	32	38	1	71
1979	32	51	0	83
1980	25	37	0	62
1981	45	69	0	114
1982	45	61	1	107
1983	49	85	2	134 ¹
1984	43	118	4	161 ¹
1985	56	81	6	137 ¹
1986	44	93	4	137 ¹
1987	50	118	2	168 ¹
1988	48	112	1	160
1989	43	126	0	169
1990	74	152	0	226
1991	88	161	0	249 ¹
1992	119	231	1	350
1993	141	273	0	414 ¹

1994	214	352	0	566 ¹
1995	233	307	0	540
1996	253	329	0	582
1997	347	360	0	707
1998	409	363	3	772
1999	339	316	0	655
2000	289	284	1	573
2001	246	270	0	516
2002	183	215	0	398
2003	146	201	0	347
2004	123	207	0	330
2005	116	199	3	315
2006	83	199	0	282
2007	84	230	0	314
2008	106	236	0	342
2009	104	247	0	351
2010	143	278	0	421
2011	171	305	0	476
2012	220	326	0	546
2013	213	309	0	522
2014	180	296	0	476
2015	181	287	0	468
2016	207	288	0	495

¹ Statewide totals differ from the Regions' sum because some harvest was reported as "unknown Region"

spiked. Managers were pressed to maintain historically high lion quotas in FWP Regions 1 and 2 because of concerns about public safety and to aid struggling prey populations. Lion harvest also reached record high levels during the late 1990s in Fish, Wildlife & Parks (FWP) Regions 3, 4, and 5.

By the early 2000s, many hound handlers believed that lion densities had significantly declined—an observation supported by ongoing FWP research in the Garnet Mountains. In response, the Fish and Wildlife Commission restricted the harvest of female lions during that decade in much of the state. By 2006, the Garnet Mountains research population had recovered to near 1990s densities (Robinson et al. 2014). Lions became increasingly common in eastern Montana FWP Regions 6 and 7 during the same period.

Mountain lions are now present in all suitable Montana habitats and continue to reoccupy neighboring states to the east. Between 1990 – 2016, an average of 450 lions were taken by licensed Montana hunters each year. Lions have been legally harvested in 49 of the state's 56 counties (Figure 2).

Harvest can be the most important factor affecting population size and growth where harvest occurs

Montana likely includes some of the most productive mountain lion habitat in North America. Although directly comparing lion densities across research projects and study areas is complicated (because of differences in field methods, inclusion of different sex-age classes in estimates, and the use of different areas over which density is calculated), reported North American lion densities generally range from 1 to 4 lions per 100 km² (37 mile²; Hornocker & Negri 2009). In western Montana, researchers using DNA based detection methods have recently documented mountain lion densities exceeding 5 lions per 100 km² (Russell et al. 2012, Robinson et al. 2014, Proffitt et al. 2015).

GENETIC CONNECTIVITY

Mountain lion populations across the central Rocky Mountain west are genetically well connected. When wildlife populations are small and isolated, individuals can become more genetically similar over time. Although male lions are more frequent long-range dispersers (Logan & Sweanor 2001), Biek et al. (2006a) found that in Montana and Wyoming, neither male nor female resident lions shared more genes than expected by chance. Thus, frequent introduction of new genes by immigrating males is likely sufficient to maintain genetic diversity in females despite their lower dispersal rates and distances (Goudet et al. 2002).

Similarly, Anderson et al. (2004) found that there is ample gene flow between mountain lion populations in Wyoming and Colorado despite their being separated by large areas of relatively poor habitat. Even small and geographically isolated lion populations in North and South Dakota have maintained genetic diversity over time (Juarez et al. 2016).

In Montana, researchers genetically analyzed the fast-evolving feline immunodeficiency virus that commonly infects wild mountain lions. Although the study's 352 samples were collected as far as 1,000 km apart, there was no evidence of genetic sub-structuring, genetic drift, or barriers to gene flow within Montana populations (Biek et al. 2006b).

MOUNTAIN LION DISEASE, PARASITES, AND HUMAN HEALTH RISK

Mountain lions carry few communicable diseases that potentially threaten humans but certain precautions should still be taken when handling both live animals and carcasses. Fifty-four percent of lions sampled in Montana between 1971 and 1989 tested positive for the *Trichinella* roundworm. All harvested lions should be treated as if they are infected because a negative lab test does not mean *Trichinella* is not present. This parasite is transmissible to humans and pets if they consume undercooked infected mountain lion meat. Although mountain lion hunters are not required by Montana law to retain a harvested lion's meat (MCA 87-6-205), many hunters do. *Trichinella* infected lion meat that has been cooked to at least 165 degrees Fahrenheit is safe for human consumption (Western Wildlife Disease Workshop 2009).

Precautions protecting against the ingestion of other rare, but potentially fatal, air or blood-borne pathogens (i.e. pneumonic plague) should also be taken when handling a harvested lion carcass or one encountered in the field (Wong 2009). Pathogen infections or disease epizootics are not known to limit wild mountain lion populations in Montana.

EFFECTS OF HUNTER HARVEST

Mountain lion reproduction (age at first parturition, maternity, interbirth interval, litter size) and annual non-harvest mortality rates are remarkably consistent across western North American populations. Reproduction and non-harvest survival are also generally unaffected by hunter harvest. However, harvest can be additive to other forms of mortality and is often the most important factor affecting population size and growth in areas where harvest occurs. Lion populations are particularly sensitive to changes in adult female harvest rate (Anderson &



Mountain lion feeding on deer kill, D. Neils

Lindzey 2005, Stoner et al. 2006, Robinson et al. 2008, Cooley et al. 2009, Robinson et al. 2014).

Local mountain lion populations that are reduced by harvest can recover rapidly. Populations that are below prey limited densities can increase up to 30% annually when harvest (especially of females) declines and lions from other areas are able to immigrate (Ross & Jalkotzy 1992, Sweanor et al. 2000, Jenks 2011, Clark et al. 2014a). For example, in Utah, mountain lion densities that were reduced >60% over a 6-year period recovered to pretreatment levels after 5 years of reduced hunter harvest (Stoner et al. 2006). In New Mexico, an adult population that was experimentally reduced by >50% fully recovered in 31 months (Logan & Sweanor 2001), and in Wyoming a population that was lowered >40% by heavy harvest recovered in 3 years after harvest was reduced (Anderson & Lindzey 2005).

Montana lion populations are similarly resilient. Lion numbers in the Garnet Mountains declined nearly 50% during a period of heavy harvest but fully recovered within

5 years after the harvest rate was reduced there and in surrounding areas (Robinson et al. 2014).

The influence of dispersal and immigration on mountain lion population growth cannot be overemphasized. Even heavily hunted local populations may fail to decline if immigrants readily replace harvested lions (Cooley et al. 2009). On the other hand, a population (such as the one within the Garnet Mountains study area) may recover more slowly where high harvest rates are applied across a broader landscape.

Harvest can also alter a population's age structure. However, the interpretation of trends in the age of harvested mountain lions may be confounded by immigration, hunter selectivity, harvest regulations, and other factors. Monitoring changes in harvest-age composition can be a useful indication of a population's status in some cases. In general, the proportion of older age-class mountain lions in harvest—especially females—is higher within growing populations (Anderson & Lindzey 2005, Stoner et al. 2006, Wolfe et al. 2015). This index

should only be used when monitored over a period of 3 or more years (Anderson 2003), and after considering other factors (i.e. immigration and harvest) that may be influencing age-at-harvest.

Within a lightly hunted lion population in western Montana's Bitterroot Mountains, 60% of independent aged lions were female (Proffitt et al. 2015). This is similar to the proportion of juvenile (13-24 month) females documented during a 10-year study of a lion population in west-central Montana, although the proportion of adult males to females varied widely during the study period depending on the level of hunter harvest (Robinson et al. 2014). Male:female ratios of 1:2 to 1:3 were commonly reported in other hunted populations (Hornocker & Negri 2009).

MOUNTAIN LION-PREY INTERACTIONS

The relationship between mountain lion predation and their prey populations is complex. This is especially true in Montana where lions often occupy multi-predator/ multi-prey species systems. Mountain lions are the most influential ungulate carnivore across much of the state,

especially where grizzly bears and wolves are absent or recovering. Therefore, wildlife managers must carefully consider the potential effects of mountain lion predation on prey populations when developing management prescriptions for both.

Mountain lions are opportunistic and adaptable foragers that prey or scavenge on a variety of species (Bauer et al. 2005, Murphy & Ruth 2011). In Montana, lions are obligate ungulate predators primarily preying on deer and elk. Mountain lion diet varies across the state depending on available prey, and lions may switch preferred prey seasonally as ungulate newborns become available or ungulate distribution changes (Williams 1992, Murphy 1998, Kunkel et al. 1999, Ruth & Buotte 2007). Mountain lions may also increasingly prey on pets, livestock (Torres et al. 1996), or other wildlife species (Logan & Sweanor 2001) following a significant decline in wild ungulate populations. Where hunter harvest is not an overriding factor, mountain lion densities are ultimately regulated by prey availability (Pierce et al. 2000a, Logan & Sweanor 2001, Stoner et al. 2006).



Mountain lion feeding on elk kill, western Montana, E. Bradley

GENERAL PREDATOR-PREY RELATIONSHIPS

In theory, compensatory predation removes a number of prey animals from a population that would have died anyway from another cause. Additive predation removes prey that would have otherwise survived. Predators regulate prey populations when the rate at which they remove prey changes along with prey population levels. Predation can limit prey population growth if the predation rate is independent of changes to a prey species' abundance—in these cases, predation can depress, rather than stabilize, prey populations.

Predation is more likely to limit a prey population when 1) an alternative and abundant prey species supports high predator densities, 2) prey is below carrying capacity despite weather and habitat that allow adequate survival and recruitment, and 3) there is a high predation rate relative to recruitment.

Predators can limit prey populations when predation is additive to other sources of mortality (i.e. severe weather or starvation). For example, in Idaho, when experimental mountain lion removals immediately increased mule deer fawn and adult survival, the effect of mountain lion predation initially appeared to be additive. However, reducing lion densities did not significantly affect overall deer population growth. In this case, weather and annual changes in forage quality ultimately regulated mule deer numbers — mountain lion predation was, in fact, compensatory over the long term (Bishop et al. 2009, Hurley et al. 2011).

In systems where most prey biomass is composed of a single, fecund, species (e. g. white-tailed or mule deer), predation itself is unlikely to depress prey populations for extended periods. However, when severe weather or other factors decrease populations significantly below habitat carrying capacity, mountain lion predation can delay the prey species' recovery (Ballard et al. 2001, Logan & Sweanor 2001, Pierce et al. 2012).

Where predator populations are sustained at high densities by an abundant prey species, populations of other relatively vulnerable or scarce prey species might decline or remain depressed (Messier 1994, Mills 2007). This

Montana includes some of the most highly productive mountain lion habitat in North America

apparent competition (Holt 1977) has been implicated in declines of mule deer (Robinson et al. 2002, Cooley et al. 2008), bighorn sheep (Logan & Sweanor 2001), mountain caribou (Kinley & Apps 2001) and other species (Sweitzer et al. 1997) due to lion predation.

Winter severity explained most variation in annual white-tailed deer recruitment in northwest Montana. There, when harsh winter weather depressed reproduction and survival of hunted deer, predation (primarily by lions) became additive to other forms of mortality and exacerbated population declines (Montana Fish, Wildlife & Parks 2006).

Mountain lion kill rates vary by location and ecological system, but are generally reported as 1 kill per 7 days in deer dominated systems and 1 kill per 10 days in systems where elk are also available (Murphy 1998, Anderson & Lindzey 2003, Cooley et al. 2009). Lions tend to kill more frequently in warmer months, when ungulate newborns are available, and when competition with or rates of displacement by other predators is high.

Predation rates also vary depending on a mountain lion's age, sex, and reproductive status. Adults kill prey more frequently than younger lions. While adult females with dependent kittens exhibit the highest kill rate of any lion age/sex class, adult males kill a greater prey biomass on an annual basis (Nowak 1999, Buotte et al. 2008, Clark et al. 2014b). In Alberta, the annual live weight biomass of prey killed by mountain lions averaged 3,180 lbs. for subadult females, 4,520 lbs. for subadult males, 10,380 lbs for adult males, 5,340 lbs. for adult females, 6,160 lbs. for females with kittens < 6 months, and 9,440 lbs. for females with kittens > 6 months (Knopff et al. 2010).

Deer are the most common mountain lion prey species in Montana. In northwest Montana's Salish Mountains, lions were the most common predator of radio marked white-tailed deer (Montana Fish, Wildlife & Parks 2006). Similarly, 87% of lion kills documented in Montana's North Fork of the Flathead River drainage were white-tailed deer, where elk, mule deer, and moose were also present in lower numbers (Kunkel 1999).

However, in northeast Washington mountain lions disproportionately selected for mule deer even though white-tailed deer were more abundant (Cooley et al. 2008). The same was true in south-central British Columbia where mountain lion predation was implicated in mule deer declines (Robinson et al. 2002). Where both elk and mule deer were present, female mountain lions were more likely to kill mule deer, whereas male mountain lions killed elk more frequently (Anderson & Lindzey 2003). Female lions may also select for calf elk and younger or older mule deer (Nowak 1999, Pierce et al. 2000b).

Although most researchers found that mountain lions selected for male elk and deer (Hornocker 1970, Kunkel et al. 1999, Anderson & Lindsey 2003, Atwood et al. 2007, Blake & Gese 2016), others did not (Clark et al. 2014b). Adult male elk and deer are more often killed by mountain lions during and after the rut while most adult female elk and deer are killed before giving birth in late spring (Knopff et al. 2010, Clark et al. 2014b).

The annual risk of mountain lion predation to adult female elk across the western U. S. (Brodie et al. 2013) and in Montana (Hamlin & Cunningham 2009, Eacker et al. 2016) is low compared to other sources of mortality, including hunting. This is important because, in certain situations, adult female survival explains more of the variation in overall elk population growth rate than elk calf survival (Eacker et al. 2017).

Lions are often one of the primary predators of elk during their first year of life. The rate of calf predation by mountain lions increases with overall lion density, decreases when other predators (especially wolves and grizzly bears) are abundant, and increases when herds are nutritionally limited and concentrated during winter (Kortello et al.

2007, White et al. 2010, Griffin et al. 2011, Johnson et al. 2013, Eacker et al. 2016).

Elk calf survival and recruitment can influence a herd's growth and, subsequently, the number of elk available for hunter harvest (Raithel et al. 2007). Although calf survival does not appear to be strongly influenced by the physical (nutritional) condition of cow elk, poor forage on summer range can reduce a herd's pregnancy rate (Reardon 2005, Proffitt et al. 2016). Depressed calf production may then predispose that herd to the effects of mountain lion predation and exacerbate population declines (Clark et al. 2014b, Eacker et al. 2016).

Unlike bears, which primarily kill elk calves during the first 30 days of life, mountain lions prey on them throughout the year. Mountain lions were responsible for 70% of elk calf mortalities in northeastern Oregon where there are black bears but no wolves or grizzly bears (Reardon 2005). On a study site in western Montana where there were wolves

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and black bears (but no grizzlies), Eacker et al. (2016) found that 60% of known cause calf mortality was by mountain lions and male calves were 50% more likely to die than females.

Elk migration to areas of greater or lesser exposure to predation can also affect calf survival (Hebblewhite & Merrill 2007). For example, in Montana, seasonal migration of elk to ranges dominated by agriculture (where predators were rare) lowered predation risk while concentration on winter ranges increased it (Eacker et al. 2016).

The density of mountain lions in an area may itself be enough to explain predation's influence on elk calf recruitment. Where mountain lion densities are high they are capable of limiting elk recruitment enough that annual variation in lion densities explains most of the variation in annual calf survival (Johnson et al. 2013). In Montana's Bitterroot Range, where lion densities were relatively high, grizzlies absent, and wolves were present, lion predation accounted for most calf elk mortality (Eacker et al. 2016). In contrast, on Yellowstone's Northern Range and in Montana's Garnet Mountains where mountain lion density was relatively low, the rate of lion predation of elk calves was also low (Raithel 2005, Barber-Meyer et al. 2008).

The effect of mountain lion predation on bighorn sheep populations varies, but is most likely to limit population growth where herds are small and isolated (Ruth & Murphy 2011). The rate of predation can simply be a function of the overall mountain lion density within a sheep herd's range. However, in some cases bighorn sheep predation is a specialized behavior adopted by individual lions (Logan & Sweanor 2001).

Lion predation of bighorn sheep can increase where lion densities are buoyed by an abundant primary prey species or when a decline in the primary prey causes lions to switch to bighorn sheep (Kamler et al. 2002). Targeted removals of individual lions that specialize on sheep, or sustained efforts to suppress lion density in core bighorn sheep habitat, can effectively reduce the impact of lion predation on small, isolated herds (Ernest et al. 2002, McKinney et al. 2006).

MANAGEMENT CONSIDERATIONS

- Weather and forage availability are more likely than predation to explain chronically low ungulate populations. The influence of these potentially limiting factors should be evaluated before predation is implicated.
- Mountain lion predation is more likely to limit a prey population's growth if that population is below habitat carrying capacity and the lion predation rate is high. For instance, if a severe winter causes a significant deer die off but overall forage availability remains unchanged, mountain lion predation may slow the herd's recovery. In this case, preemptively and temporarily reducing mountain lion density through hunting could increase the deer population's growth rate while potentially reducing human-mountain lion conflicts.
- Mountain lion predation can limit a prey population where lions are the most abundant predator, lion density is supported by another abundant prey species, and the prey population is below its habitat's carrying capacity. In this case, managers should consider whether apparent competition is the ultimate cause of a secondary prey species' (e.g. mule deer or bighorn sheep) decline. Where abundant primary prey support dense mountain lion prey populations, sympatric populations of more vulnerable secondary prey may be disproportionately affected.
- The effect of predation on elk survival increases with the diversity of the predator community – the addition of grizzlies and wolves to a system with established mountain lions and black bears can change the influence of predation on ungulate prey.
- Mountain lion predation is unlikely to limit adult elk survival but can significantly reduce elk calf recruitment where lions are the predominant predator, lions occur at high densities, and where weather and/or habitat quality has reduced elk pregnancy rates.

- Targeted removal of individual lions that specialize on bighorn sheep, or sustained efforts to suppress lion density in core bighorn sheep habitat, may reduce the influence of mountain lion predation on the growth of small and isolated sheep herds.

- Attempts to locally reduce mountain lion populations will likely be confounded by the effect of immigration. Harvest treatments intended to reduce lion density should be sustained, broad scale, or both.

- Any proposal to reduce mountain lion density to benefit prey should be explicitly developed in an adaptive management framework. Managers should make measurable predictions about the outcome of a mountain lion harvest prescription (on lion and prey populations), monitor and evaluate the treatment's effects after a predetermined period, and be prepared to modify management based on that evaluation.



CHAPTER 2

MOUNTAIN LION-HUMAN CONFLICT

Montana law grants FWP and the Fish and Wildlife Commission broad authority and discretion to manage wildlife. However, the legislature provided specific direction to the Department regarding the management of large predators, including mountain lions, that clearly emphasizes the protection of people and property over sport hunting of either mountain lions or their prey:

87-1-217. Policy For Management Of Large Predators - Legislative Intent

(1) In managing large predators, the primary goals of the department, in the order of listed priority, are to:

- (a) protect humans, livestock, and pets;
- (b) preserve and enhance the safety of the public during outdoor recreational and livelihood activities; and
- (c) preserve citizens' opportunities to hunt large game species.

A mountain lion becomes a public safety concern when it appears habituated to human activity or development, attacks livestock or pets, or in any way behaves aggressively toward humans. FWP has developed specific Mountain Lion Depredation and Control Guidelines (Appendix 3) which describe and direct the Department's actions following a reported conflict between a human and a mountain lion.

The types and rate of conflicts between mountain lions, humans, and livestock are affected by mountain lion abundance, location, presence of attractants, and individual lion behavior. FWP will rely on the expertise and judgment of its field staff and agents (i.e. USDA Wildlife Services

personnel) to investigate reported conflicts and determine the most appropriate response to a given situation. FWP's principal consideration when making these decisions will be reducing future risk of harm to people and/or property.

FWP will respond to human-lion conflicts in a manner that protects public safety, reduces property loss, and increases public tolerance for mountain lions. FWP will enforce state law (MCA 87-6-216) and local ordinances that prohibit certain wildlife attractants and will work to remove or contain attractants when a lion localizes in a problematic location. FWP will use hunter harvest when and where appropriate to manage lion density in high conflict areas. Finally, FWP may use targeted hazing or removal of individual offending mountain lions to mitigate ongoing or potential risk to people, pets, or livestock.

FWP will implement and facilitate programs that help livestock and pet owners protect their animals such as those currently offered by FWP, the Montana Livestock Loss Board, and nongovernmental organizations. FWP will continue to emphasize the importance of preventative efforts intended to reduce the risk of livestock loss in memoranda of understanding entered into with USDA Wildlife Services.

FWP does not maintain facilities to rear, hold, or rehabilitate mountain lions. Mountain lions that are injured so severely that they could pose a risk to humans or those that are unlikely to survive without intervention will be euthanized.

Montana hunting regulations prohibit the taking of a female lion accompanied by spotted kittens. However, in the unfortunate circumstance that a lactating female lion is mistakenly taken by a hunter or is otherwise killed, FWP staff may attempt to find the kittens and humanely euthanize them, unless an approved zoo or other facility is prepared to permanently assume responsibility for their care.

Capturing and relocating habituated, aggressive, or depredating mountain lions is not an effective conflict management response (Hornocker & Negri 2009). Mountain lions that are captured and translocated are

Table 2. Recorded non-harvest human-caused lion mortality, 1989 – 2015.

Year ²	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
FWP, Private Party, & Other Removals ^{1,3}	10	14	17	20	23	15	9	23	53	19	21		3			5		8	22	32	24	23	39	27	35	21	16	41	9
Public Safety																			4	10	9	9	15	9	10	6	1	16	2
Depredation or Protection of Pets			1	2						3	2								5	4	5	2	6	5	2	6	5	10	2
Depredation or Protection of Livestock	1			1						6	1								5	8	4	6	15	6	14	8	4	2	3
Self Defense																			4	10	4	2	2	3	7	1	5	10	1
Other/Unknown	9	14	16	17	23	15	9	23	53	10	18		3			5		8	4		2	4	1	4	2	0	1	3	1
% Female (of those known)																			50%	50%	55%	41%	47%	36%	64%	42%	44%	32%	67%
Livestock Depredation USDAWS/APHIS⁴	2	3	3	4	7	3	9	8	13	21	16	18	9	12	7	3	7	5	8	13	12	14	17	19	15	12	12	3	4
Illegal	2	2	2	4	9	5	11	6	18	7	5	0	2	0	1	0	0	2	4	2	5	6	7	5	9	7	3	3	7
Incidental Trapping⁵	2	2	2	4	5	9	7	4	6	4	2	0	1	3	3	1	1	1	10	9	9	8	8	16	16	12	13	6	4
Snare																			7	2	7	4	6	7	2	6	8	5	3
Foothold																			2	7	2	4	2	9	13	6	5	1	1
Conibear																								1					
Unknown	2	2	2	4	5	9	7	4	6	4	2	0	1	3	3	1	1	1	1										
% Female (of those known)																			60%	78%	63%	50%	88%	75%	50%	89%	73%	67%	50%
Total	16	21	24	32	44	32	36	41	90	51	44	18	15	15	11	9	8	16	44	56	50	51	71	67	75	52	44	53	24

¹ Roadkill incidents are inconsistently reported in MT and are not included in this table

² FWP License Year, 8/1 - 7-31, unless otherwise noted

³ Data from License Year 2000 to 2006 are incomplete and should be considered minimums

⁴ Source: USDAWS/APHIS. Data recorded by Federal Fiscal Year, 10/1 - 9/30

⁵ Data prior to 2007 are incomplete and should be considered minimums

unlikely to survive, often return (or attempt to return) to their capture location (Ross & Jalkotzy 1995, Ruth et al. 1998), and can cause future conflicts (Belden et al. 1991, Williams 1992). For these reasons, mountain lions shall not be captured and translocated under any circumstances. Mountain lions involved in any form of conflict will be dealt with per the Mountain Lion Depredation and Control Guidelines (Appendix 3).

Statewide records of reported mountain lion-human conflicts are historically incomplete (Table 2). In 2007, FWP created a centralized database to track harvest and most reported human caused non-harvest lion mortality. The same database has since been updated to also archive records of animals, including mountain lions, that are incidentally caught by recreational trappers and successfully released. This system will also be used to record all reported human-mountain lion conflict incidents, and their resolution. These more complete records will allow FWP to identify sources of and trends in mountain lion conflicts so that they can be more effectively addressed.

FWP actively educates the public about safely living with mountain lions, avoiding human-lion conflicts, and reducing the risk of property loss. The agency will continue to employ biologists and technicians who specialize in educating the public about, and responding to, human-predator conflicts. FWP will also maintain and periodically update educational materials and programs that teach the public about lion biology and behavior, ways to avoid and diffuse conflicts, strategies and methods to protect pets and livestock, and how to responsibly live and recreate in mountain lion habitat.

LIVESTOCK DEPREDATION

Mountain lions were confirmed to have killed an average of 136 head of livestock in Montana annually between 2006 and 2015 (USDA Wildlife Services, Table 3). However, only a fraction of actual livestock losses to mountain lions are found and formally documented (Jenks 2011). In Montana, male mountain lions were more likely than females to be removed in response to livestock depredation and most depredating lions were younger adults (1-4 years old) in good physical condition. The peak time period for both



Mountain lion killed following domestic sheep depredation, FWP

The rate of livestock loss may be partly a function of an area's mountain lion density

livestock and human conflict incidents was between June and November (Riley & Aune 1997).

Mountain lions most commonly kill livestock that weigh less than 300 pounds. Although full grown cattle and horses are occasionally killed, mountain lions mainly kill calves/foals and yearlings. Losses are highest where calves or foals are born in lion habitat (Cougar Management Guidelines Working Group 2005). Small livestock (sheep, goats, and fowl) are the domestic species most vulnerable to mountain lion predation in Montana (Figure 3). Livestock depredation predominately occurred in central Montana where sheep production is more common and in western valleys where there is a greater number of hobby livestock.

Montana law (MCA 87-6-106) allows private citizens to legally kill any mountain lion that is attacking, killing, or threatening to kill a person or livestock. Private citizens may also legally kill a mountain lion that is in the act of

attacking or killing a domestic dog. A person who kills a mountain lion under this statute must notify a FWP employee within 72 hours and surrender the carcass. FWP may issue a permit to kill a mountain lion to a landowner which allows them to take a mountain lion, within a specific area and time period, that is threatening to or suspected of killing livestock.

FWP annually contracts USDA Wildlife Services to respond to reported depredation of commercial livestock. When a loss is reported, a Wildlife Services agent conducts a field investigation to determine whether the loss is a “probable” or “confirmed” depredation and what predator species is responsible. Based on that investigation, and whether predation is determined to be the likely cause, the agent decides what response is most likely to prevent further livestock losses. This may, but does not always, include attempting to lethally remove the offending individual predator. The annual FWP contract requires Wildlife Services to provide records of all reported incidents (including lethal removals) to FWP at the end of the federal fiscal year (October 1).

Montana's Livestock Loss Board may reimburse stock growers for up to fair market value of probable or confirmed livestock losses due to mountain lion predation. The Board may also issue grants supporting efforts to reduce or mitigate the risk of mountain lion depredation of livestock (MCA 2-15-3110 through 3113).

Table 3. Domestic livestock reported to and/or verified by USDA APHIS Wildlife Services as injured or killed by mountain lions, federal fiscal years 2006 – 2015.

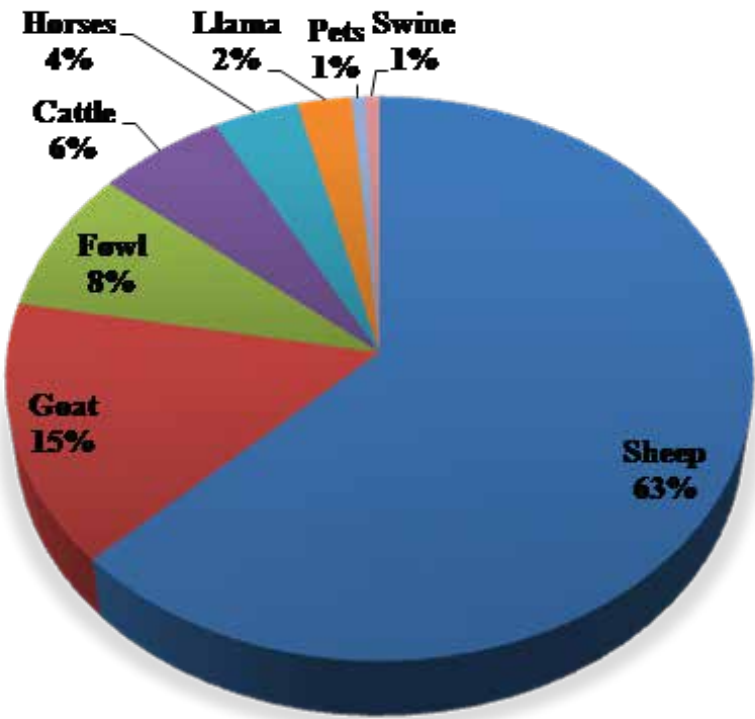
	2006		2007		2008		2009		2010	
	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed
Cattle		2		10		2		18	2	8
Horses	6	2	8	8	1	2	5	2		3
Goat		2		16	2	20		23	1	22
Llama		1				3		2		4
Sheep		23	1	26	4	115	2	157	2	128
Swine										
Fowl				7		8		49		25
Total	6	30	9	67	7	150	7	251	5	190

The rate of livestock loss may be partly a function of an area’s mountain lion density. In Oregon, Hiller et al. (2015) found that as mountain lion population density increased, so did the number of mountain lions killed as a result of livestock predation. This relationship was especially strong at higher mountain lion densities. Livestock conflicts either decreased when mountain lion hunter harvest increased or remained constant where mountain lion densities were relatively low.

There is evidence that a similar relationship between lion abundance and livestock conflict may exist in Montana. There is a correlation ($r^2 = 0.66$) between the number of mountain lions that Wildlife Services agents annually killed in response to livestock depredations and the statewide mountain lion population estimated by FWP’s Integrated Population Model (1990 – 2013; Chapter 6; Figure 4). Hunter harvest that maintains mountain lions at moderate densities may be a useful tool in managing livestock predation in some circumstances (Hiller et al. 2015).

Otherwise, there are few practical measures that can completely prevent the loss of commercial livestock to mountain lions. Delaying turnout of cow-calf pairs into remote lion occupied pastures may reduce calf loss. Although guard dogs can reduce livestock losses to canine predators, guard dogs do not effectively protect against mountain lion depredation (Jenks 2011). If economically feasible, switching from raising small livestock (i.e. sheep)

Figure 3. Proportion of livestock killed by mountain lions by species, 2006 – 2015.



to less vulnerable species where mountain lions are common may also reduce depredation losses (Lindzey 1987). Owners of hobby livestock can effectively use practices unavailable to commercial producers such as night penning, lights, and clearing brush around paddocks to reduce depredation risk.

2011		2012		2013		2014		2015	
Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed
	3		14		14		2		10
2	2	2	4	2	1	3	1	1	2
	17	3	44		6		11		45
	10		10		5		1		
	67	1	79		162		64		55
					2		2		
	3						24		
2	102	6	151	2	190	3	105	1	112

MOUNTAIN LION-HUMAN INTERACTIONS

Mountain lion attacks on humans in Montana are extremely rare. The only fatal mountain lion attack in modern times was that of a 5-year old boy killed near Evaro, on the Flathead Indian Reservation, in September of 1989. Several nonfatal attacks have also occurred in the state and, like elsewhere, overwhelmingly involved children (Beier 1991). Juvenile and subadult mountain lions are responsible for most human-lion conflicts across the western U. S. (Mattson 2007), including Montana.

Subadult lions of both sexes are also more likely than adults to use urban and exurban residential areas (Kertson et al. 2013). Although in Montana males were more likely than females to take livestock, sex ratios of lions involved in human incidents were not significantly different from 50:50. Human incidents mostly occurred near western intermountain valley communities.

Mountain lions commonly live adjacent to, or travel through, developed areas but most lions travel at night and are rarely seen (Kertson et al. 2013). Individuals that are routinely sighted during daylight hours near homes and people, or those that appear accustomed to human activity and development, have become habituated and are a public safety concern. Individual lion behavior

**Mountain lions
commonly live
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often escalates from natural to habituated to nuisance to dangerous, at which point the lion may begin to kill pets in populated areas and/or to display aggression toward humans (Cougar Management Guidelines Working Group 2005).

If an investigation reveals that a habituated mountain lion has become a nuisance or aggressive, FWP staff should document the behavior, notify area residents of the situation (especially those with children and/or outdoor pets), and immediately attempt to either aversively haze or lethally remove the offending individual.

Field staff should closely follow the approved protocols for responding to human-lion conflicts in the Mountain Lion Predation and Control Guidelines (Appendix 3).

SPECIAL MANAGEMENT AREAS

Montana has designed certain Lion Management Units (LMUs) specifically to encompass urban, suburban, or agricultural areas where the tolerance for mountain lion presence is low and the potential for human-mountain lion conflict is high. The Commission may designate these LMUs “Special Management Areas” (described by Logan & Sweanor 2001) and either elect to assign an “unlimited” harvest quota (e.g. LMU 170, immediately surrounding Kalispell) or a high annual quota that it is rarely, if ever, met.

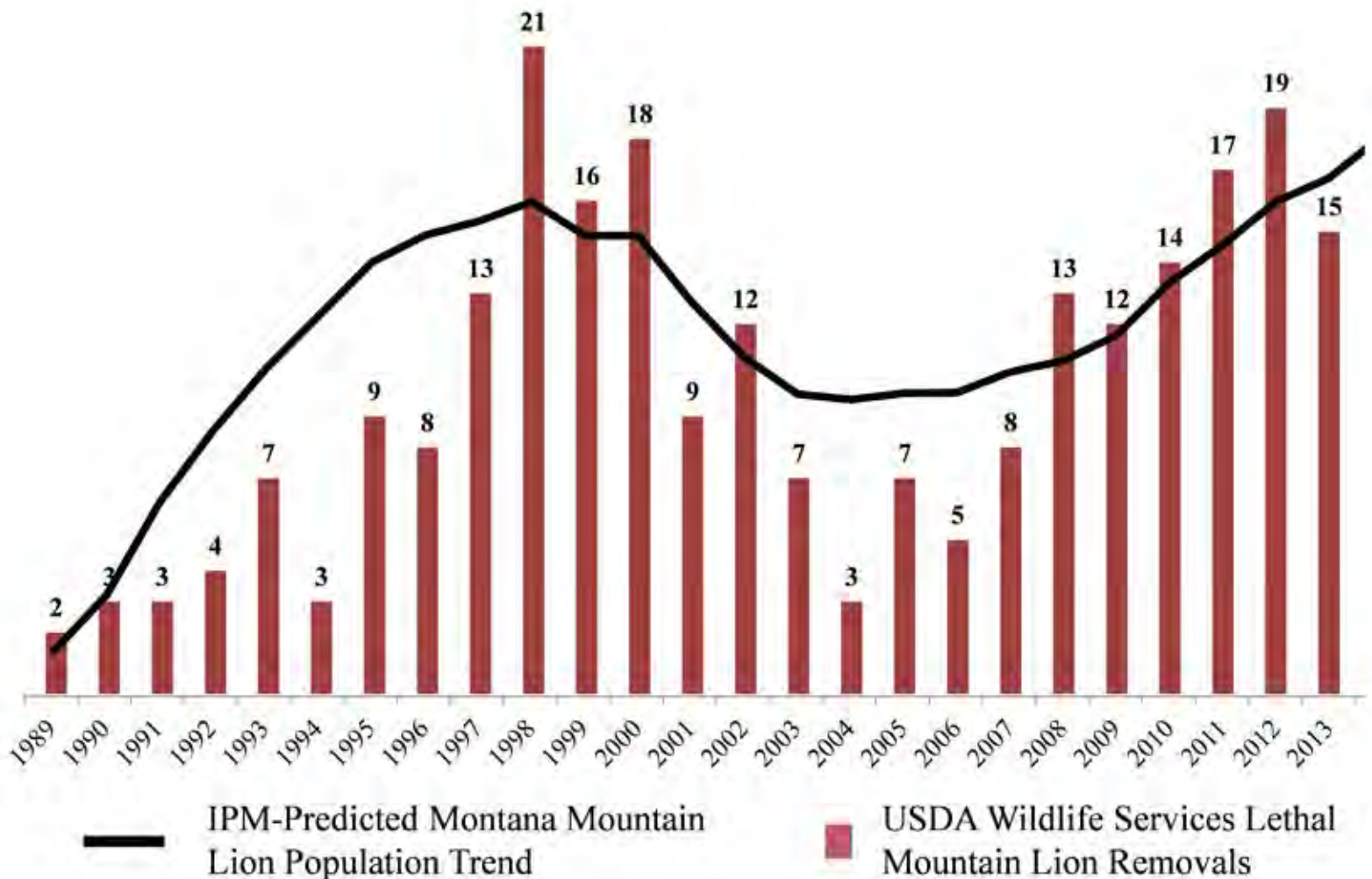
If a Special Management Area contains suitable mountain lion habitat, the management approach may not significantly reduce mountain lion densities because of

rapid immigration into vacated home ranges (Robinson et al. 2008, Cooley et al. 2009). However, specifically designating Special Management Areas can ease social and political concerns (Jenks 2011) and, importantly, ensure that legal hunter harvest remains a management tool throughout the fall and winter hunting seasons.

For example, the Missoula Special Management Area (MSMA), a LMU surrounding the highly developed Missoula Valley, was established in 1994. Relatively high quotas in this LMU are rarely met even though the area contains high-quality lion habitat and General License hunting was allowed for nearly 7 months each year.

The average age of a mountain lion harvested within the MSMA between 2000 and 2015 (3.09 years; n = 421) was slightly lower than that of lions harvested during the same period in the remainder of Region 2 (3.58 years; n = 2319). However, this small difference does not indicate that higher hunter harvest opportunity meaningfully increased the proportion of more conflict prone juveniles in the LMU. Although FWP staff lethally removed several nuisance mountain lions from the MSMA each year, FWP hunting regulations were not publicly perceived as limiting legal hunter harvest during established seasons in this high conflict area.

Figure 4. The relationship between Montana’s modeled mountain lion population trend and annual mountain lion removals by Wildlife Services in response to livestock depredation, 1989 - 2013.



CHAPTER 3

2016 MONTANA MOUNTAIN LION RESOURCE SELECTION FUNCTION

INTRODUCTION

To produce accurate estimates of mountain lion abundance, managers first need to understand what habitat features are important to lions and how that habitat is distributed across the state. Accurate spatial models that describe mountain lion habitat use can also be used to monitor lion populations over time. While producing reliable maps of relative mountain lion habitat quality and landscape linkages is critically important (Cougar Management Guidelines Working Group 2005, Jenks 2011) they have previously been difficult to produce and validate.

Managers need accurate spatial data that depict mountain lions' use of their habitat in order to predict lion abundance and to monitor their populations over time

Montana FWP will use a “resource selection function” (RSF) model to depict and analyze the state’s mountain lion habitat. A RSF is a statistical model that represents the relative probability that an animal will select a particular place or resource (Manly et al. 2002). A RSF is simply a spatial surface of pixels or cells that are each assigned a statistical value based on what we know about a species’ habitat selection. This surface can then be used to mathematically analyze and describe the species’ habitat use at larger scales.

A RSF is often displayed as a map showing the relative likelihood a species will use a particular resource or available habitat. Biologists construct RSFs from field data that describe an animal’s spatial use (such as telemetry relocations collected using radio or GPS collars) and the habitat variables that likely cause the animal to select (or avoid) certain resources or areas. Habitat variables may include vegetation type, canopy closure, elevation, terrain, or other features that affect an animal’s habitat selection.

It’s impossible to quantify all the habitat variables that cause an animal to select a certain location. However, we can often identify a combination of measurable factors that accurately predict the relative likelihood that a species is present in a certain habitat type. If we also have information about a population’s vital rates and population density, we can also estimate how many individuals a larger area likely supports.

A well designed RSF can help biologists better manage wildlife in many important ways. RSFs can describe the kind of habitat where we’d expect to find a certain species, map corridors that are potentially important connections between larger habitat patches, and identify isolated areas of suitable habitat that may support a species, even if the species is not currently there. RSFs help managers identify resources that are important for the conservation of a species or that may be limiting its use of an area. Finally, a RSF allows biologists to make inferences about an animal’s abundance across broad landscapes using monitoring data that provides information on the population’s current density.

FWP will use a statewide mountain lion RSF to:

1. Define distinct mountain lion ecoregions. The RSF surface consists of many small cells, or “pixels”, that are each assigned a value based on the habitat features present within them. The average RSF value of all the pixels within a hunting district or lion management unit generally describes the overall quality of that unit’s lion habitat. FWP used these average values to define large, biologically meaningful, ecoregions within the state where lion habitat is similar in type and

distribution. These ecoregions will be the primary spatial basis of its mountain lion population monitoring program (Chapter 4).

2. Improve population monitoring.

The RSF helped FWP identify representative population Trend Monitoring Areas within the Northwest, West-central, and Southwest ecoregions. The RSF will also be used to guide periodic field sampling within these Monitoring Areas (Chapter 4).

3. Enable FWP to estimate mountain lion abundance.

When the relationship between observed lion abundance and the RSF is known, we can estimate lion abundance within both Trend Monitoring Area(s) and the larger ecoregion. Integrating the RSF with field sampling such as spatial capture-recapture (Chapter 5) makes these monitoring methods more effective. Including a RSF as a covariate in the density estimation model—that is, formally assuming that an animal's activity center is more likely to fall in higher quality habitat—significantly improves the population estimate's biological realism and precision.

MONTANA MOUNTAIN LION RESOURCE SELECTION FUNCTION

Robinson et al. (2015) produced the first comprehensive winter mountain lion resource selection function for the state of Montana. The authors used mountain lion telemetry relocations (both VHF and GPS) from 10 individual mountain lion field research projects conducted throughout Montana and Yellowstone National Park between 1979 and 2012 to train and validate the RSF (Table 4). A significant number of telemetry locations were withheld from the training data for internal model validation. Mountain lion harvest locations (1988 – 2011; generalized to the center of the 640-acre section of harvest) were also used to validate the model. The original manuscript contains a detailed description of how this original RSF was constructed, was tested, and performed.

The most important measure of a RSF's utility is its ability to predict a species' use of available habitat (Boyce et al. 2002). The 2015 RSF model predicted both out-of-sample lion telemetry locations and hunter harvest locations quite well across Montana. Although there was generally excellent agreement between the location of harvested animals and predicted areas of lion habitat use, the 2015 model was most predictive in FWP Regions 1, 2, 4 and 6. In Regions 3, 5, and 7, a higher proportion of animals were harvested in areas that the RSF predicted to be lower quality habitat, compared to other FWP Regions.



Table 4. Field studies and sampling data used to develop the Robinson et al. (2015) and 2016 MT Mountain Lion Resource Selection Function.

Study	Location	Years	N	Telemetry Method	2016 Model Training Locations
Murphy (1983)	Fish Creek	1979–1982	9 (6F, 3M)	VHF	127
Williams (1992)	Sun River	1991–1992	24 (15F, 9M)	VHF	104
Murphy (1998)	Yellowstone National Park	1987–1995	41 (29F, 12M)	VHF	1335
Ruth (2004)	North Fork Flathead	1993–1997	38 (28F, 8M)	VHF	692
Ruth & Buotte (2007)	Yellowstone National Park	1986–2006	39 (21F, 18M)	VHF and GPS	2782
Choate (2009)	National Bison Range	2000–2003	8 (7F, 1M)	VHF	576
Robinson & DeSimone (2011)	Garnet Range	1998–2006	39 (31F, 8M)	VHF and GPS	14,127
Kunkel et al. (2012)	Rocky Boys Reservation	2006–2009	6 (2F, 4M)	GPS	1786
Kunkel et al. (2012)	Fort Belknap Reservation	2008–2010	3 (2F, 1M)	GPS	281
Matchett (2012)	Missouri Breaks	2011–2012	2 (2M)	GPS	785

Table 5. Montana mountain lion winter Resource Selection Functions developed as part of Robinson et al. (2015) and the revised 2016 model.

Covariate	Robinson et al. 2015 Coefficient (SE)	2016 (revised) RSF Coefficient (SE)
South Aspect	0.3181 (0.0274)	0.3716 (0.0249)
High Montane	-1.3883 (0.3093)	-0.4619 (0.2116)
Agriculture	-1.9151 (0.1512)	-1.5664 (0.1115)
Developed	-0.6110 (0.1706)	-1.0656 (0.1642)
Transitional Vegetation	-0.7200 (0.0453)	-1.3047 (0.0417)
Elevation	0.0191 (0.0002)	0.0084 (0.0002)
Elevation ²	-0.000006 (8.67E-08)	-0.000003 (7.13 E-08)
Percent Slope	0.0264 (0.0017)	0.0229 (0.0014)
Percent Slope ²	-0.00015 (1.96E-05)	-0.0001 (1.3E-05)
Distance from forest	-0.0078 (0.0002)	N/A
Canopy	N/A	0.1688 (0.0029)
Canopy ²	N/A	-0.0022 (0.00004)
Constant	-14.9483 (0.2250)	-6.4305 (0.1551)

Figure 5. The 2016 Montana Mountain Lion Resource Selection Function map. Higher values indicate an area is more likely to be used by mountain lions.

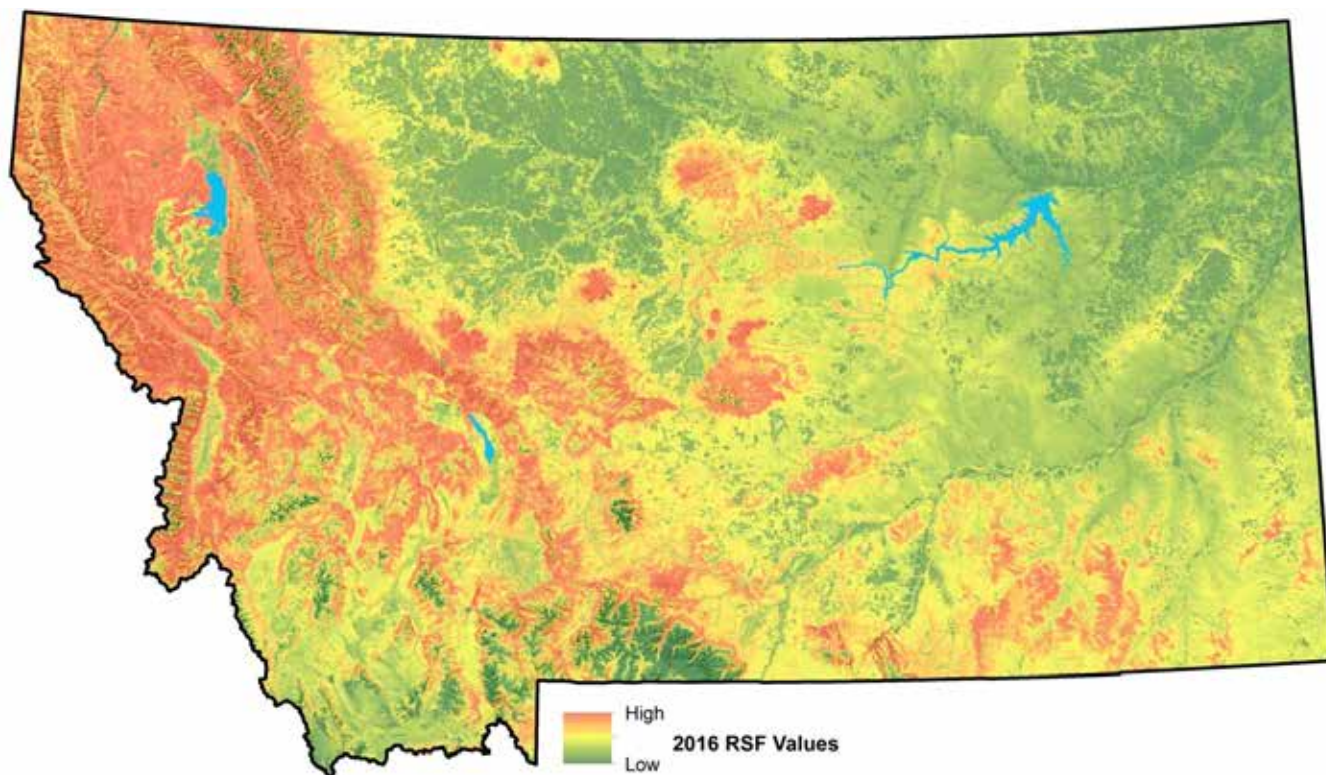


Figure 6. The 2016 Montana Mountain Lion Resource Selection Function map with 22,595 mountain lion telemetry model training points (1979 - 2012) and 10,503 harvest location validation points (1988 - 2015).

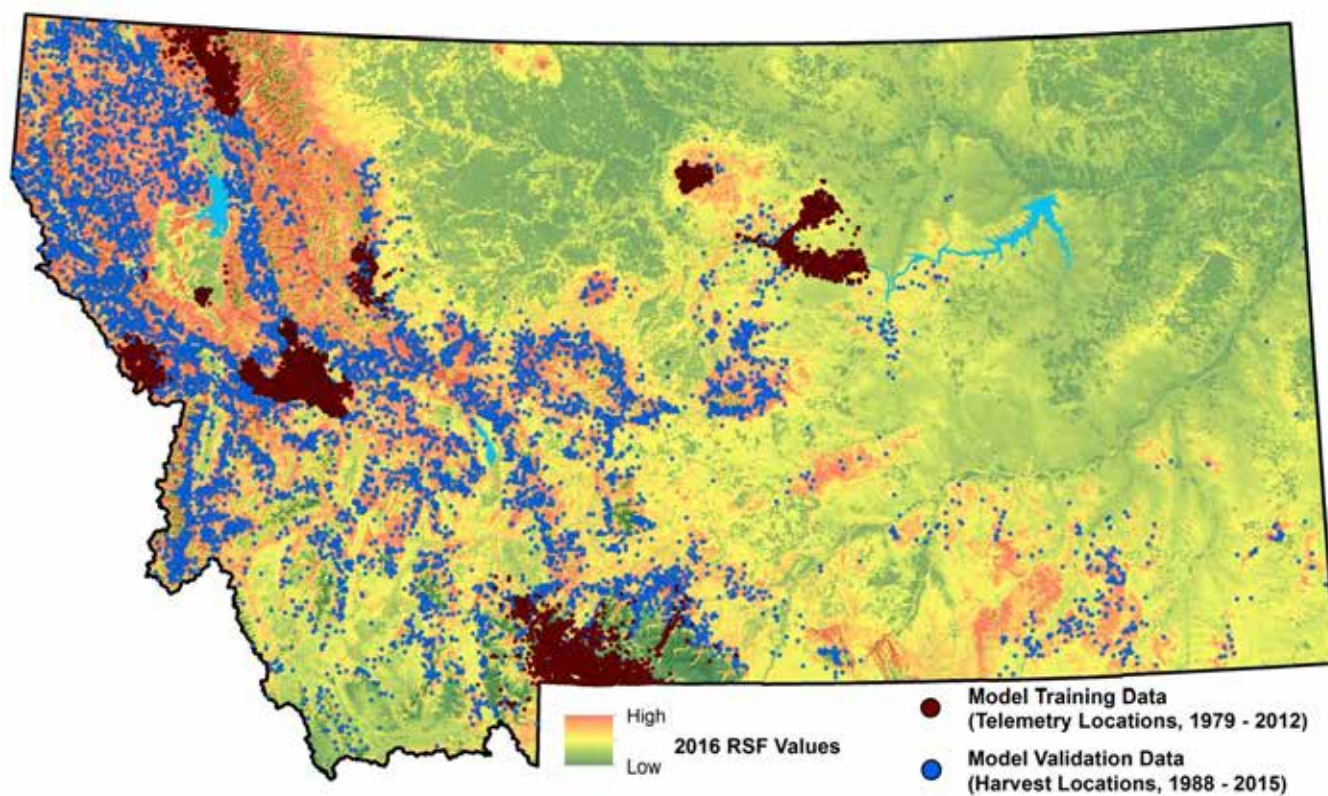
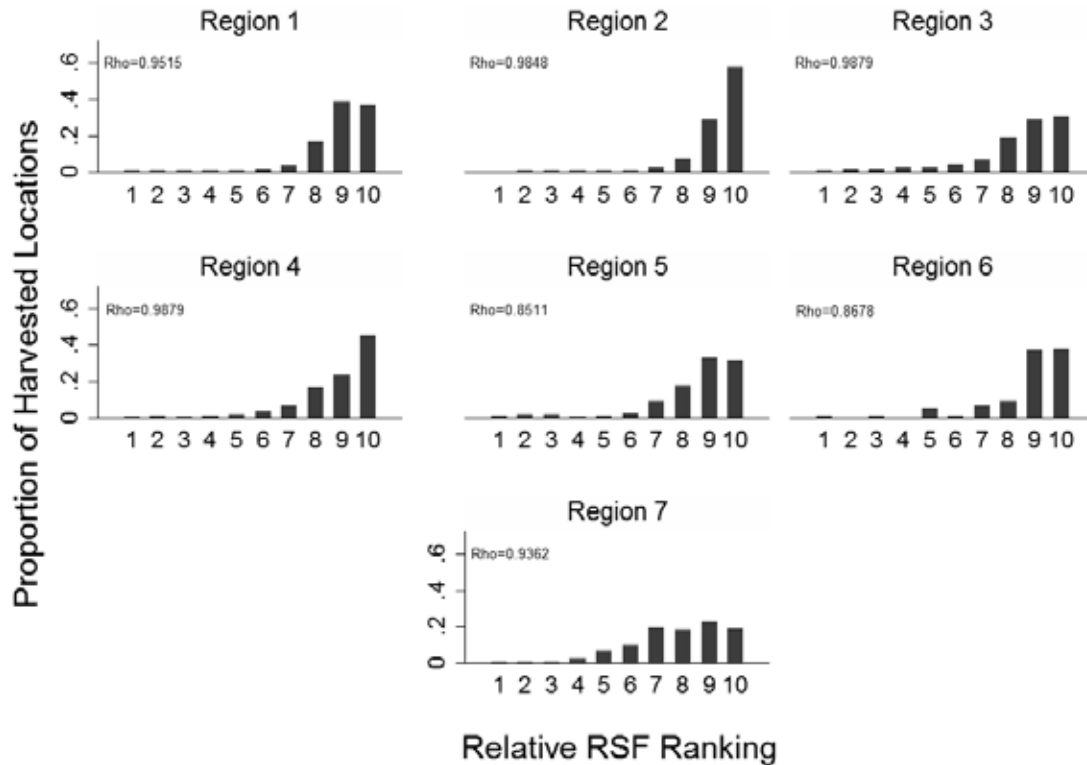


Figure 7. 2016 Montana Mountain Lion Resource Selection Function values and proportion of lion harvest locations per equal-sized bin (bin 1 = lowest quality predicted habitat; bin10 = highest quality habitat) by FWP administrative Region.



2016 MONTANA MOUNTAIN LION RSF

In 2016, FWP and Dr. Robinson worked together to improve the mountain lion RSF's ability to predict lion habitat selection statewide — specifically, in southern and eastern Montana. The same methods used by Robinson et al. (2015) were used to develop a revised version of the RSF, with three important refinements:

1. All available mountain lion telemetry relocations (n = 22,595) from the 10 Montana and Yellowstone National Park studies were used to train the revised model. "Study Area" was then used in the Generalized Linear Model as a random effect to account for varying levels of sampling intensity amongst studies.
2. FWP reexamined approximately 3,800 individual harvest locations reported between 2007 and 2015 - hundreds of location errors were found and corrected. The more accurate and complete 1988 – 2015 harvest data set (totaling 10,503 mountain lion harvest locations) was then used for external validation of the refined winter RSF model.

3. The revised winter RSF contained the same variables as described by Robinson et al. (2015) except that the variable "distance to forest" was replaced by a quadratic of "canopy closure" (Table 5). The revised model included a random intercept for each study area/data set.

We refer to this refined model (Figures 5 and 6) as the 2016 MT Mountain Lion RSF and it is the model used throughout this Strategy. The 2016 RSF performed similarly to Robinson et al.'s original 2015 model in FWP Regions 1, 2, 4, and 6 while the agreement between harvest locations and predicted high-quality habitat in Regions 3, 5 and 7 was significantly improved (Figure 7).

It is important to note that the RSF does not describe all the variables that affect mountain lion distribution or abundance. There are factors such as prey density, habitat disturbance (i.e. wildfire), or harvest history that are important to mountain lions and that vary over time. Therefore, it will be necessary to periodically reassess the relationship between the RSF and actual mountain lion density in an area (as described in Chapter 5).

CHAPTER 4

MONTANA MOUNTAIN LION ECOREGIONS

Mountain lions currently occupy nearly all of their suitable habitat in Montana. However, the quality, quantity, and arrangement of that habitat—thus the number of lions an area can support—varies significantly across the state. Mountain lion habitat in northwest Montana is nearly continuous, but habitat quality generally declines and becomes patchily distributed in more southern and eastern portions of the state (Figure 5).

The average RSF values of individual Lion Management Units reflects this pattern (Figure 8). This gradient in lion habitat quality across Montana allowed FWP to partition the state into distinct mountain lion “ecoregions”. These ecoregions are large, contiguous areas of the state within which lion habitat is broadly similar. Mountain lion ecoregions are the spatial basis of FWP’s lion population monitoring program.

Mountain lion harvest management is most effective when it’s done at a large and biologically meaningful scale (Cougar Management Guidelines Working Group 2005, Jenks 2011). In lightly hunted populations, virtually all males and a significant proportion of females disperse from their natal area. Lion populations are best thought of as many connected sub-populations linked by dispersing animals. Local areas generally depend on immigration to recruit breeding males and, often, a large portion of breeding females.

These local sub-populations (i.e. within a LMU) can be resilient to harvest because lions are able to readily emigrate from adjacent areas and refill available habitat. Dispersal can also cause local populations to exhibit lower growth rates than expected, given their intrinsic vital rates (Sweanor et al. 2000, Logan & Sweanor 2001, Stoner et al. 2006, Cooley et al. 2009, Robinson et al. 2008 & 2011, Newby et al. 2011). Therefore, even if a LMU’s harvest rate appears sustainable (when supported by immigration), the same harvest level could cause the unit’s population

to decline if harvest in adjacent areas increases. Similarly, specific attempts to reduce local lion populations can fail over the long term because of increased immigration from outside the treatment unit (Clark 2014a).

Monitoring and management programs are most effective when implemented across large landscapes. The effects of immigration and emigration on local population dynamics are less pronounced when considering large scale trends (Robinson et al. 2015). Importantly, large-landscape (i.e. > 35,000 km², an area ~ 115 x 115 miles) lion populations can be considered statistically “closed” (that is, the influence of immigration/emigration is eliminated) for most analyses (Robinson et al. 2008). Harvest treatments and abundance estimates are therefore less likely to be confounded by metapopulation dynamics if they are conducted across broad landscapes.

Montana includes a diverse range of habitat types, prey communities, weather patterns and other factors that affect mountain lion abundance. The relationship between an area’s lion abundance and the range of RSF values within that area is unlikely to be the same across the state. Therefore, conducting field population monitoring and modeling efforts within large but discrete ecoregions (containing similar lion habitat) helps take this habitat variability into account.

FWP can more accurately estimate broad scale (ecoregion) lion abundance when using monitoring data collected from within that same ecoregion because mountain lion habitat and harvest history is more similar within ecoregions than across them (Boyce & McDonald 1999). FWP will produce periodic estimates of lion abundance and forecast the effects of harvest based only on monitoring data collected within those respective ecoregions (Chapters 5 and 6).

Mountain lion harvest management is most effective when it’s done at a large and biologically meaningful scale

Figure 8. Avg. Mountain Lion Resource Selection Function values (0 = lowest quality habitat, 1 = highest quality habitat) for Montana's 2016 Lion Management Units.

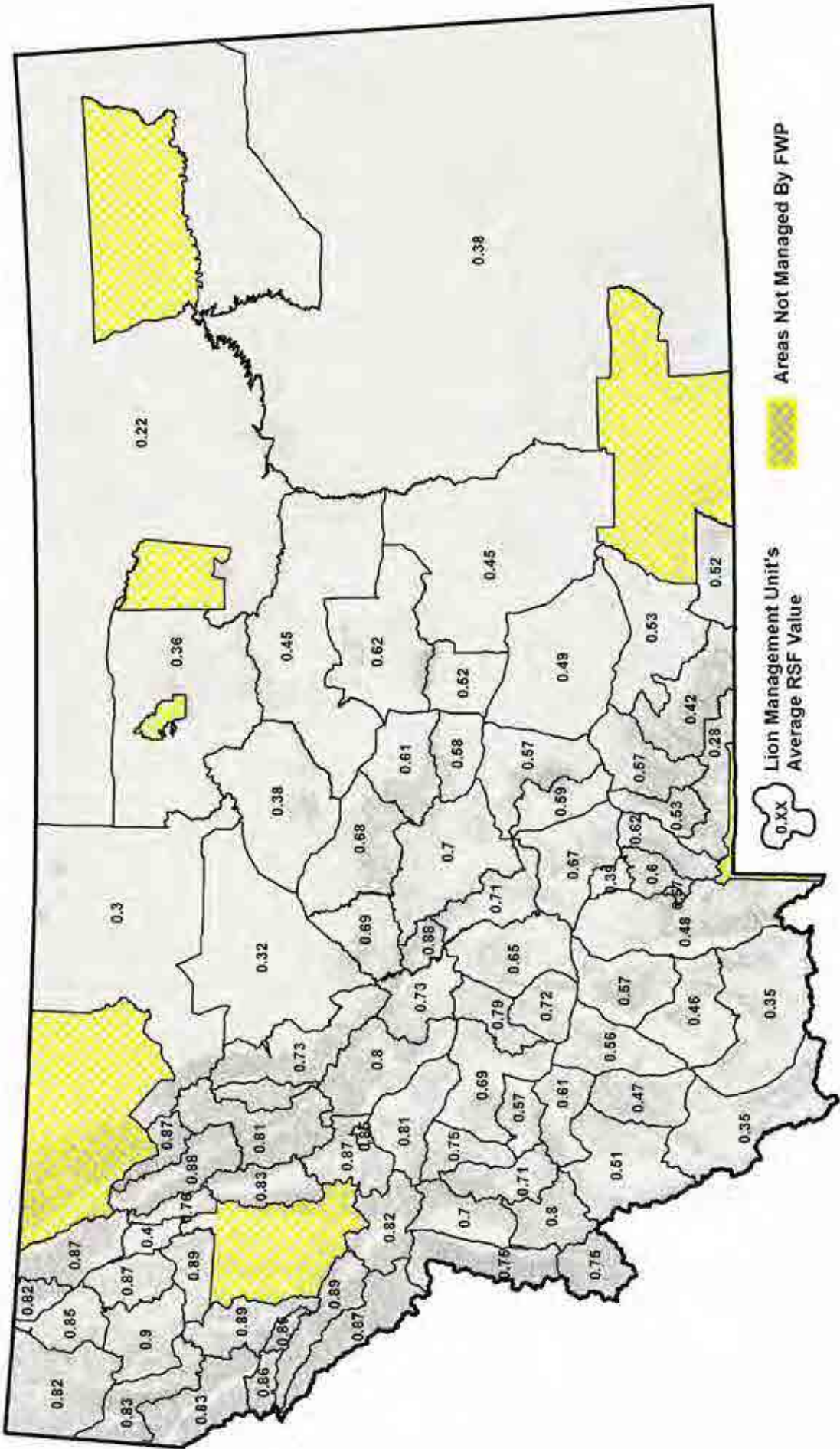
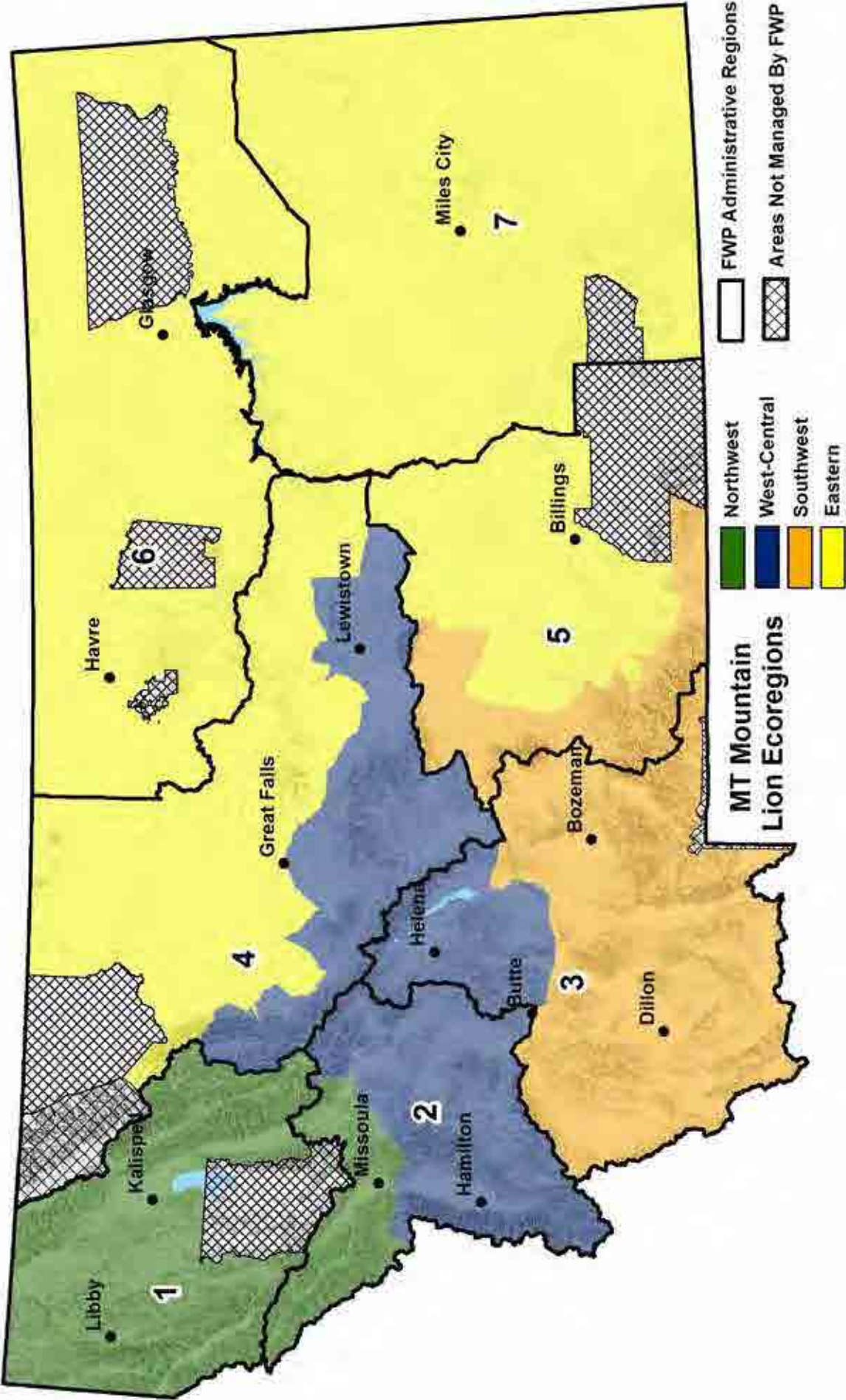


Figure 9. Montana's four mountain lion ecoregions and seven FWP administrative regions.



For the same reason, it is also only statistically and logistically practical to estimate lion population trend at a large scale. Mountain lion ecoregions should contain enough lions that populations can be modeled assuming that those populations are statistically closed. Population models then consider vital rates (from research on marked animals), harvest records, and periodic abundance estimates to allow managers to better understand past and future population trends (Chapter 6). This ability to describe the effects of past harvest and to predict the effect of future harvest prescriptions is a cornerstone of an adaptive harvest management program (Chapter 8).

FWP considered four factors when identifying individual mountain lion ecoregions:

1. They include contiguous LMUs with broadly similar habitat quality (RSF values).
2. They are large enough to allow management prescriptions to be effective despite internal lion metapopulation dynamics.
3. They are well distributed and represent the range of Montana lion habitat types.
4. The total number of ecoregions is limited so that monitoring can occur frequently enough to provide meaningful and timely data to managers. There is a tradeoff between the number of statewide ecoregions and how often each of them can be monitored. Budgets and available personnel limit the amount of effort FWP can expend field sampling lion populations.

FWP grouped 2016 LMUs' using a k-Nearest Neighbor algorithm (ESRI ArcGIS 10.1) based on their RSF values and proximity. Local biologists then helped identify four contiguous mountain lion ecoregions that met the above criteria and that could be reasonably managed as distinct units (Figure 9). FWP will periodically collect field data to produce abundance estimates for each of the three western MT ecoregions (where approximately 90% of harvest annually occurs). Estimates of future lion abundance and trend will also be modeled for these ecoregions.

Each Montana mountain lion ecoregion includes all or portions of two or more FWP administrative Regions. FWP managers and the public from different administrative Regions will collectively evaluate an ecoregion's monitoring data, develop management objectives, and decide on an overall management prescription (harvest) for the ecoregion. Managers will then recommend individual LMU harvest limits that implement the prescription, distribute hunter effort, and address local concerns.

FWP also identified a permanent population Trend Monitoring Area in each of the state's three western ecoregions. These Trend Monitoring Areas will be periodically sampled to produce estimates of lion abundance within them, and in their respective ecoregions. The criteria used to select Trend Monitoring Areas are described in Appendix 1.

To be clear, the following ecoregions will be the basis of Montana's mountain lion population monitoring program. Information about the status and trend of lion populations within these ecoregions will inform adaptive management proposals that affect lion populations at the ecoregion scale. FWP and the public in two or more FWP administrative regions will periodically collaborate to develop certain population objectives for each ecoregion. For example, biologists and the public in FWP Regions 1 and 2 may agree to an objective of a moderately positive, negative, or stable population growth rate over the following 6 years in the Northwest ecoregion.

However, biologists and the public in each of the seven FWP administrative regions have local expertise, experience, and relationships. FWP public meetings and many wildlife advocacy groups are also organized by FWP administrative region. Therefore, specific management recommendations about harvest prescriptions and season structure for individual LMUs will be developed by FWP staff and the public in each of the seven administrative regions. The cumulative effect of these individual LMU prescriptions (i.e. the overall harvest within an ecoregion) will be considered, and periodically assessed, at the ecoregion scale.

ECOREGION DESCRIPTIONS

Northwest Ecoregion

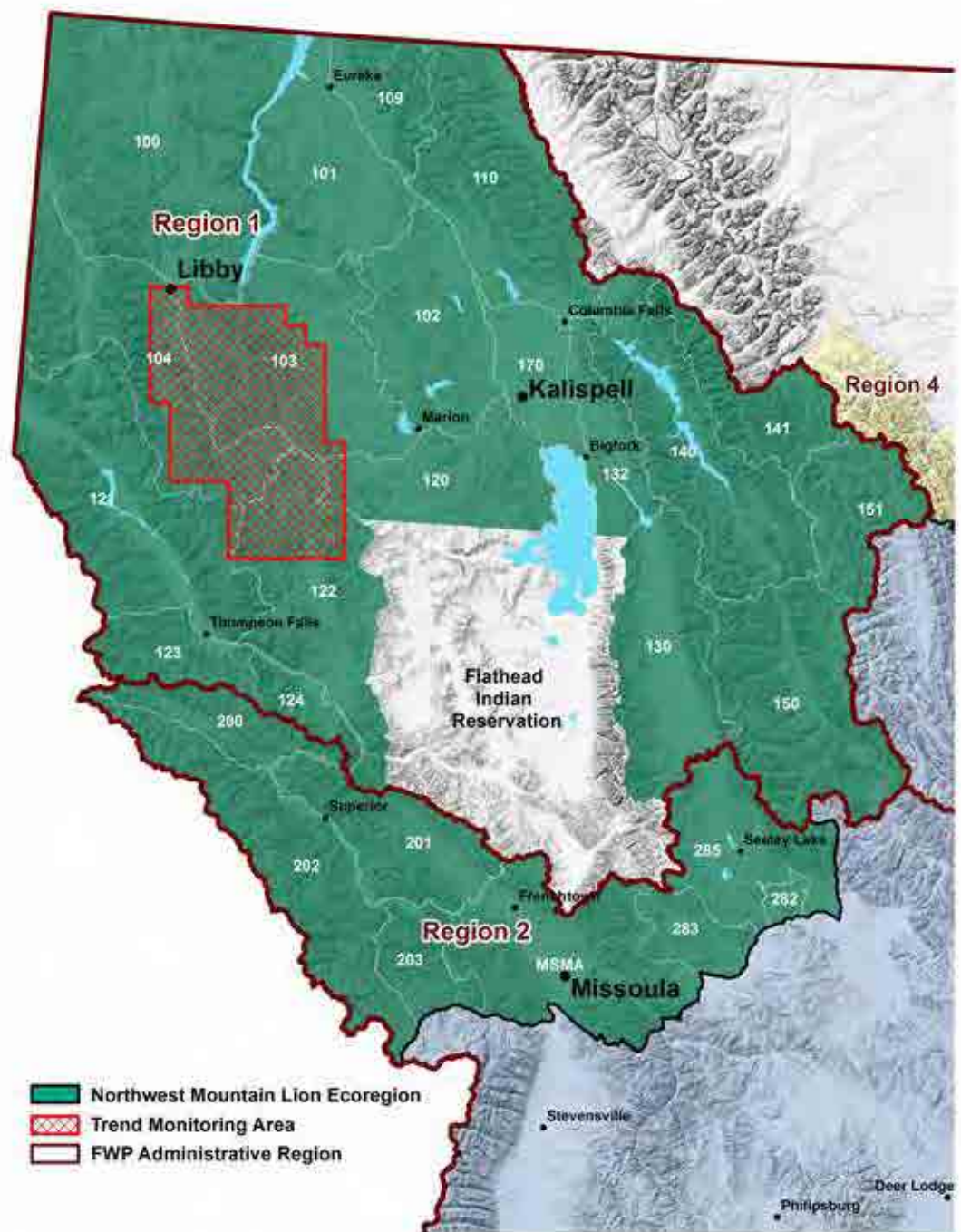
The Northwest mountain lion ecoregion encompasses all of FWP Region 1 (except for the Flathead Indian Reservation) and Region 2's northern Blackfoot and middle Clark Fork River drainages (Figure 10). It is Montana's smallest ecoregion at 36,893 km² but it contains the state's most continuous and highest quality lion habitat (average LMU RSF value = 0.83). Forests cover more than 90% of the Northwest ecoregion due to its Pacific maritime climate and moderate elevations.

Most of this ecoregion's lion habitat is either public land or publicly accessible private land. Hunter access during winter is extensive outside of designated wilderness areas. Tracking snow is generally present throughout the Winter Season.

The 2,550 km² Northwest mountain lion ecoregion Trend Monitoring Area includes the Libby Cr., Thompson River, and Fisher River drainages southeast of Libby. (Figure 11).

Mountain lion harvest in the Northwest ecoregion steadily increased during the 1990s, reaching a historic high of 344 (57% females) in 1998 (Fig 12). White-tailed deer make up as much as 90% of mountain lion prey in northwest Montana (Kunkel 1999, Montana Fish, Wildlife & Parks 2006). The ecoregion's white-tailed deer numbers were high in the mid-1990s before

Figure 10. The Northwest mountain lion ecoregion, trend monitoring area, and 2016 FWP hunting districts.



the severe 1996-97 winter significantly reduced this prey base. Lion harvest density, especially of females, was low during the 2000s but increased through the mid-2010s to approximately 4.6 lions per 1,000 km² (42% female), less than half the harvest density observed in the late 1990s.

Figure 11. The Northwest mountain lion ecoregion trend monitoring area divided into a grid of 102 5x5 km sampling cells.

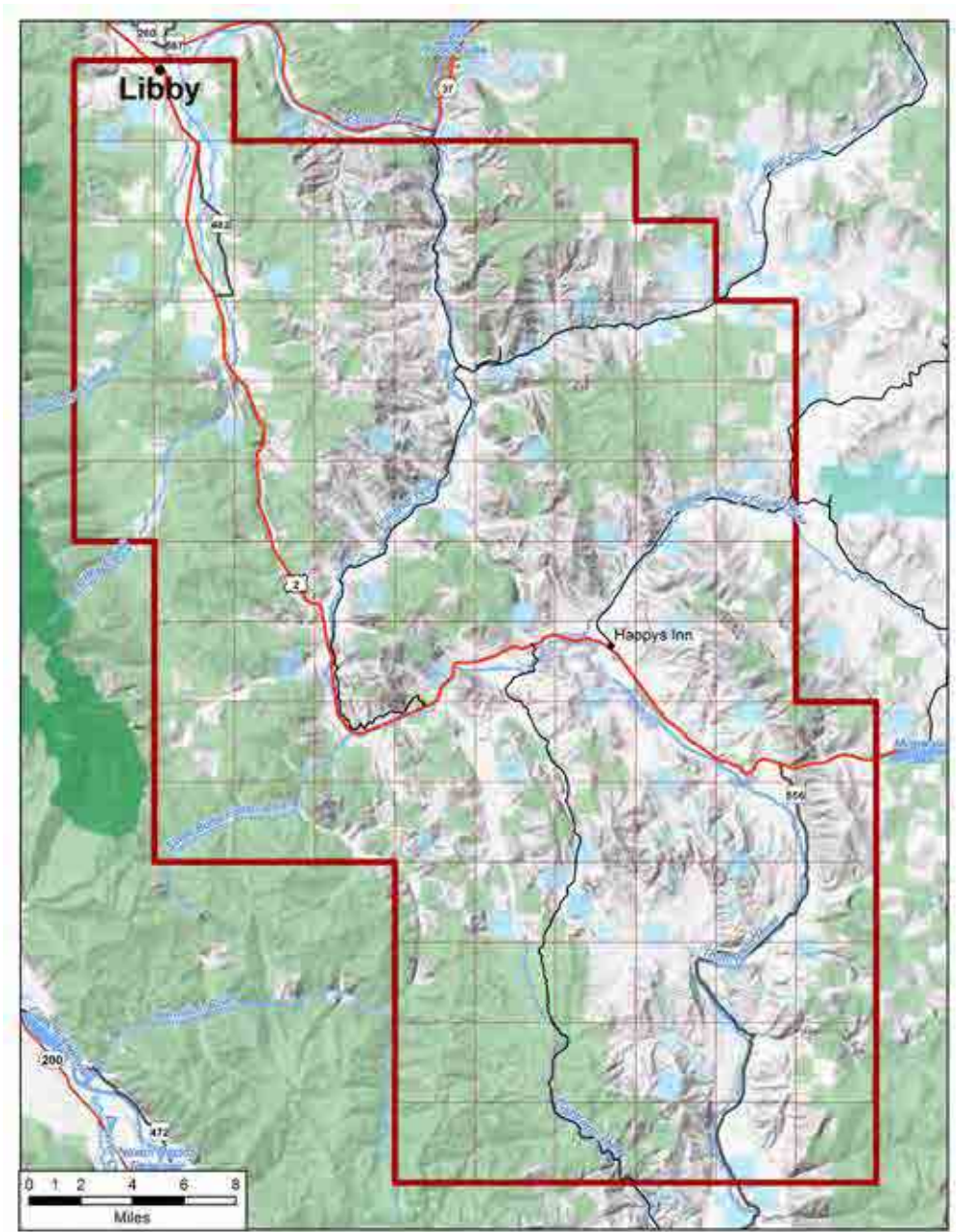
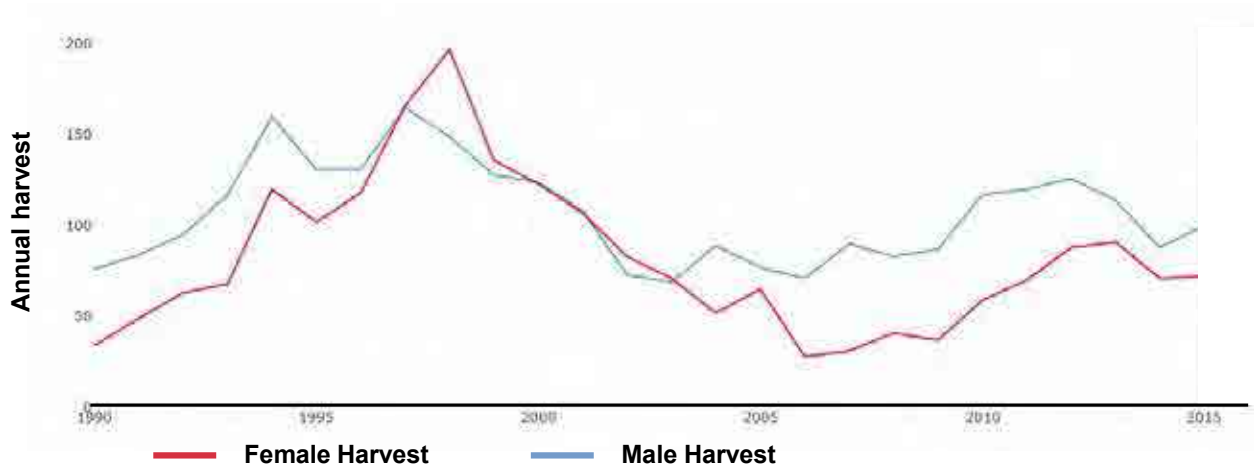


Figure 12. Northwest ecoregion mountain lion harvest, 1990 – 2015.



West-central Ecoregion

The 51,665 km² West-central ecoregion includes the forested mountain ranges and intermountain valleys of the Bitterroot, southern Blackfoot, and upper Clark Fork watersheds west of the Continental Divide and the Rocky Mountain Front, Helena/Boulder valleys, Belt and Snowy Mountains to the east (Figure 13). The ecoregion includes portions of FWP Regions 2, 3 and 4.

Forests across the ecoregion are diverse and often separated by broad intermountain valleys. The average mountain lion habitat quality (average LMU RSF value = 0.72) is generally lower than in northwest Montana because high-quality lion habitat is more intermittent. There is extensive and well distributed public recreational access to winter lion habitat, although some local private land refuges exist. Snow conditions annually vary within and between watersheds—a lack of adequate tracking snow occasionally limits winter lion harvest in some areas.

The ungulate prey base and density varies across the ecoregion. Although white-tailed deer are generally common, mule deer and elk make up a greater proportion of available ungulates than in northwest Montana.

The 2,200 km² West-central ecoregion's Trend Monitoring Area includes the upper Blackfoot and east Nevada Cr. Valleys west of the Continental Divide (Region 2) and the Canyon Creek/Little Prickly Pear drainages east of the Divide in Region 3 (Figure 14).

Mountain lion harvest in the West-central ecoregion climbed to a high of 294 lions (53% female) in 1998 (Figure 15). Hunter harvest, particularly of females, was significantly reduced in the 2000s following perceived population declines. By 2015, overall harvest density increased to 3.1 per 1,000 km², well below the nearly 6.0 per 1,000 km² in the late 1990s—specifically, the 2015 female harvest was one third of the 1998 peak.

Figure 13. The West-central mountain lion ecoregion, trend monitoring area, and 2016 FWP hunting districts.

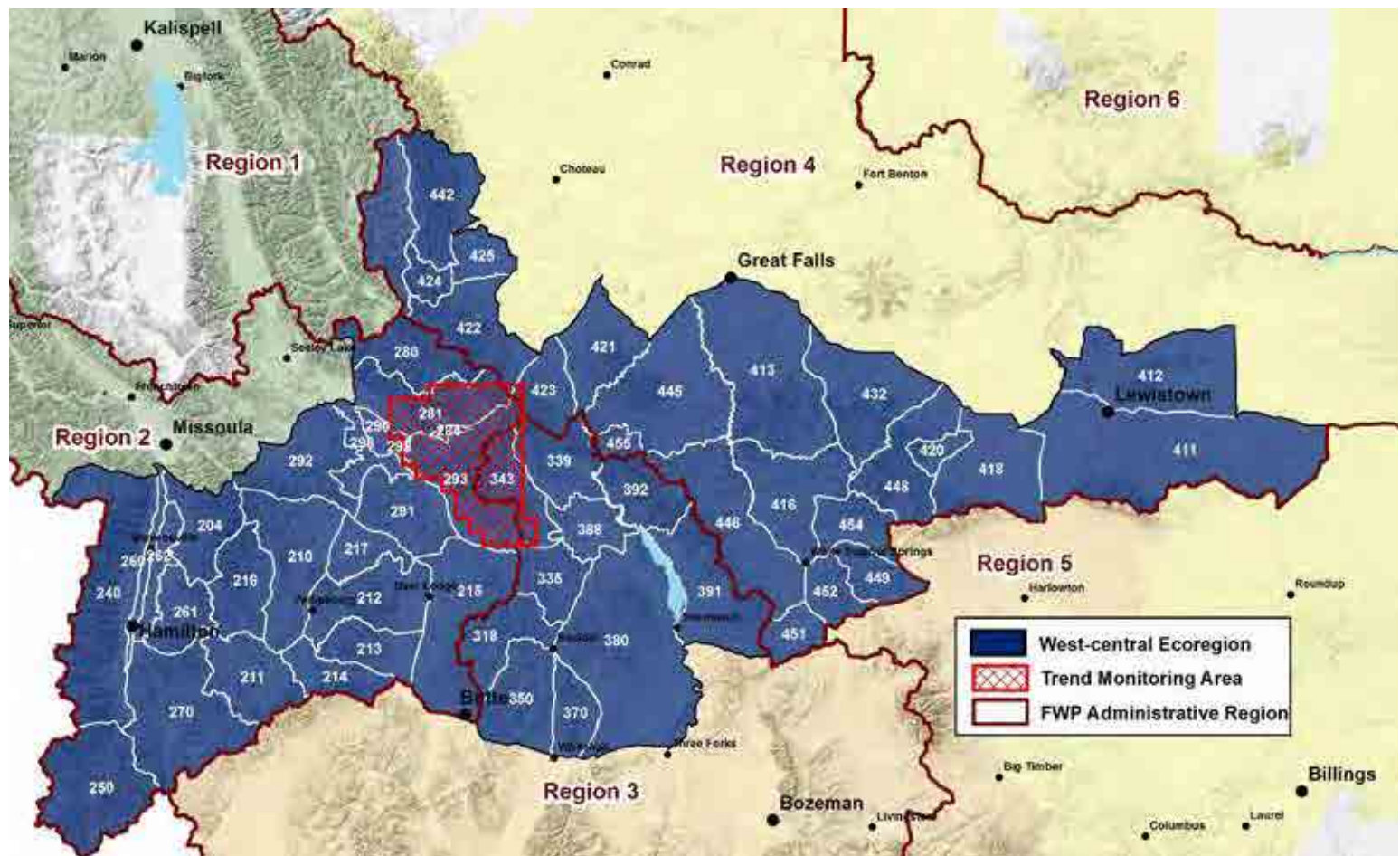


Figure 14. The West-central mountain lion ecoregion trend monitoring area divided into a grid of 101 5x5 km sampling cells.

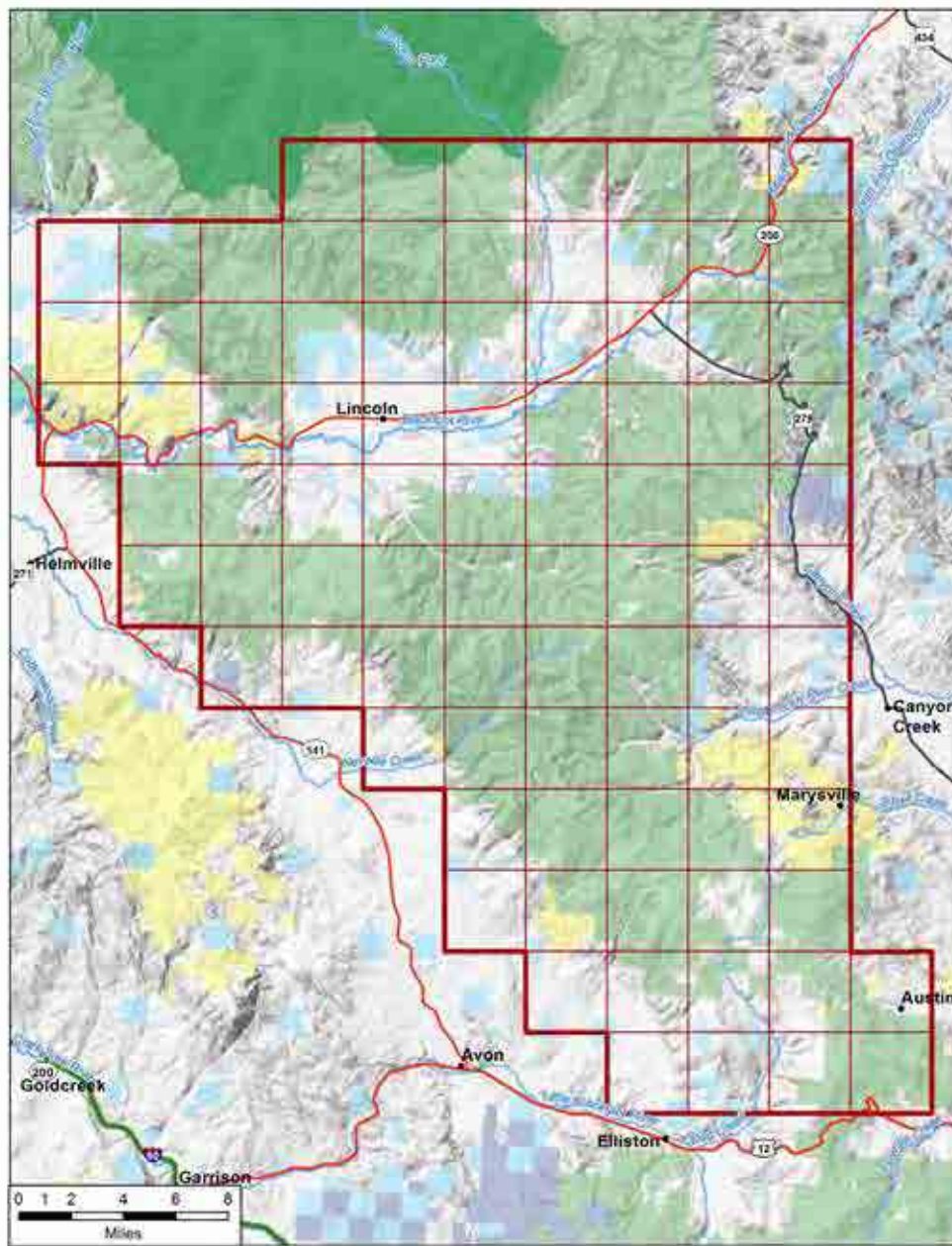
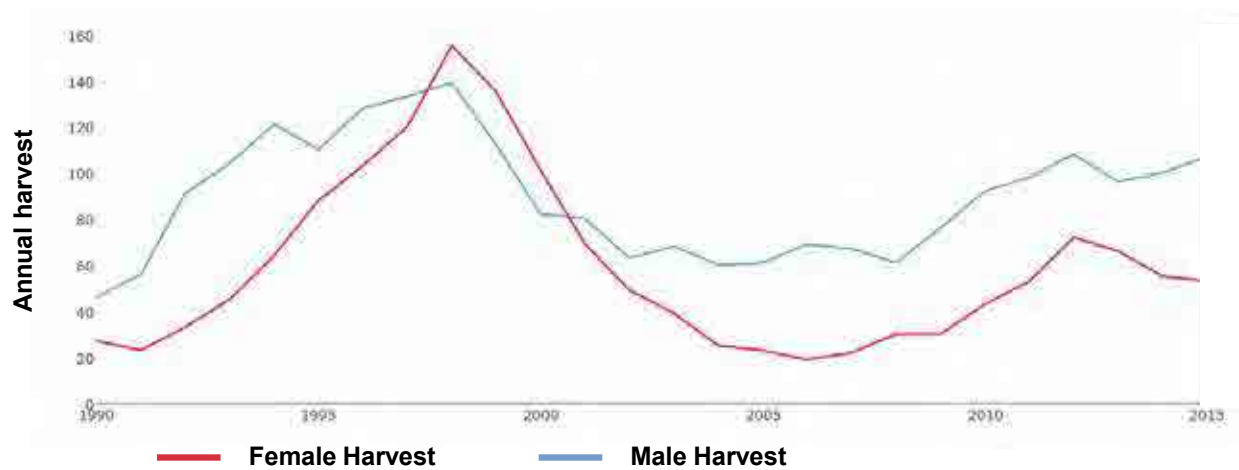


Fig. 15. West-central ecoregion mountain lion harvest, 1990 - 2015.



Southwest Ecoregion

Mountain lion habitat is relatively patchy and linearly distributed in much of the 52,487 km² Southwest ecoregion. This area extends from the Continental Divide and southwest Montana's island ranges, across the Greater Yellowstone Ecosystem to the Beartooths, Crazy Mountains, southeastern Little Belts, and southern Big Snowy Mountains. The ecoregion includes much of FWP Region 3 and western Region 5 (Figure 16). Although many portions of the ecoregion include high-quality lion habitat, only about a third of the total area is forested—the average LMU's RSF value in this ecoregion is 0.51.

Public access to winter mountain lion habitat is mixed; approximately 75% of lions harvested between 2007 and

2015 were taken on public land. Winter snow tracking conditions vary and can, at times, limit effective harvest.

The 2,525 km² Southwest ecoregion mountain lion Trend Monitoring Area is located in the Gallatin Range between Bozeman and Yellowstone National Park (Figure 17).

Total mountain lion harvest in this ecoregion peaked in the late 1990s, declined in the 2000s, then returned to near the 25-year average level by 2015. Much of this variation, however, was due to fluctuations in female lion harvest; male harvest has remained relatively constant since the mid-1990s (Fig. 18). Overall Southwest ecoregion harvest density was 1.75 lions per 1,000 km² in 2015.

Figure 16. The Southwest mountain lion ecoregion, trend monitoring area, and 2016 FWP hunting districts.

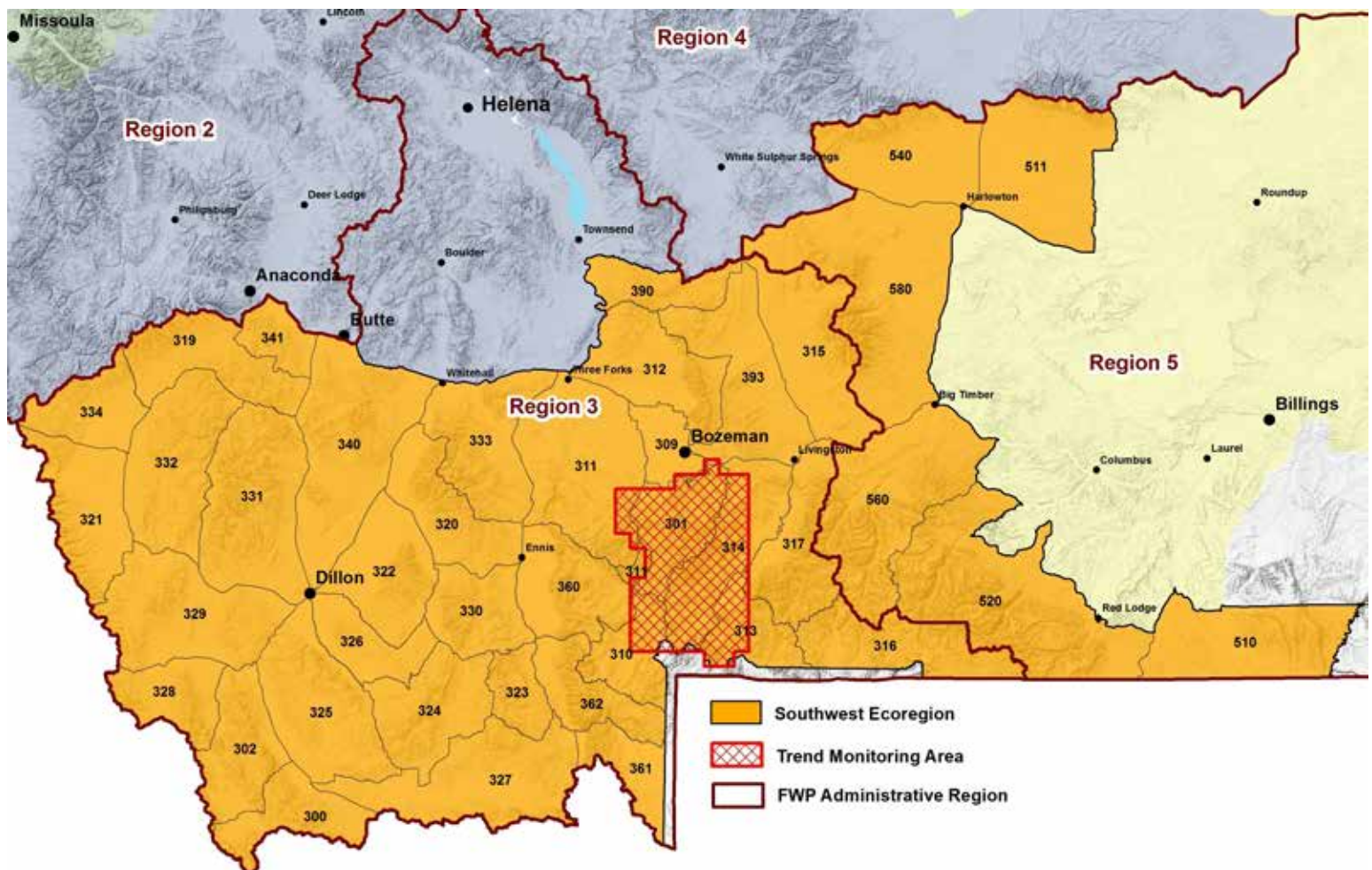


Figure 17. The Southwest mountain lion ecoregion trend monitoring area divided into a grid of 101 5x5 km sampling cells.

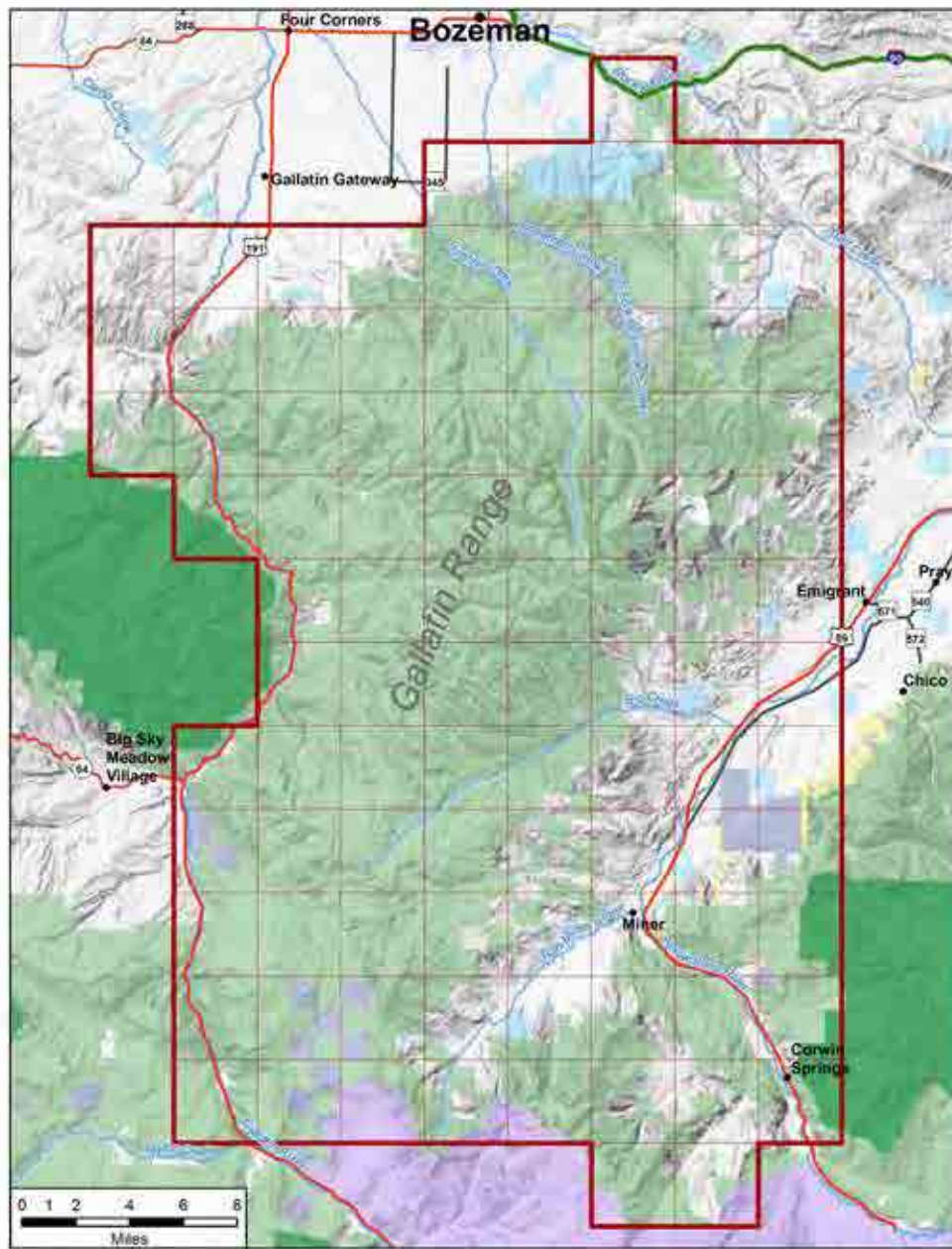
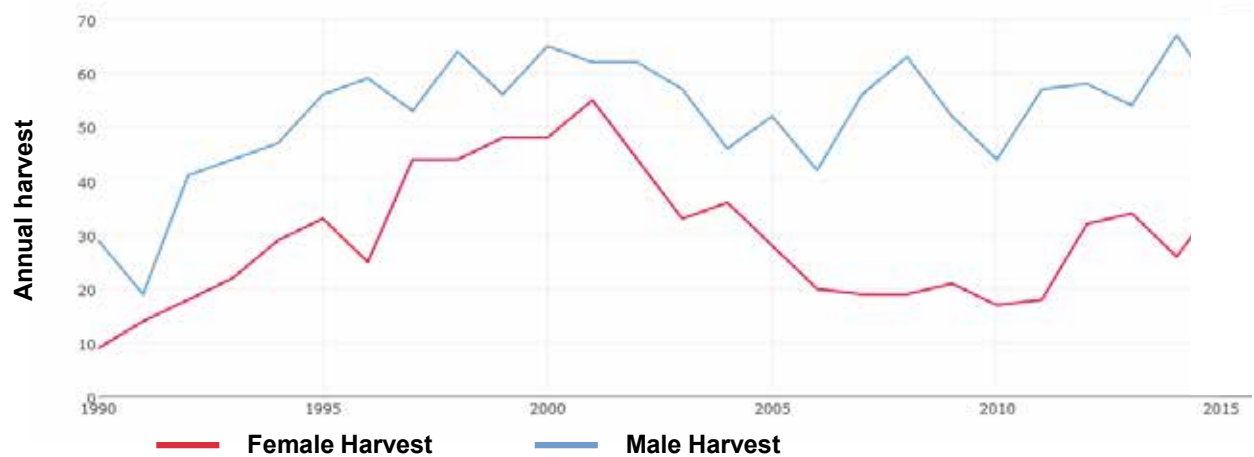


Fig. 18. Southwest ecoregion mountain lion harvest, 1990 – 2015.



Eastern Ecoregion

The 198,175 km² Eastern ecoregion is, by far, the largest in the state and includes all or portions of FWP Regions 4, 5, 6 and 7 (Fig 19). Much of the highest quality mountain lion habitat in eastern Montana lies within Indian reservations—FWP does not have routine mountain lion management jurisdiction on these reservations and they are excluded from the ecoregion for analysis and planning purposes. Less than 10% of the remaining ecoregion supports ponderosa pine or juniper-dominated forest. In general, patches of high-quality lion habitat are relatively small and widely distributed (average LMU RSF value = 0.38).

Genetic field monitoring data will not be routinely collected in the Eastern ecoregion and, therefore, no permanent Trend Monitoring Area has been designated. Lions in this ecoregion occur at an overall low density and sub-populations occur in discontinuous patches of suitable habitat. Inferences drawn from field sampling in one area would be of limited use for broad scale management of this ecoregion.

Mountain lion distribution and abundance has significantly increased in eastern Montana since the 1980s and recovery likely continued through the 2010s. Harvest has steadily increased since the 1990s (Fig. 20). Intermittent snow cover in eastern Montana can significantly reduce hound hunting's effectiveness. Therefore, in this ecoregion, quotas are more likely to serve as limits on harvest during years when snow conditions are favorable than as reliable annual harvest prescriptions.

Lion harvest in the Eastern ecoregion generally occurs in areas that the RSF describes as high-quality habitat on or near the Custer National Forest, Bureau of Land Management lands surrounding the Charles M. Russell National Wildlife Refuge, private land in the Bears Paw Mountains, in the Highwood Mountains, and along the northern Rocky Mountain Front.



Figure 19. The Eastern mountain lion ecoregion and 2016 FWP hunting districts.

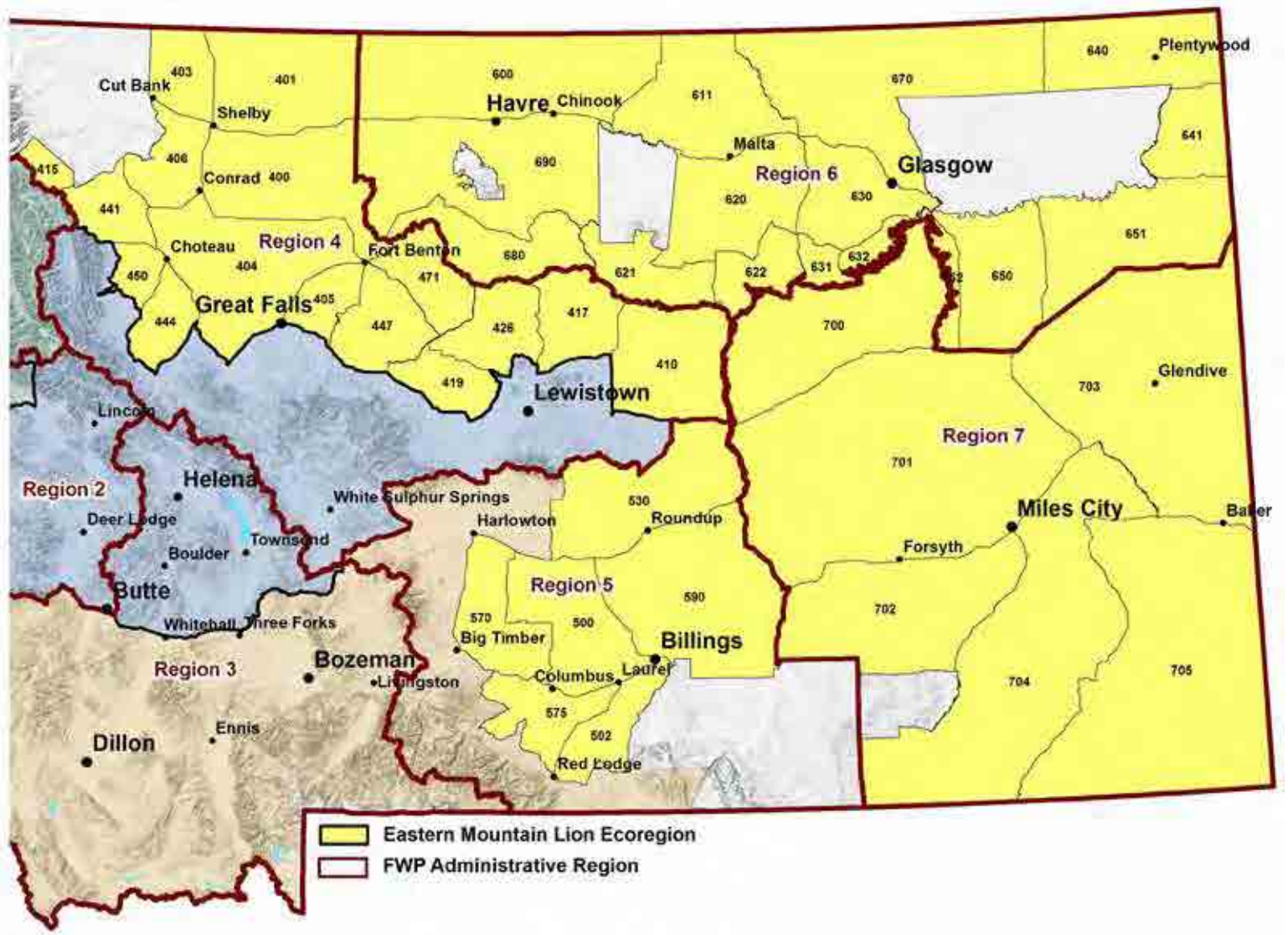
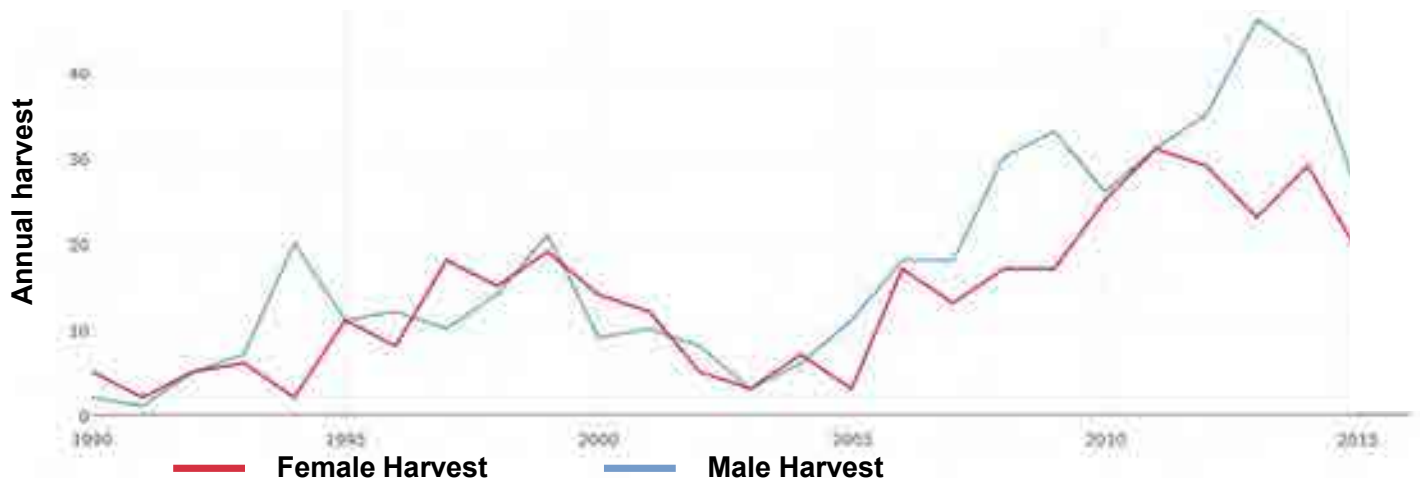


Fig. 20. Eastern ecoregion mountain lion harvest, 1990 – 2015.



CHAPTER 5

MONITORING MOUNTAIN LION ABUNDANCE

“The Holy Grail of cougar management has always been the question of ‘How many are there?’”

**Managing Cougars in North America—
J. A. Jenks, editor (2011)**

INTRODUCTION

To conserve mountain lions while ensuring sustainable recreational hunting opportunities, FWP needs accurate and up-to-date information about mountain lion population size and trend. In the past, managers used indirect measures of lion abundance, inferences drawn from long term field research projects, or anecdotal information about population status to inform decisions. Unfortunately, these sources of information often fail to accurately describe the effects of previous management actions and don’t allow us to precisely predict the effects of future harvest (Beausoleil et al. 2013).

Developing a method to obtain regular, accurate, extensive, and affordable estimates of the size of lion populations has been one of the highest priority mountain lion management needs (Beausoleil et al. 2008, Jenks 2011). Until recently, there was no cost effective and relatively quick way to produce reliable lion population estimates at a large enough scale to be meaningful for management (Choate et al. 2006, Beausoleil et al. 2016).

Many agencies that are charged with managing mountain lions rely on indirect measures, or indices, of lion abundance to make inferences about population changes because these indirect data are already available or relatively easy to collect. However, the actual relationship

FWP biologist preparing to fire biopsy dart to collect a genetic sample from a treed mountain lion, Western Montana, R. Wiesner



(if one exists) between a population index and true population size is rarely known and may be inconsistent over time (Anderson 2003).

When potential indices of abundance were formally compared to known populations, the indices often proved too insensitive to be useful management triggers. For example, Wolfe et al. (2015) found that although the number of lions treed-per-day, permit fill rate, and the proportion of females in harvest were correlated with abundance, those relationships were weak. These indices are also not generally relevant in Montana where most harvest is regulated by sex-specific quotas.

Although the sex and age of harvested lions can eventually indicate significant changes in a lion population’s size or

growth rate, these harvest indices are only able to detect relatively large and long term increases or declines (Stoner 2004, Anderson & Lindzey 2005, Robinson & DeSimone 2011).

In Montana, changes in harvest-age structure appear to broadly correspond to observed, long term, changes in lion abundance. When populations were thought to be high and growing during the early 1990s, a greater proportion of the harvest consisted of older lions (Table 6). Lion populations apparently declined during the early 2000s before recovering; both the average ages of harvested lions and the proportion of older lions in the harvest reflected this trend. A similar relationship was documented in western Montana's Garnet Mountains between 1997 and 2006 (Figure 21).

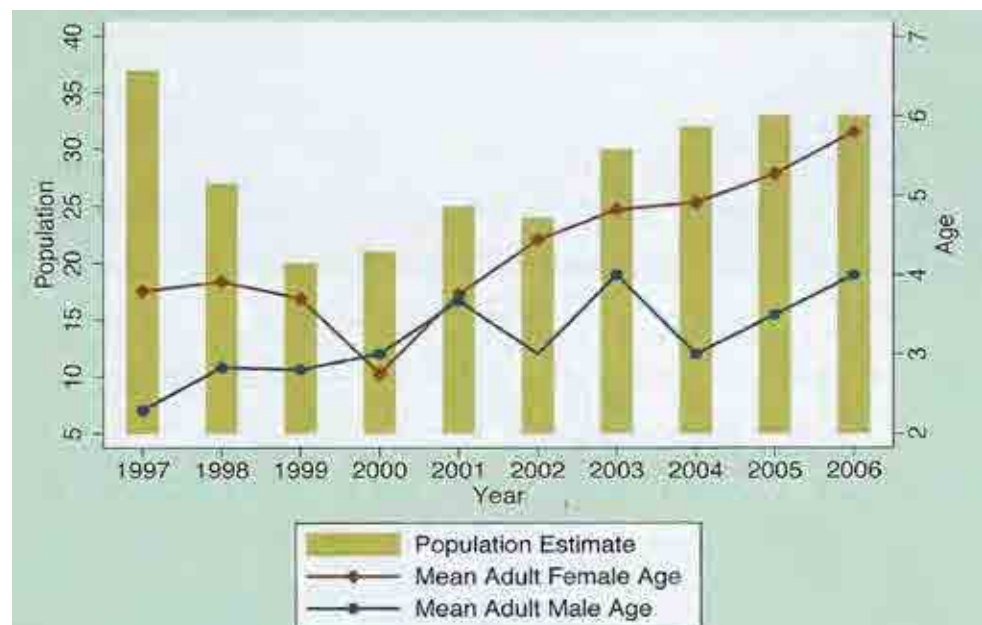
Statewide lion density declined and recovered dramatically between the mid-1990s and late 2000s. This pattern was, in part, driven by dramatic changes in statewide harvest rates that are unlikely to be applied in the future. The current magnitude of variation in statewide age-at-harvest is relatively small and annually variable. During periods when the amplitude of population change is moderate, trends in harvest-age are less informative.

Tracking changes in the ages of harvested animals may be somewhat useful where more direct measures of population trend are not available (such as eastern Montana), but the index is too insensitive to detect moderate, short term changes in an area's lion density. The proportion of older adult animals in harvest (especially females)

Table 6. Montana mountain lion age-in-harvest, 1988 – 2015.

	Female, Average Age	Male, Average Age	Combined, Average Age	% of Harvest > 5 Y.O.
1988	3.45	2.94	3.10	10.3
1989	3.21	3.94	3.75	16.7
1990	4.38	4.38	4.38	26.1
1991	5.04	4.94	4.97	37.6
1992	6.59	6.40	6.46	58.8
1993	4.99	5.39	5.25	39.0
1994	3.67	3.98	3.86	24.0
1995	4.29	4.30	4.29	27.0
1996	3.81	3.07	3.39	13.3
1997	3.70	3.18	3.44	15.4
1998	3.34	2.71	3.04	11.3
1999	3.21	2.60	2.91	12.5
2000	3.42	3.18	3.30	13.2
2001	3.33	3.28	3.31	12.6
2002	3.17	3.07	3.11	4.3
2003	2.93	2.73	2.81	5.5
2004	3.24	2.53	2.79	9.7
2005	3.22	2.95	3.05	10.6
2006	2.76	2.89	2.85	4.7
2007	3.46	3.43	3.44	11.8
2008	3.14	3.53	3.41	14.3
2009	3.34	3.13	3.19	10.8
2010	4.02	3.45	3.65	17.2
2011	3.42	3.00	3.14	10.1
2012	3.76	3.45	3.57	16.7
2013	3.62	3.13	3.33	13.1
2014	3.34	3.35	3.34	11.0
2015	3.09	2.89	2.97	6.8

Figure 21. Minimum mountain lion population estimate, and mean adult (> 24 months) age of harvested lions, Garnet Mountains, MT (Robinson & DeSimone 2011)





Adult mountain lion leaving tracks in snow, D. Neils

is more strongly correlated with annual adult survival than is the overall mean or median age-in-harvest (Wolfe et al. 2015).

Relying on past years' harvest to inform future quotas is also problematic. This "sledgehammer approach" (Logan & Sweanor 2001) uses previous seasons' hunter success rates to determine future harvest quotas. Even if managers reduce harvest quotas as hunter success decreases, these incremental reductions may not match existing population levels and can lead to further declines. Harvest indices are also much less informative in jurisdictions, like Montana, where most harvest is limited by sex-specific quotas.

Patterns in total annual harvest or days required to fill an area's quota can be misleading when factors that are independent of mountain lion population trend most strongly predict year-to-year harvest. For example, in much of the Eastern ecoregion adequate tracking snow is present only sporadically— during winters when there is snow cover, harvest increases. In these cases, quotas effectively

prevent excessive harvest during years with favorable tracking conditions even though they will not be routinely met in other years.

Intensive winter track surveys, surveys of public lion observations, and hunter effort generally failed to detect known lion population changes quickly or before large changes in population size had already occurred (Beier & Cunningham 1996, Jenks 2011, Robinson & DeSimone 2011).

Long term capture and radio-telemetry studies were traditionally considered to be the most reliable way to estimate local lion populations (Cougar Management Guidelines Working Group 2005, Jenks 2011). This method requires researchers to attempt to capture and mark all resident individuals within a study area, account for additional unmarked animals, and then extrapolate observed and suspected home ranges across a study area to produce an estimate of abundance (Lambert et al. 2006, Cooley et al. 2009, Robinson et al. 2008 & 2014).

However, capturing, marking, and counting individual lions is impractical for routine lion population monitoring. Intensive capture and radio-tracking projects can take many years to complete, require significant field resources, and are prohibitively expensive (Hornocker & Negri 2009). The uncertainty around estimates developed using this field method is also often difficult, or impossible, to assess. Finally, this technique usually produces only minimum counts because all individuals in a study area are rarely captured and nonresident (transient) individuals are often either missed or discounted (Robinson et al. 2015).

Because it was so difficult to directly monitor mountain lion population size and trend at a large scale, some researchers suggested implementing “zone management” (Logan

& Sweanor 2001) or a similar “metapopulation model” (Laundre & Clark 2003) instead. These strategies advise maintaining large and well-distributed lightly hunted refuge areas (sources) that sustain more heavily-hunted areas (sinks) through emigration. Although metapopulation management doesn’t rely on accurate population estimates, it does require knowledge of immigration rates between heavily and lightly-hunted areas. Few studies have rigorously estimated these immigration rates and the metapopulation management model’s effectiveness remains largely untested.

Although several large patches of un- or lightly-hunted lion habitat (including national parks, wilderness areas, and Indian reservations) undoubtedly act as sources of



FWP biologists recover a DNA biopsy dart from treed mountain lion

lions that disperse to other areas in Montana (Robinson et al. 2015), these refuges are neither extensive or well distributed enough to subsidize unlimited harvest in the remainder of the state.

FWP will not further restrict lion harvest across broad areas of the state in order to create additional specific “source” areas and, therefore, does not intend to use the metapopulation model as the basis for its mountain lion Management Strategy.

Instead, FWP will manage for limited and sustainable mountain lion hunter-harvest opportunity on most lands within its jurisdiction. To enable this approach, FWP will periodically monitor the size and trend of lion populations in the Northwest, West-central and Southwest ecoregions. We will use rigorous, field-based techniques to estimate population size and trend, and we will remain open to incorporating new monitoring methods as they are developed and validated. Distributing this monitoring effort across these three biologically distinct ecoregions will reduce the uncertainty of the estimates developed using local monitoring data (Walters & Holling 1990, Conroy et al. 2012).

Subsequent Trend Monitoring Area abundance estimates can be directly compared to past estimates from the same area. Abundance estimates for the Trend and Supplemental Monitoring Areas (see Montana Mountain Lion Monitoring section, Chapter 5) can also be used to develop abundance estimates for their respective ecoregions. These periodic ecoregional estimates will allow managers to track changes in mountain lion abundance over time and will be included in the Integrated Population Model (Chapter 6) to predict the effect of future harvest prescriptions.

The same regular field monitoring will not be conducted in the Eastern ecoregion. There, lion subpopulations are patchily distributed and the ecoregion annually produces <15% of the state’s annual harvest. Other population indices and harvest management strategies will be used in this ecoregion to conserve hunted populations. However, Eastern ecoregion managers may choose to sample lion abundance in specific areas of interest to better understand local populations.

ESTIMATING MOUNTAIN LION POPULATIONS

Capture-recapture (CR) sampling has been a standard method used to estimate a population’s abundance for many years (Seber 1982). To produce a traditional CR estimate, some animals in a population are captured, marked, and released. Later, there is another capture effort and the number of marked animals within the second sample is counted. The proportion of the first sample detected in the subsequent sample is then used to calculate a population estimate.

Conventional CR sampling assumes that the effective sampling area’s size is known, that animals don’t enter or leave the study area, and that all animals have a similar probability of detection (Royle et al. 2013). Species like mountain lion that are wide-ranging, occur at low densities, and are difficult to detect violate these assumptions and may cause CR methods to produce misleading results.

SPATIAL CAPTURE-RECAPTURE

A newer spatial capture-recapture (SCR) method specifically addresses the shortcomings of traditional CR techniques when working with wide ranging, low-density species. SCR has been successfully used to estimate carnivore populations (Royle et al. 2011, Blanc et al. 2013) including mountain lions in Montana (Russell et al. 2012, Proffitt et al. 2015). SCR also works well with less invasive data collection techniques such as acquiring genetic samples from biopsy darts, hair, or scat.



Biopsy darts used to collect genetic samples from mountain lions

The SCR approach allows biologists to estimate population abundance within a defined area while also accounting for animals whose ranges partially or occasionally overlap the area surveyed. SCR methods consider the spatial organization of individual animals and the fact that the probability of an individual being recaptured decreases the farther that animal is from where it was originally detected or is known to reside. SCR methods also allow for sampling effort to vary across a study area when sampling wide ranging species (such as mountain lion) that use heterogeneous habitat.

Mountain lions in Montana prefer areas with habitat features such as forest cover, moderate slopes, forest edges, and intermediate elevations (Newby 2011, Robinson et al. 2015). Consequently, lions are not evenly distributed across different habitat types within an area. SCR methods use information about lion habitat preferences (specifically, the 2016 Montana mountain lion RSF) to inform estimates of population abundance.

Because estimated abundances are spatially explicit, population abundances associated with habitat of a certain quality within a sampling area can be extrapolated across broad landscapes as a function of that landscape's habitat quality. This allows information about lion abundance within Monitoring Areas to be used to estimate lion populations at the ecoregion scale.

SCR methods can also include information from harvested animals in population estimation models, thus allowing sampling to occur where hunter harvest is expected on and around the study area during the period the sampling is taking place (Efford 2014).

ABUNDANCE ESTIMATES

Monitoring an area's mountain lion abundance over time is essential to understanding the effect of hunter harvest on lion populations. However, variation in the ways researchers have defined their study areas, inconsistent reporting of age-classes included in population estimates, and the differences in estimation methodology make directly comparing lion densities reported in the literature nearly impossible (Hornocker & Negri 2009).

FWP will monitor and report the estimated winter density of all non-dependent individual lions—that is, lions that are legal to harvest—within an area

For example, researchers have variously reported densities of all mountain lions (including dependent kittens), the minimum number of resident adults, and the density of lions estimated across both seasonal and annual ranges. FWP will monitor and report the estimated winter density of all non-dependent individual lions—that is, lions that are legal to harvest—within an area.

In Montana, the average age that a young lion becomes independent of its mother is approximately 15 months (Robinson & DeSimone 2011). Montana law prohibits the harvest of young lions with body spots; these spots are nearly gone by 15 months of age (Currier 1983, Lindzey 1987).

Young lions make up a significant proportion of legal harvest. Of the known age lions legally harvested in Montana between 1988 and 2014, 42% were <3 years old and 15% were <2 years old. Many of these juveniles and subadults are transient, having yet to establish a fixed home range. The number of transient mountain lions in a population is difficult to quantify using traditional field sampling methods and this age class is often underrepresented in population estimates reported in the literature (Logan & Sweanor 2001).

Thus, an advantage of the SCR monitoring approach is that abundance estimates will include resident and transient animals, both of which are legal to harvest. The SCR method that FWP will initially use estimates the abundance of all independent aged lions within Trend Monitoring Areas and ecoregions during the winter monitoring period. Because all independent aged lions (including transients) are included, genetically based SCR abundance estimates may well be higher than estimates previously developed using other methods.

MONTANA MOUNTAIN LION MONITORING

FWP will use scientifically sound techniques to monitor Montana lion populations and produce periodic estimates of their size and trend. However, currently available monitoring techniques are both expensive and labor intensive. As field-based monitoring and analytical techniques improve and become more practical, FWP will remain open to incorporating them.

Initially, FWP will use the SCR sampling and analysis methods described by Proffitt et al. (2015) to periodically estimate independent aged mountain lion populations in the Northwest, West-central, and Southwest ecoregions. FWP has identified permanent Trend Monitoring Areas within each of these three western ecoregions which will be sampled on a rotating basis.

An additional Supplemental Monitoring Area within each ecoregion may also be sampled the year after the Trend Monitoring Area is sampled. Unlike the Trend Monitoring Areas, the location of Supplemental Monitoring Areas can change over time. These additional Monitoring Areas will allow FWP to sample a broader range of habitats within the ecoregions. Methods for selecting the permanent Trend and Supplemental Monitoring Areas, the field protocol for collecting data, and a description of the data analysis are included in Appendix 1.

Each new estimate of a Trend Monitoring Area's lion population can be directly compared to past estimates for that same area. In addition, the relationship between lion density and the 2016 RSF within an ecoregion's Trend Monitoring Area (sampled Year 1) and Supplemental Monitoring Area (sampled in subsequent years) can be

combined to develop an estimate of population abundance for the larger ecoregion. If, over time, pooling the two Monitoring Areas' data produces ecoregional estimates that are functionally similar to estimates calculated from using the Trend Monitoring Area data alone, continued sampling of Supplemental Monitoring Areas may not be necessary.

Finally, an ecoregion's population estimate will be input into the Mountain Lion Integrated Population Model (Chapter 6) to increase our understanding of past and predicted mountain lion population trend and to evaluate alternative harvest prescriptions. Uncertainty about mountain lion abundance impedes effective harvest management. More accurate abundance estimates will be used in an adaptive management framework to make management more predictable over time. The frequency of monitoring will affect the rate at which this uncertainty is reduced, but monitoring frequency will also depend on the availability of funding and other priorities.



Treed mountain lion, western Montana

CHAPTER 6

THE MONTANA MOUNTAIN LION INTEGRATED POPULATION MODEL

INTRODUCTION

Wildlife biologists use mathematical models to approximate the real ecological systems they manage. These models allow them to better understand how populations work and to make more accurate predictions about how they're likely to change in the future. The most useful models are built using rigorously collected field research data and have a clearly defined purpose. These data (such as the age a male lion will most likely disperse or an adult female's annual survival rate) describe what's most likely to occur as well as the range of probable outcomes we should expect. By combining the best information available about a species or system we can better understand them.

Dr. Paul M. Lukacs and Dr. Joshua Nowak of the University of Montana collaborated with FWP to develop the Montana Mountain Lion Integrated Population Model (IPM; Nowak et al. 2018). The IPM is a tool that combines available information about a mountain lion population (i.e. harvest, abundance, survival, and reproduction) into a single analysis of that population's demography. Managers can use the IPM to describe the effects of past management and make predictions about future population trends.

PREDICTING LION POPULATIONS USING THE IPM

The primary purpose of the IPM is to help wildlife managers, decision makers, and the public understand the effect of past and future harvest on mountain lion populations. The IPM is directly linked to the FWP lion harvest database, and a web interface allows users to input future possible harvest prescriptions (by sex and age class).

Using this information, the model forecasts the future population trend that would likely result from an

ecoregion's proposed harvest prescription. The output clearly shows the range and magnitude of the predictions' uncertainty for each year of the analysis; this uncertainty increases the further into the future the model is asked to make predictions.

Periodic abundance estimates that are developed from field-based monitoring (described in Chapter 5) can also be input into the model. These estimates make the IPM's predictions more precise. The IPM outputs the results of model runs as graphs (by population and by age and sex-class) as well as in a tabular format.

Montana's mountain lion IPM was built using the software program PopR which was developed in collaboration with Idaho Fish and Game, South Dakota Game, Fish and Parks and The University of Montana in 2014 (Nowak et al. 2018). PopR is a web based application linked directly to agency harvest databases through an interactive graphic user interface. It allows non-expert users to easily update data and change model parameters (such as assumed survival rates or reproduction) to evaluate the potential effects of future harvest levels. The IPM and web application were specifically designed to be repeatable, transparent, and easy for biologists to use.

The Montana mountain lion IPM can analyze populations within the three western Montana mountain lion ecoregions. Harvest data are input into and analyses are output by the IPM at the ecoregion scale.

**The Integrated
Population Model is a
tool that combines all
available information
into a single analysis of
mountain lion population
demographics**



The IPM contains two underlying model components: a biological process model and an observation model (Schaub & Abadi 2011). The biological process model describes what we know about lion population dynamics and vital rates (Caswell 2001). It uses parameters including age-class and sex-specific survival probabilities, fecundity by age-class, and estimates of overall population size (when those field estimates are periodically available). The observation model describes the data collection process and the link between field data, harvest records, and biological parameters.

Field-based estimates of population vital rates have some statistical uncertainty and fluctuate over time. That is, field data (i.e. litter size) occur as a distribution of observed values that produce both a point estimate and a range of likely values. The IPM combines and considers all sources of

uncertainty when predicting mountain lion population size and trend.

Field research has shown us that although many lion population vital rates (including reproduction and non-hunting survival) are remarkably consistent across the species' range, variability around average rates can significantly influence populations (Robinson et al. 2014). This variability is explicitly incorporated into the model and carried forward into predictions. The IPM allows users to estimate sex and age-specific population size and growth, as well as the precision of those predictions.

It's difficult to directly measure mountain lion vital rates and population trend frequently or extensively. Fortunately, lion ecology has been studied for decades in Montana and throughout the western U.S. The lion IPM allows for

a straightforward application of expert knowledge even when specific information about local or contemporary populations is sparse. The model generates reasonable estimates of those parameters managers cannot directly measure based on the range of values researchers have previously collected in the field.

The IPM uses Bayesian statistics that allow a range of possible but uncertain values to be substituted in lieu of new field data. The range of values can be ‘uninformative’ (allowing a wide range of values to be equally likely) or ‘informative’ (where values known to be more likely are given a higher probability). For example, the annual survival probability for mountain lions can take any value from 0 (certain to die) to 1 (certain to live). Field research suggests that annual adult female mountain lion survival is near 0.85 in the absence of harvest. Therefore, an uninformative range of values could be a uniform (0,1) while a more useful informative range of values would have a mean of 0.85 with a standard deviation based on the range of values reported in the research literature. Montana’s lion IPM uses informative values based on previous field research to improve model performance because it’s impossible to directly measure vital rates every place or every year.

MOUNTAIN LION IPM MULTI-STATE SURVIVAL MODEL

Long-lived species with moderate reproductive rates (like lions) are particularly sensitive to changes in survival rates (Gaillard et al. 1998). The chances of a lion surviving each year also changes as it grows older. Kitten survival is the lowest of any age-class. Field estimates of kitten survival are often biased high because dens are usually located sometime after birth occurs (eg. Robinson et al. 2014) and kitten deaths between birth and when researchers discover the den may not be accounted for. Juveniles and subadults typically experience higher mortality during transient and dispersal movements (Sweaner et al. 2000, Robinson et al. 2008). Once a lion establishes a home range, nonhunting mortality risk decreases until the lion reaches old age. Adult lions typically die from intraspecific strife and human caused sources like road kills, management removals, and sport hunting (Hornocker 1970, Logan et al. 1986, Cooley et al. 2009, Robinson et al. 2014).

The model generates reasonable estimates of parameters managers cannot directly measure based on the range of values researchers have previously collected in the field

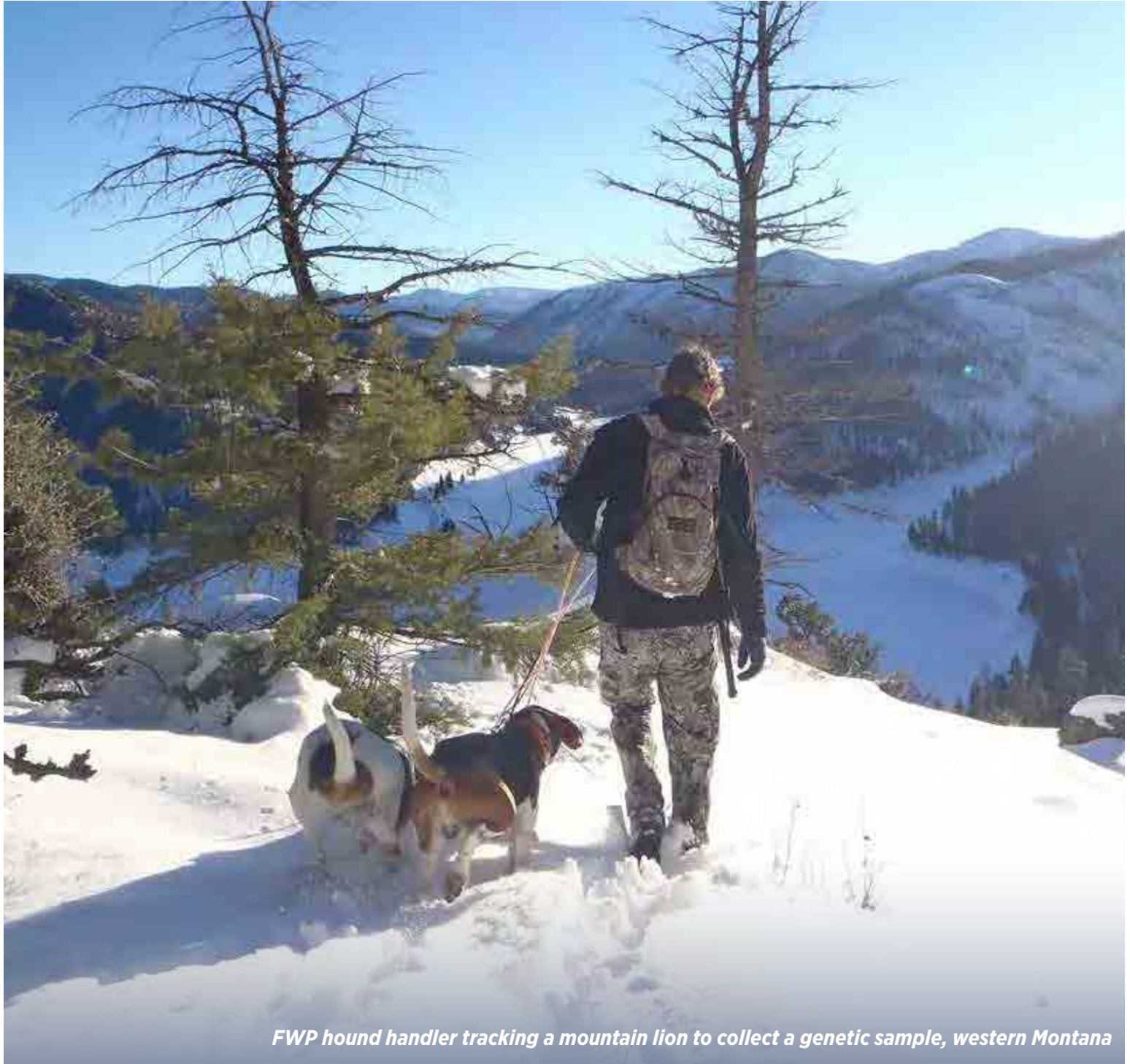
Reported rates of lion survival vary and are plagued by small sample sizes (Hornocker & Negri 2009). The lion IPM default parameters are based on telemetry data from marked lions in Wyoming’s Teton Mountains (n = 100, 2001-2012), Washington’s Kettle Range (n = 36, 2002-2006) and studies in Montana’s Garnet Mountains and National Bison Range (combined n = 127, 1998-2006). These field data describe age and sex-class annual survival probabilities and error distributions used in the model (Appendix 2). Biologists can easily adjust input values if they have reason to believe that vital rates in their area are different from those observed during these field studies.

The IPM uses a known-fate multi-state survival model (Lebreton et al. 1992, Schaub et al. 2010, Servanty et al. 2010, Kery & Schaub 2011). The known fate assumption was necessary because the data included summaries of collar deployments but not true encounter histories. The IPM assumes that at the end of each month an animal could be in one of four states: a lion could be alive, dead by harvest, dead by other causes, or already dead at the beginning of that month. Animals whose fate was unknown because they left the area or whose collar failed are only included in the analysis up until the time they were last observed. Similarly, animals harvested outside Montana were only included up until they left the state so they did not contribute to Montana’s estimated harvest rates. A description of these specific biological inputs and assumptions is included in Appendix 2.

POPULATION RECONSTRUCTION

With the exception of kittens, Montana mountain lion reproduction and nonhunting mortality is not significantly affected by typical changes in harvest levels. That is, harvest doesn't reduce the probability of animals otherwise dying and changes in a population's harvest rates don't significantly affect the surviving individuals' fecundity. In much of Montana hunter harvest is the most likely cause of lion mortality. Research on hunted populations in

Montana's Garnet Mountains showed harvest to be largely additive to more consistent background nonhunting mortality risk (Robinson et al. 2014), and FWP is not aware of research results demonstrating that harvest of independent aged mountain lions is compensatory with other mortality sources. Because nonhunting mortality occurs at a relatively constant rate, the overall number of animals that die from nonhunting causes will vary with increases or decreases of the overall population.



FWP hound handler tracking a mountain lion to collect a genetic sample, western Montana

Hunter harvest can, and often does, affect lion population growth (Cooley et al. 2009, Hornocker & Negri 2009). Harvest data also gives managers information about past population numbers and sex/age composition in an area. When managers have reliable estimates of past and current population levels, they are better able to predict the effect of future harvest prescriptions on the lion populations they manage. The IPM uses survival estimates along with the annual harvest records to reconstruct past mountain lion populations (Gove et al. 2002, Conn et al. 2008). A description of these specific biological inputs and assumptions is included in Appendix 2.

If we have an estimate of the harvest mortality rate (from telemetry data) and know the number of lions harvested, dividing the number harvested by the harvest mortality rate gives us an estimate of the pre-hunt population size. This is then corrected for an "other mortality" rate, which is relatively constant.

"Population reconstruction" methods have been successfully used to estimate the size and trend of harvested fish and wildlife populations for over 70 years. The technique uses age-at-harvest, total harvest, harvest rate, and the rate of non-harvest mortality to "rebuild" the past population that must have existed in order to have produced the known type and level of harvest.

The IPM uses these age and sex-specific survival estimates (from field research studies) along with the annual harvest rate to reconstruct past mountain lion populations. Current hunter harvest by sex, age, and location (data that, in Montana, are collected during the mandatory lion harvest inspection) is input to the model after the close of the harvest season each year. By combining survival models with observed harvest data, the IPM estimates annual population size as well as a confidence interval around these estimates.

Direct, field-based estimates of population abundance may be input into the model when they are available. These periodic field estimates can significantly improve past and future population estimates for individual lion ecoregions.

MOUNTAIN LION REPRODUCTION INTEGRATED POPULATION MODEL INPUTS

Lions can begin reproducing as early as 17 months of age or as late as 3 years old (López-González & González-Romero 1998). Studies focused on modeling cougar population dynamics often assume females reproduce for the first time at 24 months (Robinson et al. 2008, 2014; Cooley et al. 2009); the IPM uses this same convention.

Lions are induced ovulators, they can conceive during any month of the year (Bonney et al. 1981, Robinson et al. 2014), and gestation lasts about 92 days (Logan & Sweeney 2001). Despite their ability to give birth year round, most researchers working in northern latitudes report a birth pulse in mid or late summer (Laundre & Hernandez 2007, Robinson et al. 2014). The IPM assumes a default birth date of July 1.

**Montana
mountain lion
reproduction
and non-hunting
mortality is not
significantly
affected by
typical changes
in harvest levels**



Intervals between subsequent births are a function of gestation length, kitten time to independence, and any lag that may exist between rearing and breeding. Previous population models have assumed a 24-month interbirth period (Robinson et al. 2008 & 2014, Cooley et al. 2009). Field researchers measuring interbirth intervals in the wild report a range of about 17 to 24-months between litters (Lindzey et al. 1994, Logan & Sweanor 2001, Hornocker & Negri 2009). Newborn kittens trail their mothers for 1 to 2 years before dispersing or achieving independence (Hornocker & Negri 2009). In the Garnet Mountains of Montana, Robinson et al. (2014) observed an average dispersal age of 15 months ($n = 33$, range: 11-23 months), similar to that observed by others (Sweanor et al. 2000; Logan & Sweanor 2001). The IPM uses an interbirth interval of 24 months as the model default.

Mountain lion litter sizes are remarkably similar across a wide range of locations and conditions. A common estimate of litter size is 3 kittens (Spreadbury et al. 1996, Logan & Sweanor 2001, Robinson et al. 2014). Litter size does not appear to vary with harvest intensity, but may fluctuate with prey density (Wilson et al. 2004, Stoner et al. 2006, Robinson et al. 2014). The IPM uses the estimate of an average of 2.92 kittens per litter derived from recent research in Montana's Garnet Mountains (Robinson et al. 2014; $n = 24$ litters) and it assumes that half of the kittens are female. Throughout the model, the average and range of litter sizes observed in the Garnet study

is used to describe a normal distribution of litter sizes truncated between 0 and 3. The model also assumes that litter size remains constant through time and does not fluctuate with population size, prey density, or the female's age. A description of the specific biological inputs and assumptions used is included in Appendix 2.

USER CONTROLS

Biologists can adjust most model inputs such as biological assumptions, future harvest prescriptions, and model controls. The default biological assumptions are based on field research data and should only be changed if users believe that future or local circumstances have changed lion reproduction or non-harvest survival.

Users can easily use sliding scales provided on the user interface to change future harvest prescriptions by sex and to allow the model to estimate the effects of those changes. Users only need to input total anticipated hunting mortality by sex—the model will assign future harvest mortality to age classes that are consistent with the distribution of previously observed harvest ages. If the user believes that the harvest-age distribution will be different than past years, a different distribution can be manually assigned.

For more information on the model controls and settings, including the IPM model's computer code in programming language R, see Appendices 2 and 7.

CHAPTER 7

MOUNTAIN LION HARVEST REGULATION

REGULATION HISTORY

Montana's mountain lion hunting regulations became increasingly complex, and inconsistent, during the 45 years since lions were designated as a big game species. New and modified regulations were adopted in an ad hoc fashion as various Fish and Wildlife Commissions struggled to address public concerns about harvest levels, prey populations, harvest distribution, parity between hound handlers and hunters without dogs, nonresident and outfitter participation, human-lion conflicts, and scores of other issues.

In FWP regions where hunting was allowed, mountain lion harvest was not restricted by quotas or limited licenses until the mid-1980s. Hunters were simply required to purchase a license and allow FWP personnel to inspect lions following harvest. By 1988, most FWP regions had established Lion Management Units with individual harvest quotas (and/or female subquotas) to limit harvest. The Department began to require harvested lions to be reported to a hotline within 48 hours and presented for physical inspection within 10 days. The reporting period was reduced to 12 hours in subsequent seasons.

Until 1997, most Winter lion hunting seasons ran from 12/1 to 2/15, after which hound handlers could continue to pursue lions with dogs during dedicated “chase” or “training seasons” that extended into April. More recently, hound training seasons open 12/2 and run concurrent with established harvest seasons.

Montana lion populations appeared to significantly expand and grow after 1980, as did the popularity of recreational hound hunting. Both resident and nonresident hunter participation increased to historically high levels by the mid-1990s (Figure 22) and the number of nonresident hunters was not limited. During that period, conflicts between resident hound handlers, nonresident hunters, and outfitters were common in portions of northwest and west-

central Montana where winter snow is consistently present and there is plentiful access to public land lion habitat. For example, In Region 1 approximately half of harvested mountain lions were taken by outfitted or nonresident hunters during the 1990s—guided hunter harvest often closed LMUs before local “weekend” hunters had an opportunity to hunt. Similarly, over 30% of successful hunters in Region 2 were nonresidents during the 1990s; this proportion rose to 47% by 2005.

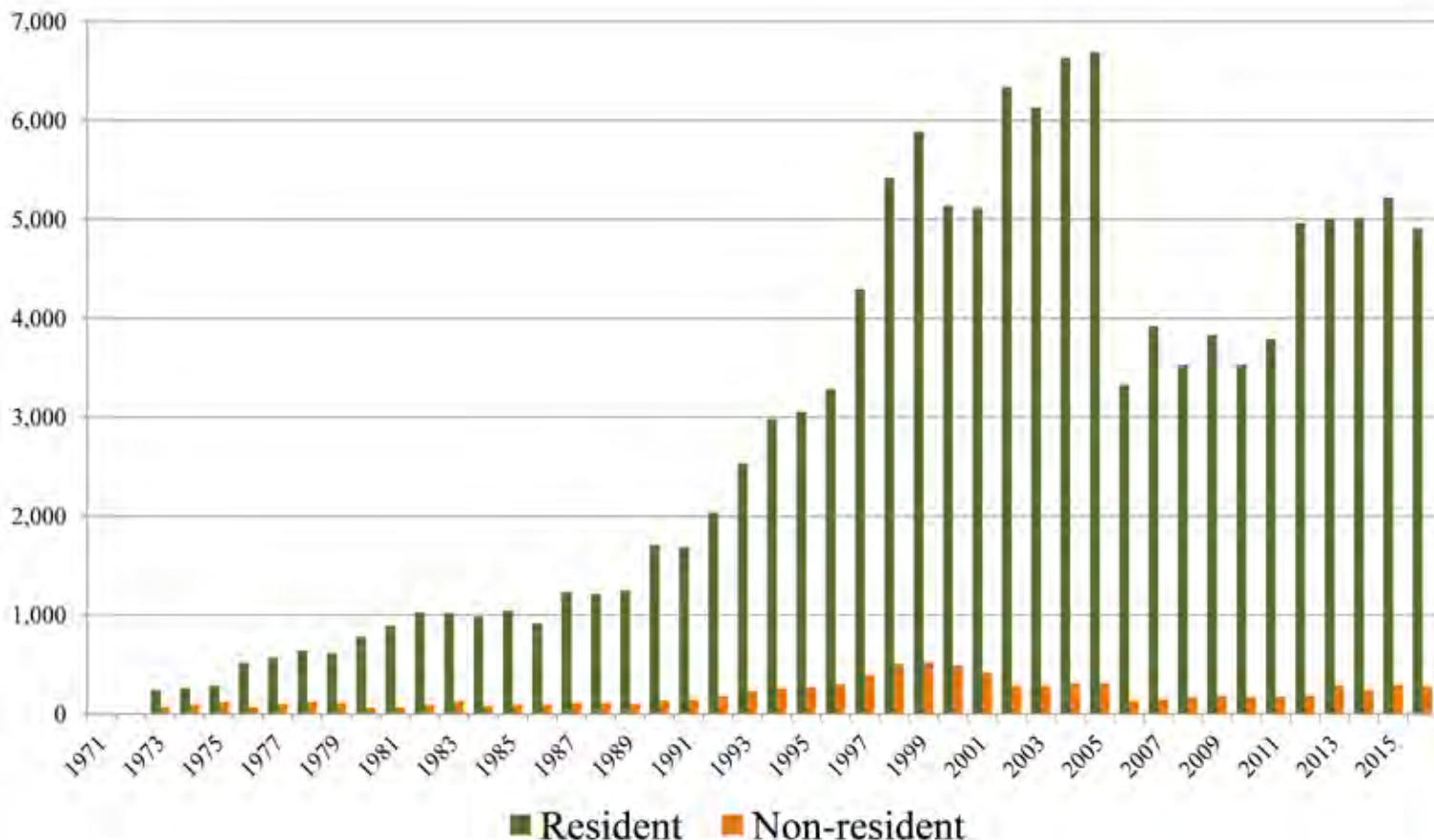
In 2000, FWP's Region 1 began to issue resident mountain lion hunting permits which, in effect, limited nonresident hunters' opportunity. Beginning in 2005, most Region 1 LMUs were managed using limited Special Mountain Lion Licenses that restricted nonresidents to no more than 10% of the licenses offered in a drawing.

Montana's mountain lion hunting regulations became increasingly complex, and inconsistent, during the 45 years since lions were designated as a big game species

Similarly, in 2006, Region 2 began to require that nonresidents draw a Special Mountain Lion License to harvest a lion in most of the region. Resident lion harvest was managed using a quota and nonresident Special License numbers could not exceed 10% of an LMU's total quota. The Fish and Wildlife Commission required that both resident and nonresident hunters draw a Special Mountain Lion License in most Region 2 LMUs beginning in 2008.

In Region 2, managers were not able to achieve predictable harvest using only these Special Mountain Lion Licenses. License fill rates varied widely from year-to-year and across LMUs. Female lion harvest was also virtually eliminated despite rapidly increasing populations. Therefore, in 2012,

Figure 22. Montana mountain lion license sales, 1973 – 2015.



Region 2 introduced an additional Late Winter Season (opening 2/1) during which hunters with a General Lion License could hunt until any quotas previously unfilled by Special Mountain License holders were met (this became known as a “hybrid” season). Nonresident participation was unlimited during the Late Winter Season and nonresident harvest rates more than doubled after the Late Winter Season was adopted.

Regions 3-7 continued to limit harvest during this period using sex-specific quotas and subquotas. Conflict between resident and nonresident hunters in these regions was low and the Fish and Wildlife Commission did not impose restrictions on nonresident harvest opportunity in these Regions.

Prior to 1997, all legal harvest occurred during the Winter Season (that immediately followed the 5-week fall General Deer/Elk season) during which hunting with the aid of dogs was allowed. Beginning that year, portions of the state began to also allow lion harvest during the fall General

Deer/Elk Season but without the use of dogs—fall seasons were adopted statewide in 1999. In 2010, the Commission added a statewide Archery Only Season that corresponded with the Archery Only Deer/Elk Season.

The Commission responded to concerns that Fall Season harvest could significantly reduce winter hound harvest opportunity by adopting separate LMU harvest quotas for the combined Archery Only and Fall Seasons. In most cases, if harvest prior to the Winter Season(s) exceeded 20% of a lion management unit’s total quota or number of Special Lion Licenses, that LMU’s Fall Season would be closed.

The separate quota for Archery Only and Fall Season harvest added complexity to the regulations but did not appear to meaningfully affect the seasonal distribution of lion harvest. Between 2007 and 2016, 95% of all hunter harvested lions in Montana were taken during the Winter Seasons with the aid of dogs. During that same period 11% of the state’s LMUs were closed during any given Archery

Only or Fall Season due to the 20% quota being met and 85% of those LMUs had an Archery Only/Fall quota equal to only one lion. Harvest that met fall quotas in these LMUs occurred a median of 16 days from the end of the 85-day Archery Only/Fall Season. The Archery Only/Fall Season quota was unlikely to reduce overall harvest in LMUs because that harvest was deducted from the LMU's quota and subquota.

However, harvest during the fall seasons is additive to prescribed Winter Season harvest in LMUs where the number of Special Mountain Lion Licenses issued serves as the effective harvest limit. Because of this difference, maintaining a separate Archery Only/Fall Season harvest quota may be necessary in LMUs where harvest is managed using Special Mountain Lion Licenses, instead of quotas.

HARVEST SEASON SETTING

This Strategy identifies four mountain lion ecoregions within the state that will be the basis for both monitoring populations and establishing broad harvest objectives. Within an ecoregion, FWP managers will work with the public and the Fish and Wildlife Commission to:

1. Develop clear and measurable population, harvest, and hunter opportunity objectives for the ecoregion.
2. Determine an overall harvest prescription that is likely to achieve the ecoregion's explicit population objectives.
3. Distribute harvest opportunity across the ecoregions' LMUs to address local concerns, reduce hunter crowding, and to focus or limit harvest where necessary.
4. Actively monitor the effect of the harvest prescription over time.
5. Adjust management objectives and harvest prescriptions, as necessary.

This process is described, in detail, in Chapter 8.

The amount of harvest that occurs in any one LMU matters much less to an ecoregion's mountain lion population than the overall harvest within that LMU's ecoregion. That is, whether an individual LMU's harvest limit (or quota) is reached or exceeded during a given year (due to weather, hunter participation, or other factors) is less important than the total annual ecoregional harvest.

Managers may intentionally recommend a relatively high harvest rate in certain LMUs (e.g. those including urban areas) or relatively low harvest rate in others (where access is challenging or tolerance for lions is high). As long as harvest is generally distributed across an ecoregion, the sum total of harvest is what will affect the ecoregion's population status and trend.

Therefore, in an LMU where harvest is limited by a quota, that quota will simply serve as "trigger" to initiate the closing of the LMU to further harvest. A quota is not necessarily a harvest objective for the LMU. When setting LMU quotas, biologists will anticipate how much additional harvest (if any) is likely to occur between the time the LMU's Season closure is publicly noticed and when the closure is effective. Subsequent ecoregional harvest decisions will consider the actual harvest that occurred in previous years' Seasons. Individual LMU quota "over runs" or "under runs" will be fully accounted for in future management decisions.

From a population standpoint, harvest that occurs in any one LMU matters much less than the overall level of harvest within that LMU's ecoregion

In LMUs managed using Special Mountain Lion Licenses, an area's average Special License fill rate (by sex) will be used to determine the overall number of licenses that should be offered to meet the ecoregion's harvest objective. Any differences between projected and observed Special License fill rates will be considered when determining future license levels. As with General License areas, decisions about future harvest prescriptions will be based on the modeled and measured effect the actual past harvest had on ecoregional populations.

There is little biological justification to frequently adjust mountain lion harvest prescriptions. Large scale mountain lion populations are very resilient to moderate changes in harvest and updated population estimates (both within trend areas and for the western ecoregions) will be available only periodically. Therefore, although FWP will routinely consider changes to mountain lion hunting season structure and quota levels, actual adjustments could be made less frequently.

LEGAL AUTHORITY

The Montana Fish and Wildlife Commission has statutory authority to regulate the management of wildlife (87-1-201), specifically "Large Predators" (87-1-217), including mountain lions. The Commission may determine seasons, bag limits, possession limits, and means of take for mountain lions as it deems appropriate (87-1-304). Montana statute describes specific resident and nonresident licenses required to hunt mountain lions (87-2-507, 508) and the license necessary for residents to pursue lions with dogs during the Training Season (87-2-521). Montana law limits hunters to taking no more than one mountain lion per license year (87-2-702) and allows the use of dogs to hunt or capture mountain lions during designated seasons (87-6-404). It is legal to kill a mountain lion at any time that is attacking, killing, or threatening to kill a person or livestock (87-6-106), using dogs if necessary (87-3-127).

Consistent with Montana law and Administrative Rules, when the Commission decides that it's necessary to limit nonresident harvest opportunity

Montana law specifically allows the Commission broad discretion to regulate the allocation of hunting opportunity among resident and nonresident hunters:

87-1-301. Powers Of Commission

(6) (a) The commission may adopt rules to:

- (i) limit the number of nonresident mountain lion hunters in designated hunting districts; and***
- (ii) determine the conditions under which nonresidents may hunt mountain lion in designated hunting districts***

(b) The commission shall consider, but is not limited to consideration of, the following factors:

- (i) harvest of lions by resident and nonresident hunters;***
- (ii) history of quota overruns;***
- (iii) composition, including age and sex, of the lion harvest;***
- (iv) historical outfitter use;***
- (v) conflicts among hunter groups;***
- (vi) availability of public and private lands; and;***
- (vii) whether restrictions on nonresident hunters are more appropriate than restrictions on all hunters.***



under the above statute, nonresident licenses will be limited to numbers not exceeding 10% of the total licenses or quotas assigned to a given hunting area (87-2-506, 12.3.105). LMUs with a quota (or number of licenses) of less than 10 will be combined with similar Regional LMUs and a number of nonresident licenses, not exceeding 10% of the combined total quota(s), will be allocated among those districts on a rotating basis (as described in ARM 12.3.116)

MODEL HARVEST REGULATIONS

Following are the three mountain lion hunting season structure alternatives Montana will use to manage hunter harvest. Managers may select an LMU's Season Type from among these three alternatives to consistently address the diversity of management challenges and needs across the state while minimizing regulation complexity. In most cases, changes to an individual LMU's season structure and/or quota(s) will be considered every second year.

Season Type 1:

Special Mountain Lion License LMU

MCA 87-1-304(e) allows the Fish and Wildlife Commission to issue limited Resident (Class D-2) and Nonresident (Class D-1) Special Mountain Lion Licenses. These licenses are valid in a single LMU and hunters can harvest a mountain lion only in that LMU during the Winter Season. FWP offers a limited number of these Special Licenses each season. Therefore, they are allocated by a random drawing and nonresident hunters are limited to

no more than 10% of the total number of available licenses (87-1-301). Sex-specific licenses or subquotas may also be designated to help achieve harvest objectives. Once a subquota is met (and the season for that sex closes), Special License holders may continue to hunt for lions of the remaining sex through the end of the legal harvest season. Both Special License holders and General License holders may harvest a lion during the Archery Only and Fall Season Without Dogs in these LMUs, but that harvest will be subtracted from any sex-specific subquotas for that LMU. Managers may choose to implement a combined Archery Only/Fall Season quota or subquota where necessary.

Season Type 2:

General License LMU

Hunters possessing a General License may harvest a mountain lion during the Archery Only, Fall Season Without Dogs, or Winter Seasons until the total or sex-specific quota for that LMU is met. There is no additional limit to nonresident opportunity to harvest a mountain lion using this Season Type.

Season Type 3:

Resident General License, Nonresident Special Mountain Lion License LMU

Resident hunters possessing a General License may harvest a mountain lion during the Archery Only, Fall Season Without Dogs, or Winter Seasons until the total or sex-specific quota for that LMU is filled. Nonresident hunters must apply for, and receive, a LMU-specific Special Mountain Lion License to harvest a mountain lion in that LMU during the Archery Only, Fall Season Without Dogs or Winter Season. Special Mountain Lion Licenses will be offered to nonresident applicants in quantities not exceeding 10% of the LMUs total combined harvest quota(s). LMUs with a total quota of less than 10 will be combined with similar Regional LMUs and a number of nonresident licenses, not exceeding 10% of the combined total quota(s) for those LMUs, will be allocated among those LMUs on a rotating basis (as described in ARM 12.3.116).

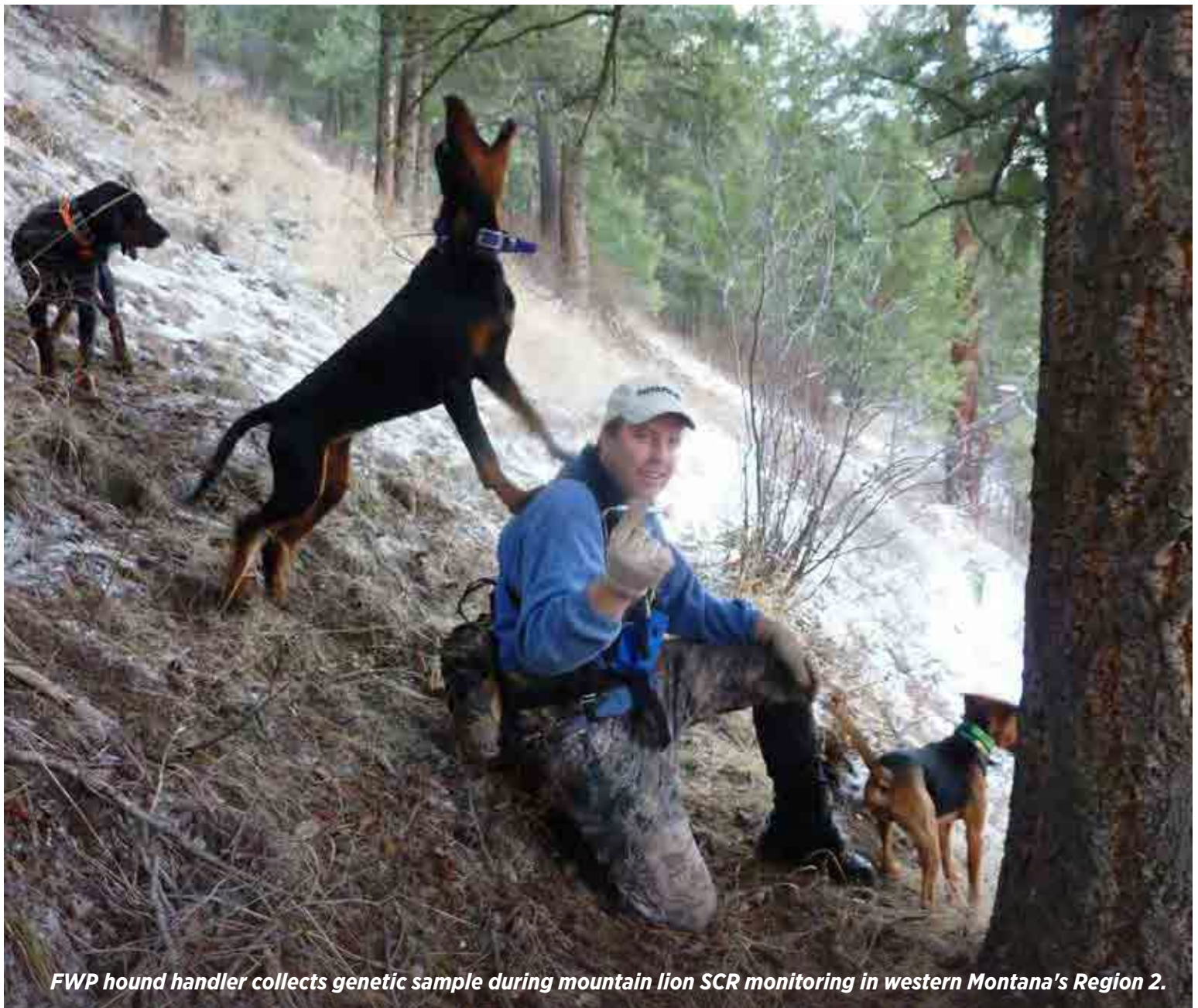
CHAPTER 8

ADAPTIVE HARVEST MANAGEMENT

This Strategy will provide FWP and the public with more accurate information about Montana's current, and likely future, mountain lion populations. However, there will always be some uncertainty about the precise effects of our management actions on lion populations. Although the overriding Conservation and Management Guidelines that direct Montana's mountain lion management decisions will

not change, specific local management objectives may well need to be refined over time as more information becomes available and conditions change.

In this chapter, we describe the adaptive harvest management process FWP will use to develop, evaluate, and adjust specific mountain lion management actions. This process relies on field monitoring and population modeling data (described earlier in this Strategy) to measure the results of management actions against explicit objectives that the public, FWP, and the Fish and Wildlife Commission collaboratively develop.



FWP hound handler collects genetic sample during mountain lion SCR monitoring in western Montana's Region 2.

**Adaptive management
can help reduce
decision-making gridlock
by making it clear that
decisions are provisional,
their effects will be
carefully monitored, and
that modifications are
expected**

Adaptive management is a science based approach to decision making that's useful when there is uncertainty about a decision's outcome. It is a cycle of planning for an action, doing the action, measuring what happened, and then modifying the next action (if needed) based on what you learned. The basic principles of adaptive management have been used for centuries (Falaruw 1984) and are increasingly employed by natural resource management agencies, including FWP (Montana Fish, Wildlife and Parks 2001).

The process works to continually improve our understanding of a system by comparing the resource's actual versus predicted response to management treatments (Nichols & Williams 2006, Williams et al. 2007). Adaptive management emphasizes 'learning while doing' and then adjusting management based on what was learned (Walters & Holling 1990). It is specifically not 'trial and error'— instead, managers explore alternative ways to meet management objectives, predict the outcomes of those alternatives based on the current state of knowledge, implement one or more alternatives, monitor the impacts of the management actions, and then use the results to adjust management actions as needed to more effectively meet objectives. Over time, resource management improves while uncertainty is reduced.

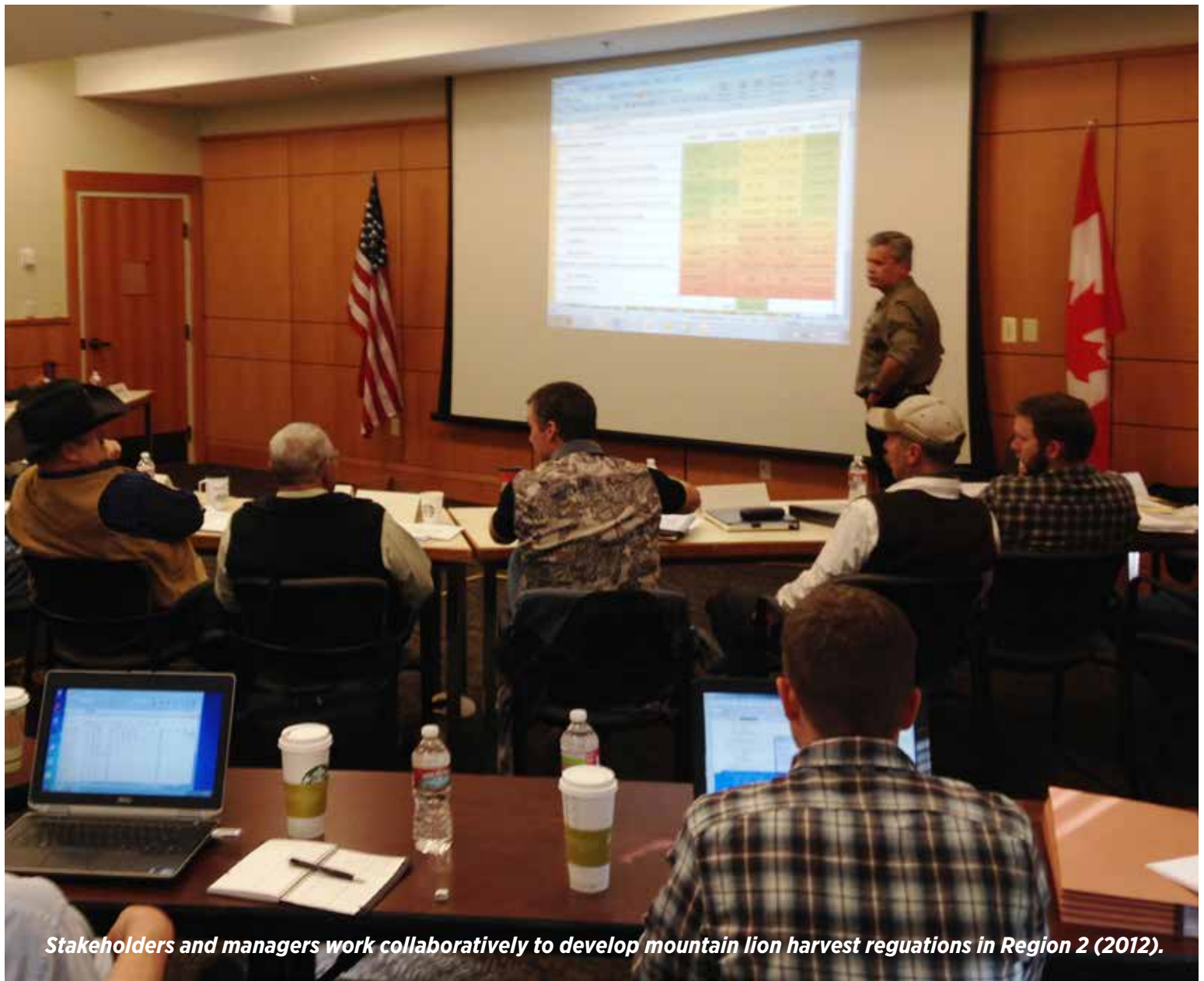
An adaptive management system requires the following conditions (Williams & Brown 2012):

- Resources are responsive to management but actual outcomes are uncertain;
- Management objectives are clear and measurable;
- There is both a range of management alternatives and the flexibility to change prescriptions as understanding improves over time;
- Monitoring can effectively describe the effect of the management action;
- There is a sustained commitment to the process by both stakeholders and decision makers.

Resource models are a critical component of the adaptive management approach. Models allow managers to use the most current information to predict the effect of possible treatments. They also represent what we don't yet know about how the system works—these uncertainties are explicitly incorporated into the model. The credibility of predictive models can improve through time as new information becomes available and uncertainty is reduced.

The effects of management actions must also be monitored so that the actual response can be compared to what was initially predicted. A successful monitoring program provides data that specifically describes the effects of the management action. Monitoring efforts must be designed from the start with that goal in mind (Szaro et al. 1999, Nichols and Williams 2006).

Disagreement about the past, and potential, effects of management decisions often leads to conflict among stakeholders. Adaptive management can help reduce decision making gridlock by making it clear that decisions are provisional, that their effects will be carefully monitored, and that modifications are expected. Management itself allows us to learn about, and therefore better manage, the resource through time.



Stakeholders and managers work collaboratively to develop mountain lion harvest regulations in Region 2 (2012).

MONTANA'S ADAPTIVE MOUNTAIN LION HARVEST MANAGEMENT PROGRAM

An adaptive harvest management process will guide most of Montana's mountain lion harvest decisions. FWP will use the best available science to develop the modeling and monitoring methods necessary to fully implement this Strategy. The modeling and monitoring techniques described in this document will be periodically reviewed and updated to ensure that we continue to use the most rigorous and up-to-date scientific methods practically available.

FWP used a habitat model (Chapter 3) to describe four distinct and biologically meaningful mountain

lion "ecoregions" within the state (Chapter 4). These ecoregions will be the spatial basis of FWP's lion monitoring program. FWP will work with stakeholders to periodically develop measurable mountain lion management objectives for each of these ecoregions. These objectives will be periodically reviewed, and potentially refined, by FWP and the public.

The likely effects of alternative harvest prescriptions will be evaluated using an Integrated Population Model (Chapter 6). These predictions will help stakeholders and FWP recommend an alternative to the Fish and Wildlife Commission that is most likely to meet that ecoregion's objectives.

In most cases, management alternatives will include an overall harvest prescription for each ecoregion. Harvest opportunity will then be allocated among the ecoregions' individual lion management units to distribute hunter effort and address local issues.

FWP will use field data to periodically estimate mountain lion population size, composition, and trend within the Northwest, West-central, and Southwest ecoregions (Chapter 5). These periodic population estimates will be used to improve the IPM's predictions, to assess how well management objectives are being met, and to inform decisions about future harvest prescriptions.

Other monitoring data including hunter effort and success, location and age of harvested animals, conflict rates, and prey status will be collected annually throughout the state. These additional data will be considered when evaluating management alternatives. Harvest data, weather, patterns of conflict, harvest success and other metrics will be the primary data used to guide management in the Eastern ecoregion.

The adaptive management approach includes the following basic steps (Figure 23):

Step 1 – Involve stakeholders

Stakeholders (including the public, managers, and decision makers) help design an adaptive management program, set management objectives, and develop management actions. Stakeholders must be committed to the adaptive management process for the long term.

FWP biologists and managers routinely meet with hound handlers, other hunters, and mountain lion advocates to share data and solicit public input concerning ongoing mountain lion management. The Fish and Wildlife Commission will generally consider proposals to adjust harvest season structure and/or harvest quotas every two years during the biennial season setting process.

Step 2 – Set objectives

Objectives must be clear and measurable. These objectives are benchmarks against which to compare the potential effects of management alternatives. They also serve as

means to evaluate how effective management actions were, once implemented.

There may be discrete objectives for population composition and trend, hunter experience, harvest distribution, rates of reported conflict, etc. It's important that an objective identifies a clear time by which it should be met and clearly describes how progress toward that objective will be measured.

An example of clear and measurable objectives would be:

“The 2023 Northwest ecoregion estimated population of independent age mountain lions will be between 1,100 and 1,300 animals”, and

“The proportion of >5-year-old male mountain lions harvested in the Northwest ecoregion will exceed 12% during 4 of the next 6 hunting seasons”

Step 3 – Develop management alternatives

Identify a set of potential management actions that, based on the best information available, are likely to help meet the objectives.

For example, competing harvest alternatives could be:

Alternative 1: “Offer a total of 160 Special Licenses with a male subquota of 70 in LMUs 100 – 130; maintain a total “any legal” mountain lion quota of 30 in LMUs 132 – 170; and maintain a quota of 30 females and 50 males distributed across LMUs 200 – 203, the MSMA, and 283/285 during the 2018 – 2019 hunting seasons in order to harvest an average of 130 male and 90 female lions annually”, or

Alternative 2: “Offer a total of 200 Special Licenses with a male subquota of 80 in LMUs 100 – 130 and maintain a total any legal mountain lion quota of 30 in LMUs 132 – 170; and maintain a quota of 45 females and 70 males distributed across LMUs 200 – 203, the MSMA, and 283/285 during the 2018 – 2019 hunting seasons in order to harvest an average of 150 male and 110 female lions annually”

Step 4 – Use models to predict the alternatives' effects

Models can describe our current understanding about how a system works and explicitly represent our uncertainties. Models are used to predict likely responses of a resource to management actions.

In our example, biologists would use the Integrated Population Model to evaluate which of the previous alternatives is most likely to move the overall Northwest Ecoregion's independent aged mountain lion population toward the 1,100-1,300-objective range in 6 years and recruit sufficient older age-class toms each year to also meet the harvest-age composition objective. If neither alternative is likely to meet both objectives, new alternatives will be developed and evaluated.

Step 5 – Develop monitoring plans

Design a monitoring plan that effectively tracks the resource's status relative to the objectives. Monitoring must produce data relevant to the management situation that motivated the monitoring in the first place.

For our example, there would be three monitoring plans in place:

- 1. Teeth will be extracted from all harvested lions upon mandatory inspection resulting in a >90% age assignment rate using cementum annuli analysis, and*
- 2. Actual 2018 and 2019 Northwest ecoregion harvest, by sex, will be input into the Integrated Population Model following the 2019 season to reassess population trend relative to the population objective, and*
- 3. A Spatial Capture-Recapture field estimate of lion abundance will be developed for the Northwest ecoregion Trend Monitoring Area in 2023 and Supplemental Monitoring Area in 2024. Biologists will directly compare the 2018 and 2023 Trend Monitoring Area population estimates. The relationship between observed mountain lion abundance and the RSF for both monitoring areas will be combined to produce an estimate of independent age mountain lions in 2024, which will be input into the IPM.*

Step 6 – Make management decisions

Select management actions that are likely to move the resource toward the objectives.

For our example:

Managers will recommend a preferred alternative or alternatives to the Fish and Wildlife Commission who will make a management decision for the upcoming hunting seasons.

Step 7 – Monitor the resource

Measure the resources' response to management actions.

FWP will implement the monitoring plans described in Step 5.

Step 8 – Assess management success

Compare the predicted vs. observed changes in the resource's status to improve our understanding of the system and allow better decisions to be made in the future.

For our example:

Monitoring data indicate that the overall population objective has been (or is likely to be) achieved but the harvest-age composition objective has not.

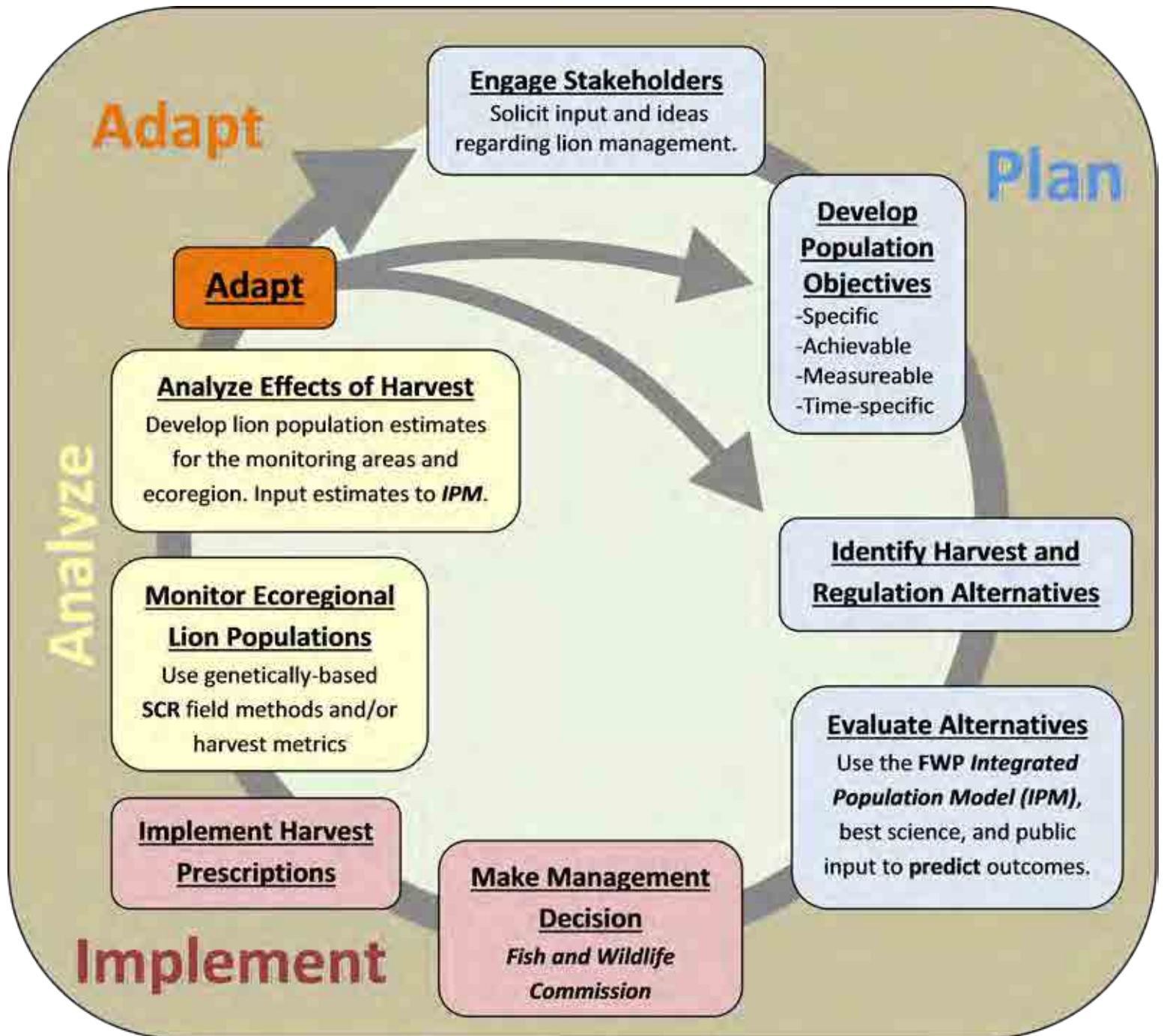
Step 9 – Repeat the process

Cycle back to Step 6 and, less frequently, to Step 1. Predictive models will improve based on new information. Objectives can change over time.

For our example:

Managers propose a revised harvest prescription that maintains female harvest at a similar level while reducing male harvest.

Figure 23. Adaptive mountain lion harvest management process.



CHAPTER 9

REGIONAL MANAGEMENT CONSIDERATIONS AND OBJECTIVES

Mountain lion populations will be monitored, modeled, and managed at the ecoregion scale. However, it is important to recognize the social and biological issues that are unique to each FWP administrative Region. FWP wildlife managers are experts in their regional landscapes and communities, opportunities to gather public input are organized regionally, and regional managers develop and submit individual hunting season proposals for Fish and Wildlife Commission consideration. Responses to human-lion conflicts are also coordinated by Regional managers and field staff.

This Strategy will require that FWP and the public work across FWP regional boundaries to develop management objectives and alternatives for each of the 4 broader

mountain lion ecoregions. They will also need to collaboratively work to distribute an ecoregion's harvest prescription because the ecoregion's constituent LMUs lie within more than one FWP administrative region.

This chapter presents each FWP administrative region's mountain lion management history and some local factors that will need to be considered as ecoregional management proposals are developed and evaluated.

This Strategy will require that FWP and the public work across FWP regional boundaries to develop management objectives and alternatives for each of the 4 broader mountain lion ecoregions



REGION 1

Approximately 80% of FWP Region 1's area is high-quality mountain lion habitat (Chapter 3), the most of any of the state's 7 administrative Regions (Figure 24). Because of this, and the Region's abundant white-tailed deer, it may support the highest overall mountain lion density in the state. Mountain lion habitat occurs almost entirely on either public or publicly accessible private land and tracking snow is generally present throughout the Winter Season.

Region 1 lion harvest was unlimited until specific LMU quotas were adopted in 1986. Harvest was managed using a system of total quotas and female subquotas through 1994, followed by a total quota system until 1999 (Table 8).

Regional harvest steadily increased throughout the 1990s (Table 7) and the average age of harvested lions also increased during this same period. In the late 1980s, only 38% of the harvest was made up of older (≥ 3 years) lions. That proportion increased to 66% older individuals as the harvest steadily increased from 1990 to 1996.

Mountain lion harvest increased during the 1990's such that even historically-high quotas were exceeded in 1995 and 1997. Harvest then began to decline in 1999 following a drop in harvest-age structure that began in 1997. The effect of high harvest levels (especially of females) was likely exacerbated by a severe winter in 1996-1997 that significantly reduced both the Region's deer populations and subsequent recruitment (Montana Fish, Wildlife and Parks 2006).

Quota-based, General License harvest regulations did not limit nonresident hunter participation during the 1990s and conflicts between nonresident/outfitted hunters (who in some years took nearly half of all Region 1 lions) and resident hunters became unacceptably common.

Between 1997 and 2004, only 39% of harvested lions were 3 years old or older. In 2000, declines in the Region's age-in-harvest and overall harvest, combined with a public demand to prioritize resident hunter opportunity, led the Fish and Wildlife Commission to change the Region's management approach. The Commission restricted

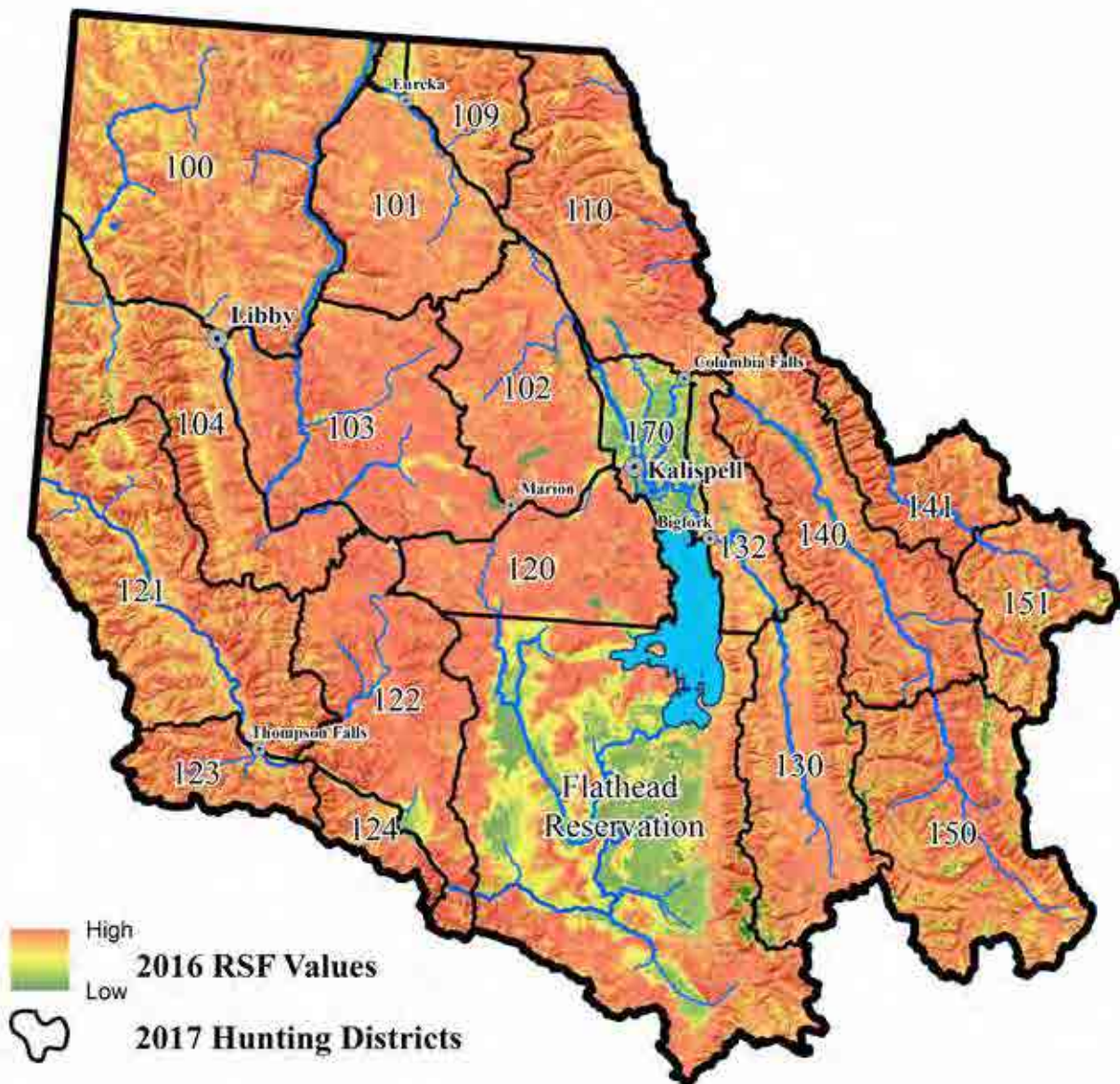
Table 7. Region 1 mountain lion harvest, 1971 – 2016.

License Year	R1			
	F	M	Unk	Tot.
1971	10	11	0	21
1972	9	13	0	22
1973	4	19	0	23
1974	23	23	0	46
1975	27	27	0	54
1976	18	20	0	38
1977	21	21	0	42
1978	12	14	0	26
1979	8	21	0	29
1980	9	6	0	15
1981	20	25	0	45
1982	18	26	1	45
1983	27	31	0	58
1984	13	29	1	43
1985	17	30	1	48
1986	16	32	0	48
1987	22	25	0	47
1988	18	34	0	52
1989	20	46	0	66
1990	30	55	0	85
1991	40	69	0	109
1992	50	67	1	118
1993	53	86	0	139
1994	81	122	0	203
1995	80	100	0	180
1996	87	94	0	181
1997	119	112	0	231
1998	139	105	1	245
1999	92	86	0	178
2000	103	93	0	196
2001	80	83	0	163
2002	67	61	0	128
2003	57	47	0	104
2004	42	69	0	111
2005	52	59	2	113
2006	20	50	0	70
2007	20	64	0	84
2008	32	62	0	94
2009	29	63	0	92
2010	42	83	0	125
2011	53	89	0	142
2012	46	78	0	124
2013	50	79	0	129
2014	43	57	0	100
2015	41	68	0	109
2016	49	56	0	105

resident and nonresident harvest by requiring a Special Lion License, obtained through a drawing, across much of the Region that year.

In 2005, a combination of limited entry (Special Licenses) and quota systems were adopted in Region 1. The goals of this harvest strategy were to 1) maintain a high-quality hunting experience, 2) limit nonresident hunter harvest in some LMUs, 3) prevent the overharvest of adult females while recruiting more mature males into the population, and 4) prevent FWP regulations from limiting effective harvest in LMUs where tolerance for lion presence was low. Region 1 documented a higher percentage (55%) of older individuals (≥ 3 years) in the harvest during the years following the change (2005 – 2013). In 2014, the Commission adopted a male subquota, limited entry hunting season type for most Region 1 LMUs.

Figure 24. FWP Region 1 2016 mountain lion winter RSF and hunting districts.



In 2017, 13 of the Region’s 18 LMUs issued a limited number of Special Licenses, available through a drawing, with nonresidents limited to 10% of the total number of Licenses offered. The Region’s remaining 5 LMUs managed harvest using General Lion Licenses; harvest in these Units is generally limited by overall quotas and male subquotas. LMU 170 (the Flathead Valley) is the single exception. An unlimited number of lions could be taken each season in this highly developed, urban, LMU. In practice, however, lions are rarely harvested in LMU 170—only 4 lions were taken by hunters in that Unit between 2007 and 2016.

The predominant use of limited Special Licenses in Region 1 has effectively emphasized resident hunter harvest—

between 2007 and 2016 an average of only 13% of harvested lions were taken by nonresidents there.

Region 1 lies entirely within the Northwest mountain lion ecoregion (Figure 25). The Region’s biologists and public will work with their counterparts in Region 2 (that includes the remainder of the Northwest ecoregion) to adaptively manage the ecoregion’s mountain lion population.

Model Harvest Regulation Season Type 1: Special Mountain Lion License and **Season Type 2: General License** will initially need to be employed to address Region 1’s diverse social and biological management needs.

Figure 25. FWP Region 1 hunting districts and mountain lion ecoregion.



Specific harvest and population objectives will be identified and evaluated through the adaptive harvest management process (Chapter 8). However, Region 1 will generally advocate for limited adult female harvest in the Northwest ecoregion so that the overall, long term, population growth rate within the ecoregion is stable or positive. Region 1 will also support harvest proposals designed to recruit and maintain older age-class males in the ecoregion. Mountain lion harvest across the Region will be generally distributed in proportion to the various LMUs' estimated mountain lion habitat quantity and quality.

Region 1 will recommend season types that effectively limit nonresident hunter harvest, where necessary, to maintain

a high-quality hunting experience for resident mountain lion hunters.

Region 1 will also ensure that hunting regulations do not limit hunter harvest in densely populated areas of the Region (such as LMU 170) where human-lion conflicts are likely. Human-lion conflicts will be mitigated using both hunter harvest and effective responses to individual incidents that are consistent with the Depredation and Control Guidelines (Appendix 3).

Table 8. Summary of Region 1 mountain lion harvest regulations, 1971 – 2017.

License Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Mandatory Inspection	None				10 Day Inspection						4 Day Inspection		48 Hr. Inspection	10 Day Inspection	72 Hr. Inspection	48 Hr. Inspection
Hunting season	Opening of General D/E - 4/30			Opening of General D/E - 4/30; HD 150 9/15 - 11/24	12/1- 4/30; HD 150 9/15 - 11/27	12/1- 4/30; HD 150 9/15 - 4/30	12/1- 2/15; HD 150 9/15 - 2/15									12/1 - 2/15; HD 150 & 151 9/15 - 2/15
Chase/Hound Training						None										2/16 - 4/30
Regional Quotas	UNLIMITED; One ES Adult Lion per Hunter															Total = 52; FSQ = 26

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection						48 Hr. Report; 10 Day Inspection					24 Hr. Report; 5 Day Inspection	24 Hr. Report; 10 Day Inspection				
Hunting season						12/1 - 2/15; HD 150 & 151 9/15 - 2/15						Fall Season w/o dogs; 12/1- 2/15; HDs 150 & 151, 9/15 - 2/15				Fall Season w/o dogs; Winter Season, 12/1 - 4/14; HDs 150 & 151, 9/15 - 4/14
Chase/Hound Training Season						2/16 - 4/30										No dedicated Chase Season, Hound Training allowed during Winter Hunting Season
Regional Quotas	Total = 52; FSQ = 26	Total = 55; FSQ = 28	Total = 68; FSQ = 32	Total = 77; FSQ = 38	Total = 98; FSQ = 51	Total = 95; FSQ = 53	Total = 97; FSQ = 51	Total = 109; FSQ = 90	Total = 145; Any Legal Lion	Total = 175; Any Legal Lion	Total = 204; Any Legal Lion	Total = 229; Any Legal Lion	Total = 246; Any Legal Lion	Total = 203; Any Legal Lion	Total = 199; Any Legal Lion	Total = 164; Any Legal Lion

License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection	12 Hr. Report; 10 Day Inspection														
Hunting season	Fall Season w/o dogs; Winter Season, 12/1 - 4/14; HDs 150 & 151, 9/15 - 4/14				Archery-only Season w/o dogs; Fall Season w/o dogs; Winter Season, 12/1 - 4/14; HDs 150 & 151, 9/15 - 4/14										
Chase/Hound Training Season	Hound Training Season 12/2 - 4/14														
Regional Quotas	Total = 154; Any Legal Lion	Total = 141; Any Legal Lion	Total = 141; Any Legal Lion	Total = 136; FSQ (some LMUs) = 41	Total = 148; FSQ (some LMUs) = 41	Total = 158; FSQ (some LMUs) = 51	Total = 172; FSQ (some LMUs) = 54	Total = 191; FSQ (some LMUs) = 55	Total = 191; FSQ (some LMUs) = 55	Total = 223; FSQ (some LMUs) = 69	Total = 223; FSQ (some LMUs) = 69	Total = 190; MSQ (some LMUs) = 71	Total = 190; MSQ (some LMUs) = 71	Total = 190; MSQ (some LMUs) = 71	Total = 190; MSQ (some LMUs) = 71

REGION 2

High-quality mountain lion habitat is distributed throughout FWP Region 2, especially in the lower Clark Fork, Blackfoot, and portions of the Bitterroot Valleys (Figure 26). The Region has a diverse and abundant ungulate prey base. Recent field estimates of mountain lion abundance (using SCR) in portions of the Blackfoot and Bitterroot Valleys were high compared to the range of densities previously reported for western North America.

Important field research into mountain lion ecology, the effects of harvest, and new population monitoring techniques has been conducted in Region 2 and the results of this work were used to develop this Strategy (Hornocker & Negri 2009, Robinson & DeSimone 2011, Russell et al. 2012, Proffitt et al. 2015).

Region 2 lion abundance and harvest opportunity increased dramatically during the 1990s, reaching a peak of 267 lions taken (more than half of them females) during the 1998 seasons (Table 9). Historically high harvest continued through the late 1990s even after the severe winter of 1996-97 reduced deer and elk herds in several areas of the Region.

By the early 2000s, the average age of harvested lions had fallen. FWP significantly reduced harvest quotas during the 2000s after both ongoing research and hound handlers' field observations indicated that lion numbers had declined (Table 10). Research in the Garnet Mountains (Robinson & DeSimone 2011), public observations, and rates of human-lion conflict all suggested that Region 2 lion populations had recovered to near 1990s levels by the late 2000s.

In 1994, Region 2 established a new LMU—the Missoula Special Management Area—surrounding the densely populated Missoula Valley. FWP prescribed high quotas (that were rarely met) in this LMU to ensure that hunting regulations were not publicly perceived as limiting legal hunter harvest in this high conflict area.

Tension between Region 2 nonresident/outfitted and resident hunters increased during the 1990s and early 2000s; By 2005, nonresident hunters harvested nearly

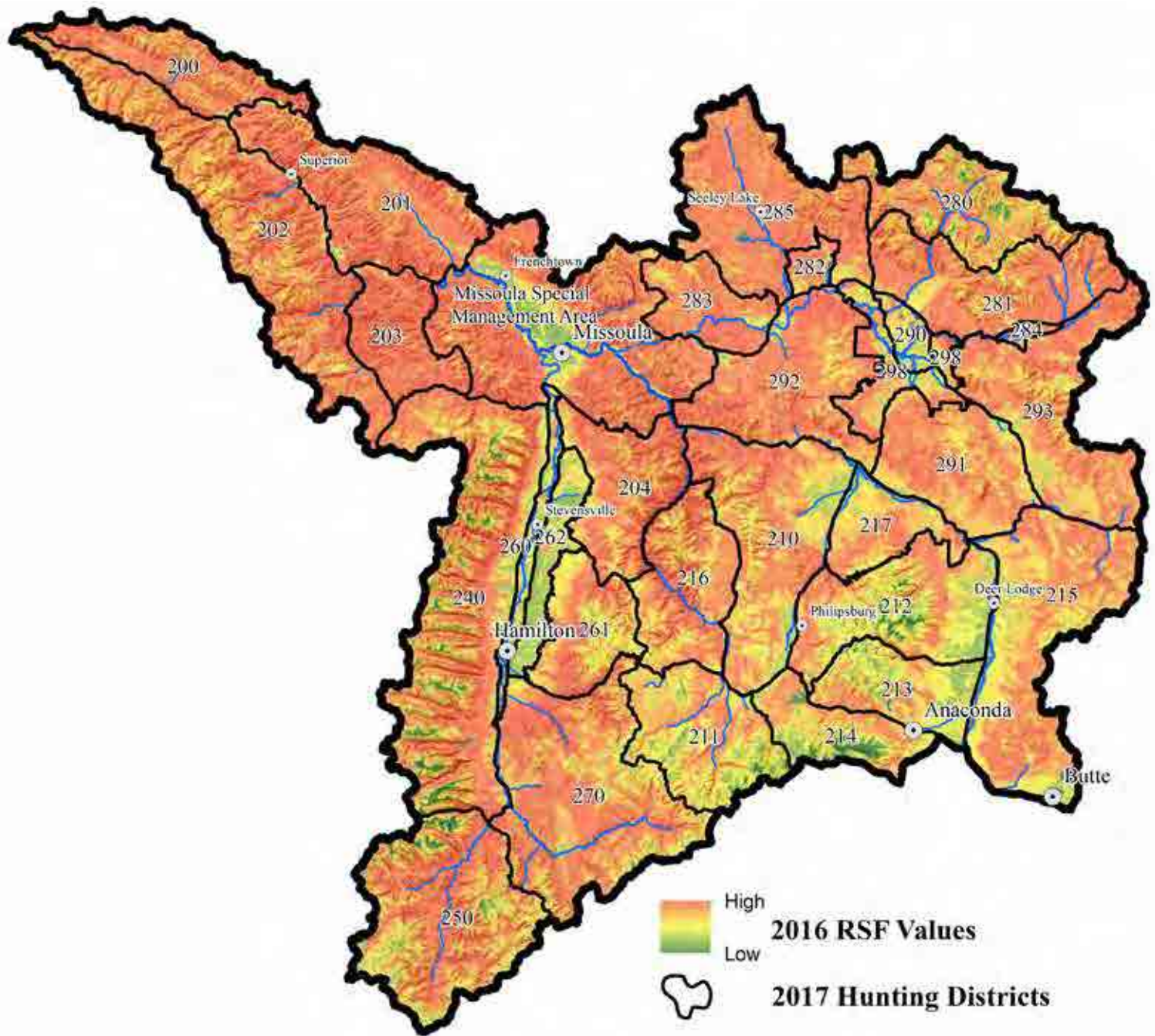
Table 9. Region 2 mountain lion harvest, 1971 – 2016.

License Year	R2			
	F	M	Unk	Tot.
1971	10	8	0	18
1972	10	10	0	20
1973	11	26	2	39
1974	16	19	0	35
1975	8	13	0	21
1976	7	12	1	20
1977	5	14	0	19
1978	8	16	0	24
1979	8	16	0	24
1980	6	14	0	20
1981	9	21	0	30
1982	13	17	0	30
1983	13	22	1	36
1984	14	34	1	49
1985	13	13	0	26
1986	9	22	1	32
1987	4	56	1	61
1988	16	34	1	51
1989	12	39	0	51
1990	19	44	0	63
1991	18	42	0	60
1992	30	84	0	114
1993	36	82	0	118
1994	62	99	0	161
1995	64	88	0	152
1996	84	103	0	187
1997	112	127	0	239
1998	143	123	1	267
1999	107	101	0	208
2000	60	70	0	130
2001	43	56	0	99
2002	26	36	0	62
2003	26	47	0	73
2004	14	37	0	51
2005	12	41	0	53
2006	8	43	0	51
2007	10	48	0	58
2008	10	36	0	46
2009	10	52	0	62
2010	31	73	0	104
2011	34	74	0	108
2012	76	97	0	173
2013	68	72	0	140
2014	45	71	0	116
2015	47	78	0	125
2016	47	69	0	116

50% of the Region's lions. These conflicts were particularly acute in the Bitterroot and Blackfoot watersheds. In 2006, Region 2 began to require that nonresident hunters draw a limited Special Lion License to harvest a lion in most Region 2 LMUs—the number of these nonresident Special Licenses were equal to 10% of the total harvest quota.

In 2008, the Commission began to require that both resident and nonresident hunters draw a Special Lion License to harvest a lion in most of the Region's LMUs. This season type resulted in unpredictable harvest rates and female harvest objectives were rarely met using Special Lion Licenses alone. Therefore, in 2012 the Commission adopted a Late Winter Season (beginning 2/1) in most Region 2 LMUs. During the late Winter Season, hunters with a General Lion License could harvest lions until any quotas previously unfilled by Special Lion License holders

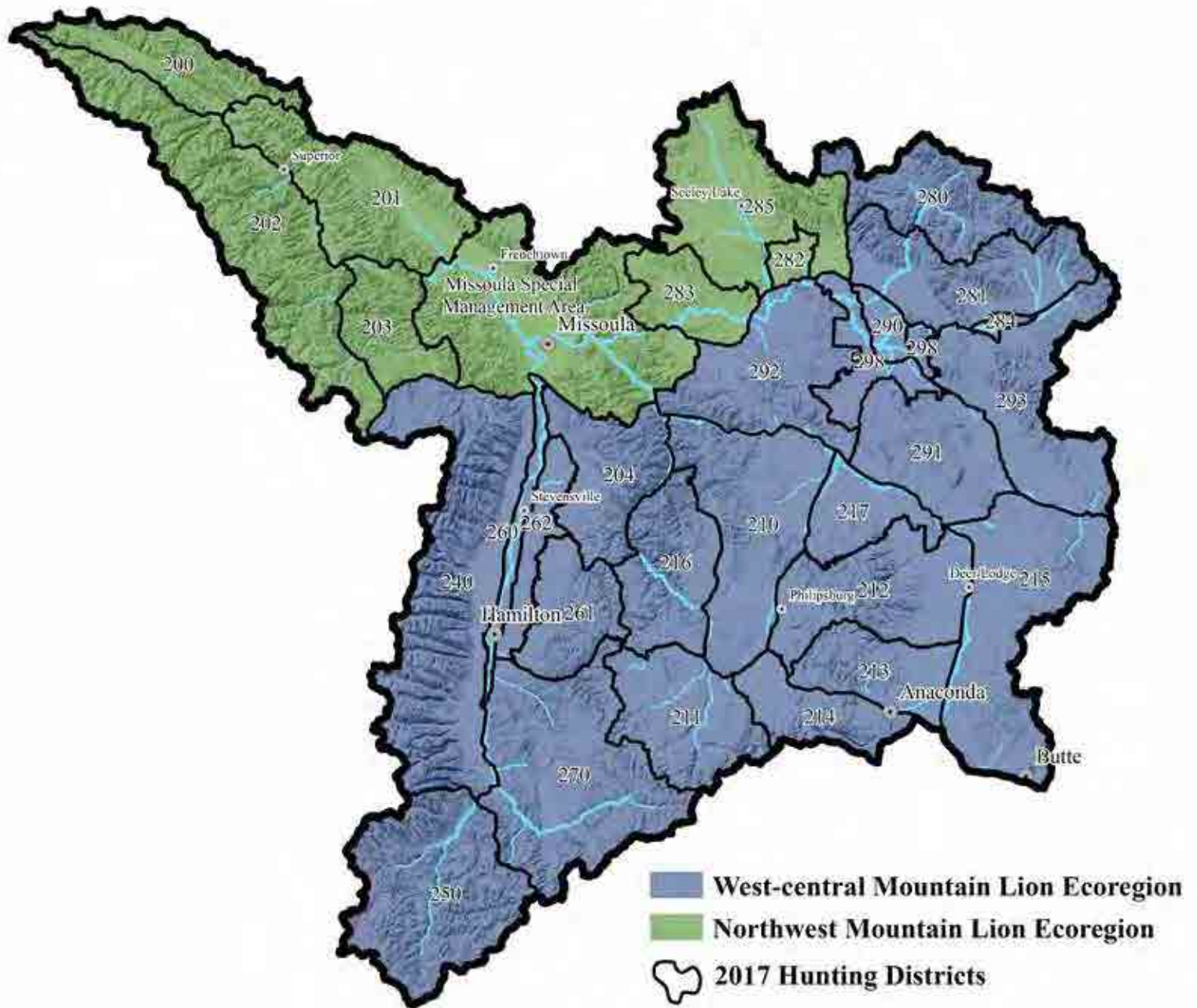
Figure 26. FWP Region 2 2016 mountain lion winter RSF and hunting districts.



were met (this became known as a “hybrid” season). Although this season type allowed more precise harvest management, nonresident participation was unlimited during the Late Winter Season and Region 2 nonresident harvest rates more than doubled after the Late Winter Season was adopted.

Most Region 2 lion habitat is on public or publicly accessible private land. Tracking snow is generally present during the Winter Season, although snow conditions are more likely to limit effective harvest in the upper Clark Fork and Bitterroot drainages.

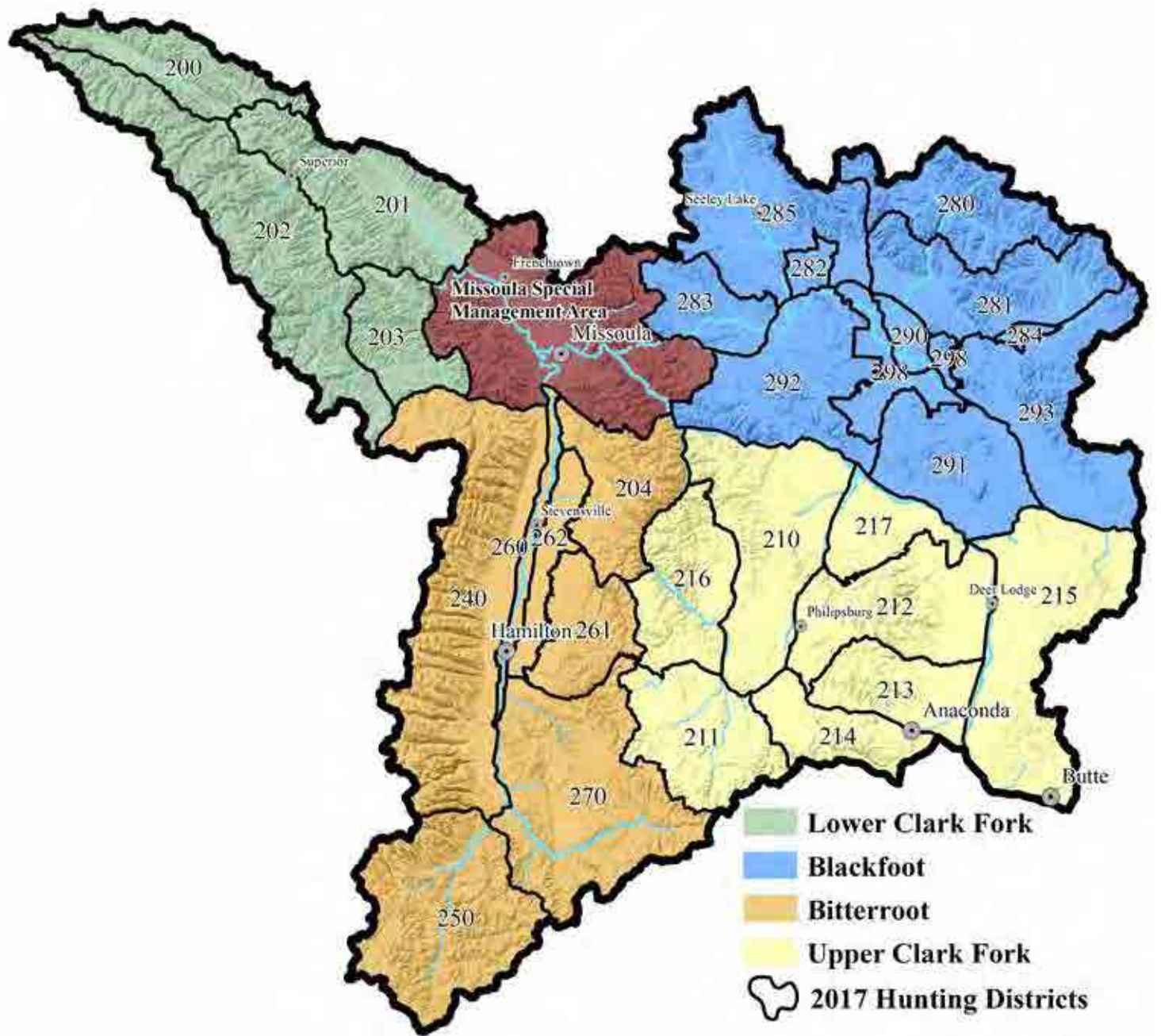
Figure 27. FWP Region 2 hunting districts and mountain lion ecoregions.



FWP Region 2 includes portions of both the Northwest and West-central mountain lion ecoregions (Figure 27). Region 2's biologists and public will work with their counterparts in Regions 1, 3 and 4 to set specific objectives for, and adaptively manage, these ecoregions' mountain lion populations.

Region 2 is comprised of 5 distinct management areas: the Region's four major watersheds and the Missoula Special Management Area (Figure 28). Region 2 will initially recommend either Model Harvest Regulation **Season Type 2: General License** or **Season Type 3: Resident General License, Nonresident Special Mountain Lion License** for each of these distinct areas.

Figure 28. Region 2's four major watersheds and the Missoula Special Management Area.



Specific harvest and population objectives will be identified and evaluated through the adaptive harvest management process (Chapter 8). In general, Region 2 will support ecoregion management objectives that result in generally stable lion populations and annual harvest levels. FWP will consider adjustments to management prescriptions based on contemporary monitoring data and significantly changed local circumstances.

Region 2 will minimize human-lion conflicts using both hunter harvest and effective responses to individual

incidents that are consistent with the Depredation and Control Guidelines. Hunting regulations and harvest quotas for the Missoula Special Management Area will not significantly limit hunter harvest opportunity there during open seasons.

Region 2 will recommend season types that effectively limit nonresident hunter harvest where necessary to maintain a high-quality hunting experience for resident mountain lion hunters.

Table 10. Summary of Region 2 mountain lion harvest regulations, 1971 – 2017.

License Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Mandatory Inspection	None		10 Day Inspection													
Hunting season	Opening of General D/E - 4/30		Opening of General D/E - 4/30; HD 280, 9/15 - 11/24	Opening of General D/E - 4/30; HD 280, 9/15 - 4/30	Opening of General D/E - 4/30; HD 280, 9/15 - 4/30	12/1 - 4/30; HD 280, 9/15 - 4/30	12/1 - 4/30; HD 280, 9/15 - 11/27; HD 282, CLOSED	12/1 - 4/30; HD 280, 9/15 - 4/30; HD 282, CLOSED	4 Day Inspection							
Chase/Hound Training Season	None		12/1 - 2/15; HD 280 9/15 - 2/15; HD 282, CLOSED													
Regional Quotas	UNLIMITED; One ES Adult Lion per Hunter															

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection	48 Hr. Report; 10 Day Inspection															
	24 Hr. Report; 5 Day Inspection															
	24 Hr. Report; 10 Day Inspection															
Hunting season	12/1 - 2/15; HD 280, 9/15 - 2/15; HD282, CLOSED															
	12/1 - 4/14; HD 280, 9/15 - 4/14; HD 282, CLOSED															
Chase/Hound Training Season	No dedicated Chase Season, Hound Training allowed during Winter Hunting Season; HD 282 Closed															
	2/16 - 4/30; HD282, CLOSED															
Regional Quotas	UNLIMITED One ES Adult Lion per Hunter	Total = 46; FSQ = 21	Total = 52; FSQ = 21	Total = 55; FSQ = 22	Total = 74; FSQ = 28	Total = 104; FSQ = 46	Total = 106; FSQ = 47	Total = 133; FSQ = 78	Total = 172; Male = 94; Female = 78	Total = 212; Male = 109; Female = 103	Total = 299; Male = 135; Female = 164	Total = 305; Male = 127; Female = 178	Total = 232; Male = 101; Female = 131	Total = 167; Male = 96; Female = 71	Total = 111; Male = 61; Female = 50	Total = 93; Male = 57; Female = 36

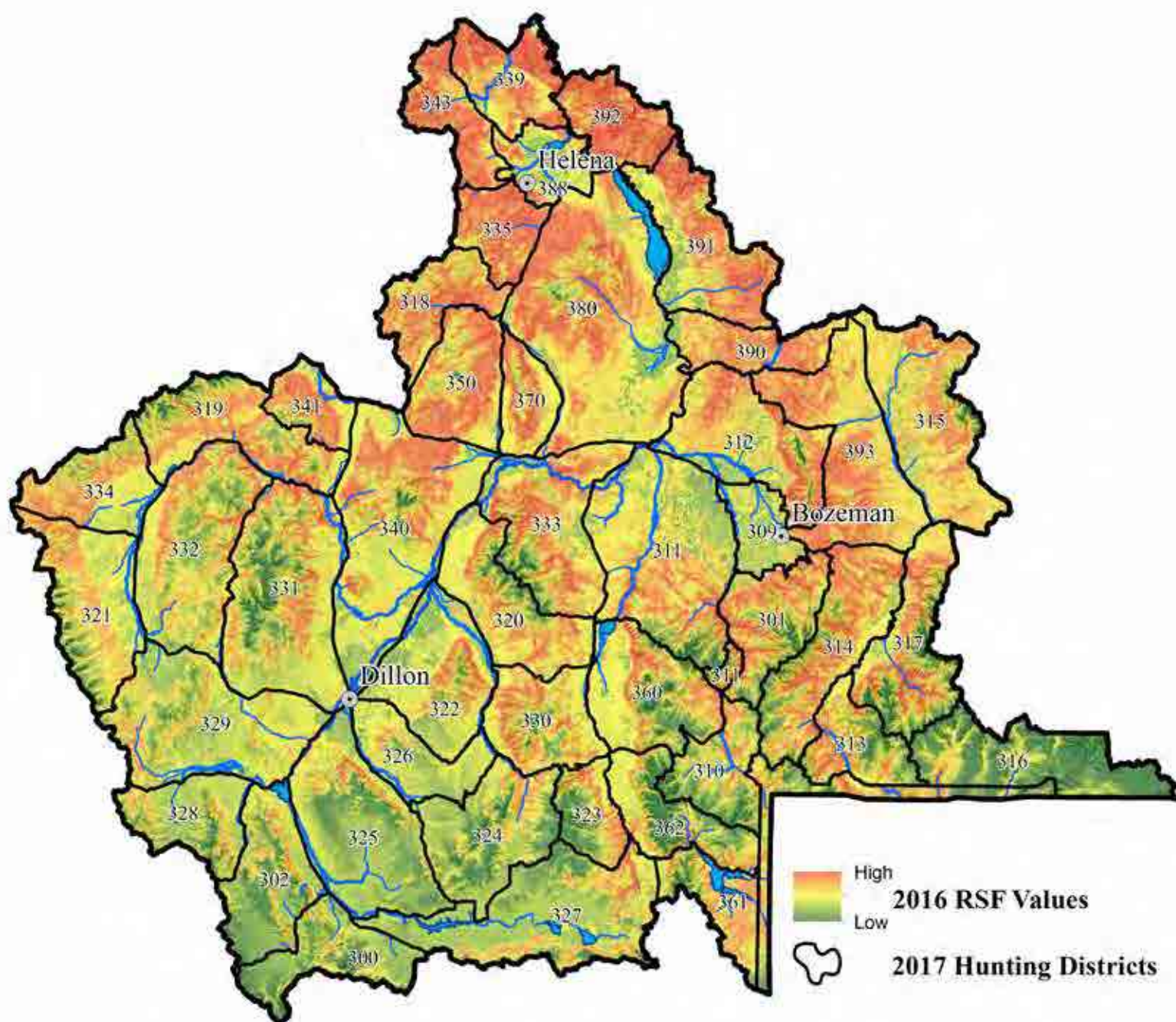
License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection	12 Hr. Report; 10 Day Inspection														
Hunting season	Fall Season w/o dogs; 12/1 - 4/14; HD282, CLOSED						Archery-only Season; Fall Season; 12/1 - 4/14; HD282, CLOSED		Archery-only Season; Fall Season w/o dogs; 12/1 - 4/14; Late Winter Season, 2/1 - 4/14; HD282, CLOSED						
Chase/Hound Training Season	Hound Training Season 12/2 - 4/14														
Regional Quotas	Total = 85; Male = 48; Female = 36	Total = 72; Male = 44; Female = 28	Total = 70; Male = 47; Female = 23	Total = 71; Male = 52; Female = 12	Total = 64; Male = 48; Female = 12	Total = 88; FSQ (some LMUs) = 16	Total = 126; FSQ (some LMUs) = 19	Total = 192; FSQ (some LMUs) = 38	Total = 219; FSQ (some LMUs) = 54	Total = 202; Male = 119; Female = 81	Total = 197; Male = 110; Female = 85	Total = 163; Male = 96; Female = 65	Total = 160; Male = 102; Female = 56	Total = 158; Male = 100; Female = 56	Total = 158; Male = 100; Female = 56

REGION 3

Mountain lions occur throughout their suitable habitat in southwest Montana's Region 3 (Figure 329). The Region has a diverse and abundant ungulate prey base that inhabits a mix of publicly accessible and privately-owned land.

Lion abundance increased in Region 3 during the 1980s and 1990s but, unlike other areas of the state, did not appear to fall as sharply during the 2000s. Instead, anecdotal evidence and harvest records suggest that mountain lion distribution and abundance have remained relatively stable

Figure 29. FWP Region 3 2016 mountain lion winter RSF and hunting districts.



in the Region since the mid-1990s. Variation in the total annual harvest (Table 11) is almost entirely due to changes in female harvest quotas. Sustained harvest in the late 2010s was similar to harvest levels in both Regions' 1 and 2 during the same period.

Region 3 generally managed harvest using simple harvest quotas and female subquotas (Table 12). However, the Region historically designated a large number of LMUS (23 in 2017)—the number of these individual LMUs may be reduced during future season setting processes. Region 3 quotas serve as harvest limits in all LMUs.

Public access to winter mountain lion habitat is mixed, although most harvest occurs on public land. Winter snow tracking conditions vary annually and can, at times, limit effective harvest. Nonresidents accounted for 15% of all successful hunters in the Region between 2007 and 2016 even though there was no regulatory limit on nonresident hunter harvest during that period.

Region 3 manages LMU 309, (the Gallatin Valley around Bozeman) as a Special Management Area. Lions are rarely harvested in this LMU (2 between 2007 and 2016), but the quota is high enough to ensure that FWP regulations do not limit legal harvest. Similarly, the Fall Season Without Dogs in LMU 309 opened with the beginning of the Deer/Elk Archery Only Season and remained open through the General Deer/Elk Season. The Region also designated a specific quota for the Spanish Peaks portion of LMU 311 to reduce lion predation on the resident bighorn sheep herd.

FWP Region 3 contains portions of both the Southwest and West-central Mountain Lion Ecoregions (Figure 30). Region 3's biologists and public will work with their counterparts in Regions 2, 4 and 5 to set objectives for, and adaptively manage, these ecoregions' mountain lion populations.

Region 3 will be able to meet lion management objectives by primarily using Model Harvest Regulation **Season Type 2: General License**.

FWP and public stakeholders will determine and evaluate specific lion population objectives using the

Table 11. Region 3 mountain lion harvest, 1971 – 2016.

License Year	R3				1993	18	41	0	59
	F	M	Unk	Tot.					
1971	1	2	0	3	1994	32	52	0	84
1972	2	2	0	4	1995	33	53	0	86
1973	1	0	0	1	1996	29	60	0	89
1974	2	2	1	5	1997	43	56	0	99
1975	2	2	0	4	1998	51	66	0	117
1976	2	0	0	2	1999	54	63	0	117
1977	1	8	0	9	2000	55	55	1	111
1978	7	6	0	13	2001	52	57	0	109
1979	9	5	0	14	2002	46	64	0	110
1980	1	6	0	7	2003	32	57	0	89
1981	6	10	0	16	2004	34	44	0	78
1982	7	11	0	18	2005	23	51	1	75
1983	4	12	1	17	2006	16	45	0	61
1984	5	21	0	26	2007	12	57	0	69
1985	10	11	2	23	2008	13	61	0	74
1986	4	13	1	18	2009	14	53	0	67
1987	5	15	0	20	2010	17	50	0	67
1988	1	17	0	18	2011	17	57	0	74
1989	2	16	0	18	2012	33	68	0	101
1990	6	23	0	29	2013	33	61	0	94
1991	11	19	0	30	2014	33	70	0	103
1992	11	33	0	44	2015	44	72	0	116
					2016	44	69	0	113

Adaptive Harvest Management process (Chapter 8). The Region will generally support objectives for stable lion populations and annual harvest, while considering contemporary monitoring data and local circumstances. Region 3 will recommend the least complex harvest regulations that will allow management objectives to be met.

Hunting regulations will not limit hunter harvest in highly developed areas where human-lion conflicts are likely (such as LMU 309) or where suppression of local lion density is desired (such as the Spanish Peaks portion of LMU 311).

FWP will minimize human-lion conflicts using both hunter harvest and effective responses to individual incidents that are consistent with the Depredation and Control Guidelines.

Figure 30. FWP Region 3 hunting districts and mountain lion ecoregions.

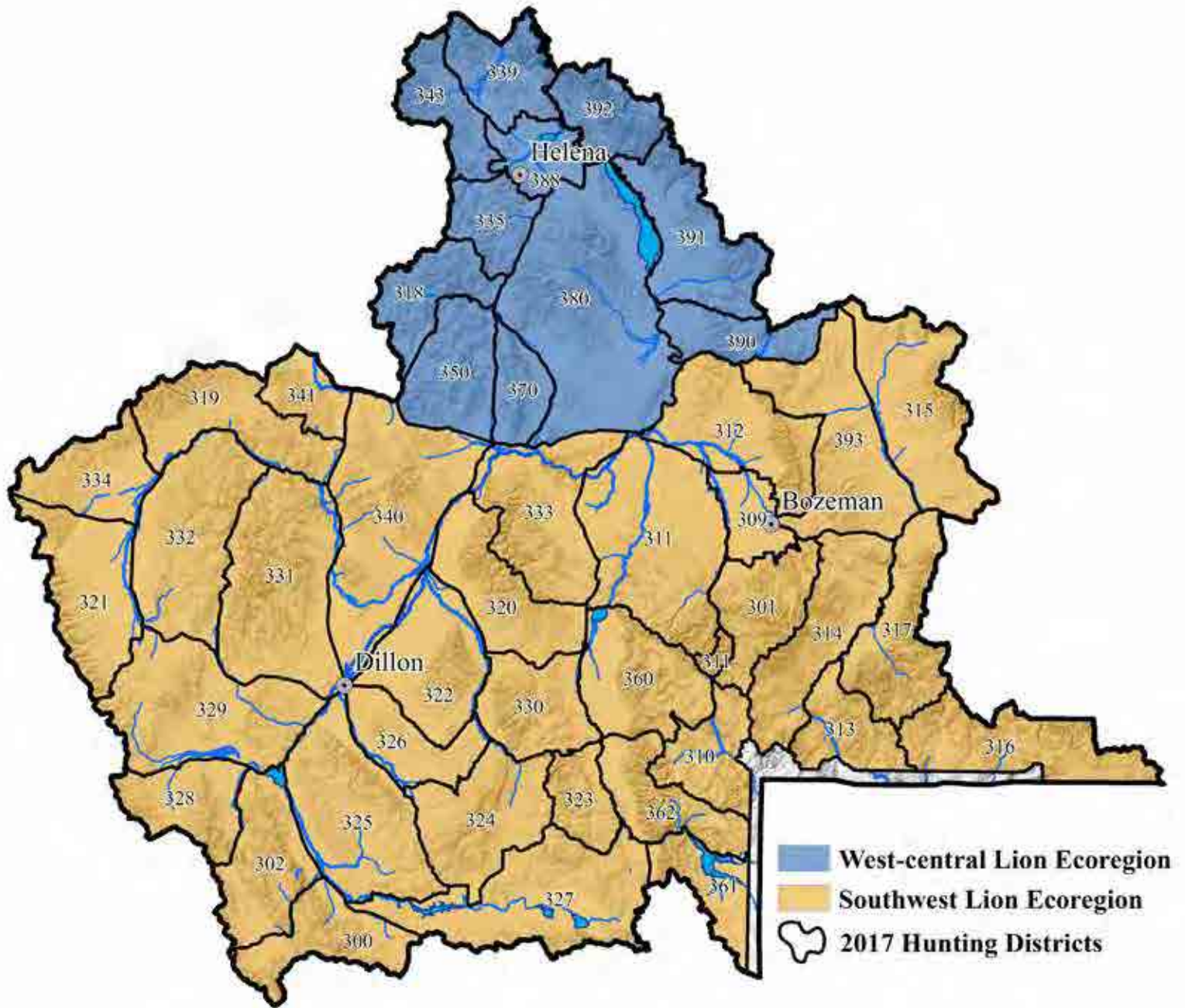


Table 12. Summary of Region 3 mountain lion harvest regulations, 1971 – 2017.

License Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986		
Mandatory Inspection	None		10 Day Inspection					4 Day Inspection			48 Hr. Inspection		10 Day Inspection		72 Hr. Inspection		48 Hr. Inspection	
Hunting season	Opening of General D/E - 4/30					12/1 - 4/30			12/1 - 2/15									
Chase/Hound Training Season	None								2/16 - 4/30;									
Regional Quotas	UNLIMITED; One ES Adult Lion per Hunter															Total = 32; FSQ = 16 ¹		

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection	48 Hr. Report; 10 Day Inspection		24 Hr. Report; 5 Day Inspection		24 Hr. Report; 10 Day Inspection		24 Hr. Report; 10 Day Inspection		24 Hr. Report; 10 Day Inspection		24 Hr. Report; 10 Day Inspection		24 Hr. Report; 10 Day Inspection		24 Hr. Report; 10 Day Inspection	
Hunting season	12/1 - 2/15		12/1 - 2/15		12/1 - 2/15		12/1 - 2/15		12/1 - 2/15		12/1 - 2/15		12/1 - 2/15		12/1 - 2/15	
Chase/Hound Training Season	2/16 - 4/30		2/16 - 4/30		2/16 - 4/30		2/16 - 4/30		2/16 - 4/30		2/16 - 4/30		2/16 - 4/30		2/16 - 4/30	
Regional Quotas	Total = 32; FSQ = 20	Total = 34; FSQ = 21	Total = 34; FSQ = 21	Total = 34; FSQ = 21	Total = 39; FSQ = 21	Total = 37; FSQ = 21	Total = 45; FSQ = 23	Total = 69; FSQ = 33	Total = 86; FSQ = 39; MSQ (R8) = 19	Total = 89; FSQ = 41; MSQ (some LMUs) = 19	Total = 104; FSQ = 49; MSQ (some LMUs) = 21	Total = 123; FSQ = 47; MSQ (some LMUs) = 22	Total = 123; FSQ = 60; MSQ (some LMUs) = 22	Total = 134; FSQ = 67; MSQ (some LMUs) = 25	Total = 132; FSQ = 60; MSQ (some LMUs) = 19	Total = 136; FSQ = 63; MSQ (some LMUs) = 23

License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection	12 Hr. Report; 10 Day Inspection														
Hunting season	Fall Season w/o dogs; 12/1 - 4/14					Archery-only Season; Fall Season w/o dogs; 12/1 -4/14									
Chase/Hound Training Season	Hound Training Season 12/2 - 4/14														
Regional Quotas	Total = 117; FSQ (some LMUs) = 41	Total = 105; FSQ (some LMUs) = 40	Total = 101; FSQ (some LMUs) = 30	Total = 76; FSQ (some LMUs) = 16	Total = 66; FSQ (some LMUs) = 12	Total = 73; FSQ (some LMUs) = 12	Total = 72; FSQ (some LMUs) = 12	Total = 80; FSQ (some LMUs) = 16	Total = 77; FSQ (some LMUs) = 16	Total = 109; FSQ (some LMUs) = 34	Total = 109; FSQ (some LMUs) = 34	Total = 126; FSQ (some LMUs) = 41	Total = 135; FSQ (some LMUs) = 46	Total = 140; FSQ (some LMUs) = 48	Total = 138; FSQ (some LMUs) = 48

REGION 4

Mountain lion abundance and distribution generally increased in Region 4 from the 1980s to mid-2010s — only toward the end of that period was all suitable habitat (including the Missouri River Breaks and Sweet Grass Hills) fully reoccupied (Figure 31).

Region 4 includes portions of both the West-central and Eastern Mountain Lion Ecoregions (Figure 32). Most of the Region’s high-quality lion habitat lies within the West-central ecoregion, although quality habitat exists in portions of the Eastern ecoregion along the northern Rocky Mountain front, the Highwoods, the Sweet Grass Hills and Missouri River Breaks. Most lion harvest within Region 4 occurs on public land.

Region 4’s annual harvest peaked in the late 1990s and stabilized somewhat below those historic high levels in the mid-2010s (Table 13). The Region traditionally managed harvest by prescribing male and female quotas to individual LMUs. Nonresident hunters accounted for 19% of all lions harvested between 2007 and 2016; less than 20% of those successful nonresident hunters used the services of an outfitter.

Reducing and mitigating conflicts between lions and agricultural interests is a high Regional priority. Region 4 staff will actively respond to potential and ongoing mountain lion conflicts, consistent with the Depredation and Control Guidelines, in order to maintain landowner tolerance for lions.

Region 4 will generally support management objectives that maintain stable lion abundance, distribution, and harvest across the Region’s suitable habitat. Region 4’s biologists and public will work with their counterparts in other Regions to set objectives for, and adaptively manage, the West-central and Eastern ecoregions’ mountain lion populations.

Region 4 will recommend the least complex harvest regulation that will allow management objectives to be met, primarily using Model Harvest Regulation **Season Type 2: General License** with male and female quotas.

Table 13. Region 4 mountain lion harvest, 1971 – 2016.

License Year	R4								
	F	M	Unk	Tot.					
1971	3	3	0	6	1993	16	39	0	55
1972	2	4	0	6	1994	24	46	0	70
1973	1	5	0	6	1995	32	39	0	71
1974	2	4	0	6	1996	37	47	0	84
1975	2	4	0	6	1997	44	41	0	85
1976	1	5	0	6	1998	54	39	0	93
1977	4	6	0	10	1999	56	37	0	93
1978	2	2	1	5	2000	45	36	0	81
1979	2	3	0	5	2001	39	36	0	75
1980	5	7	0	12	2002	24	26	0	50
1981	7	7	0	14	2003	21	27	0	48
1982	4	5	0	9	2004	17	27	0	44
1983	1	10	0	11	2005	17	26	0	43
1984	7	18	1	26	2006	18	35	0	53
1985	10	14	3	27	2007	25	30	0	55
1986	4	7	1	12	2008	32	37	0	69
1987	10	16	0	26	2009	30	35	0	65
1988	6	16	0	22	2010	32	43	0	75
1989	5	16	0	21	2011	32	46	0	78
1990	10	17	0	27	2012	35	44	0	79
1991	10	17	0	27	2013	34	48	0	82
1992	15	22	0	37	2014	31	47	0	78
					2015	28	37	0	65
					2016	38	42	0	80



Figure 31. FWP Region 4 2016 mountain lion winter RSF and hunting districts.

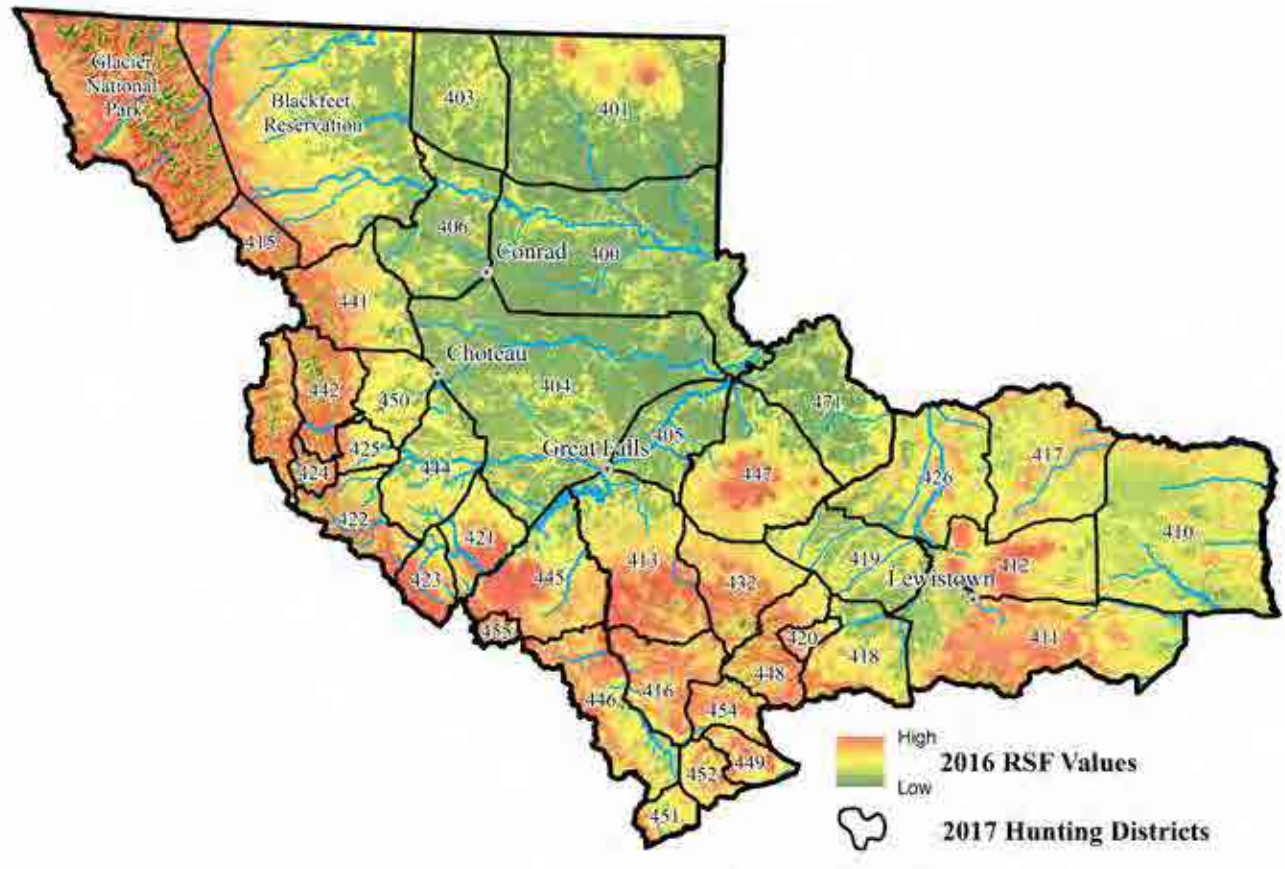


Figure 32. FWP Region 4 hunting districts and mountain lion ecoregions.

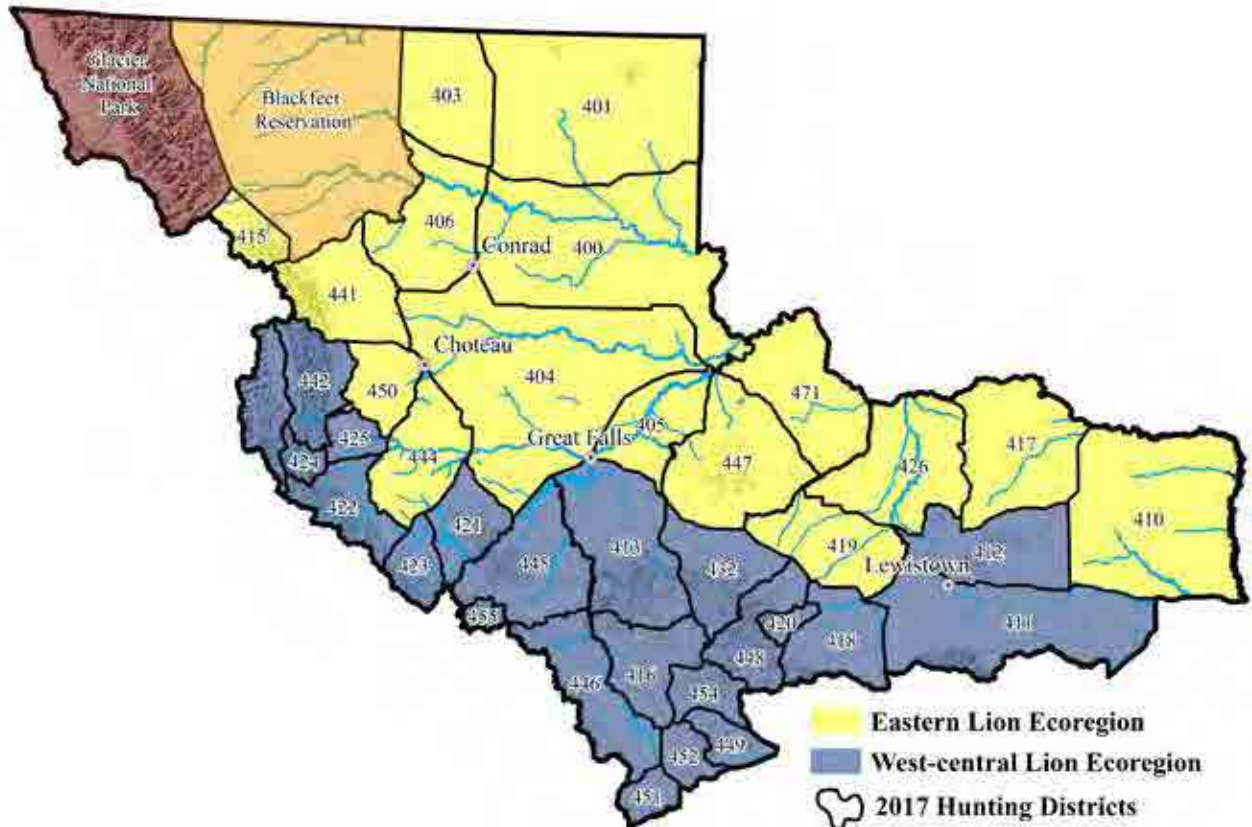


Table 14. Summary of Region 4 mountain lion harvest regulations, 1971 - 2017.

[illegible]

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection	48 Hr. Report; 10 Day Inspection												24 Hr. Report; 10 Day Inspection	12 Hr. Report; 10 Day Inspection		
Hunting season	12/1 - 2/15; HDs 427 & 428, 1/1 - 2/15						12/1 - 2/15						12/1 - 4/14	Fall Season w/o dogs; 12/1 - 4/14		
Chase/Hound Training Season	2/16 - 4/30												No dedicated Chase Season, Hound Training allowed during Winter Hunting Season			
Regional Quotas	UNLIMITED One ES Adult Lion per Hunter	Total = 30; FSQ = 10	Total = 35; FSQ = 10	Total = 35; FSQ = 10	Total = 40; FSQ = 12	Total = 46; FSQ = 14	Total = 46; FSQ = 14	Total = 65; FSQ = 26	Total = 80; Male = 46; F = 34	Total = 110; Male = 57; F = 53	Total = 108; Male = 49; Female = 59	Total = 133; Male = 52; Female = 81	Total = 126; Male = 48; Female = 78	Total = 124; Male = 48; Female = 76	Total = 110; Male = 47; Female = 63	Total = 106; Male = 48; Female = 58

License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection	12 Hr. Report; 10 Day Inspection														
Hunting season	Fall Season w/o dogs; 12/1 - 4/14						Archery-only Season; Fall Season w/o dogs; 12/1 - 4/14								
Chase/Hound Training Season	Hound Training Season 12/2 - 4/14														
Regional Quotas	Total = 103; Male = 48; Female = 55	Total = 91; Male = 45; Female = 46	Total = 94; Male = 45; Female = 46	Total = 83; Male = 43; Female = 40	Total = 85; Male = 45; Female = 40	Total = 80; Male = 40; Female = 40	Total = 80; Male = 40; Female = 40	Total = 88; Male = 44; Female = 44	Total = 91; Male = 46; Female = 45	Total = 93; Male = 46; Female = 47	Total = 93; Male = 46; Female = 47	Total = 98; Male = 48; Female = 50	Total = 98; Male = 48; Female = 50	Total = 98; Male = 48; Female = 50	Total = 100; Male = 48; Female = 52

REGION 5

Mountain lion hunter harvest opportunity was generally stable in Region 5 from the 1990s to late 2010s. However, annual harvest success varied year-to-year depending on winter snow-tracking conditions. Most of the Region's publicly accessible, high-quality, lion habitat lies in its peripheral mountain foothills (Figure 33). While the Region includes portions of both the Southwest and Eastern Mountain Lion ecoregions, most lions are harvested in the Southwest ecoregion (Figure 34). Nonresidents took 18% of all lions harvested in Region 5 between 2007 and 2016, most without the aid of an outfitter.

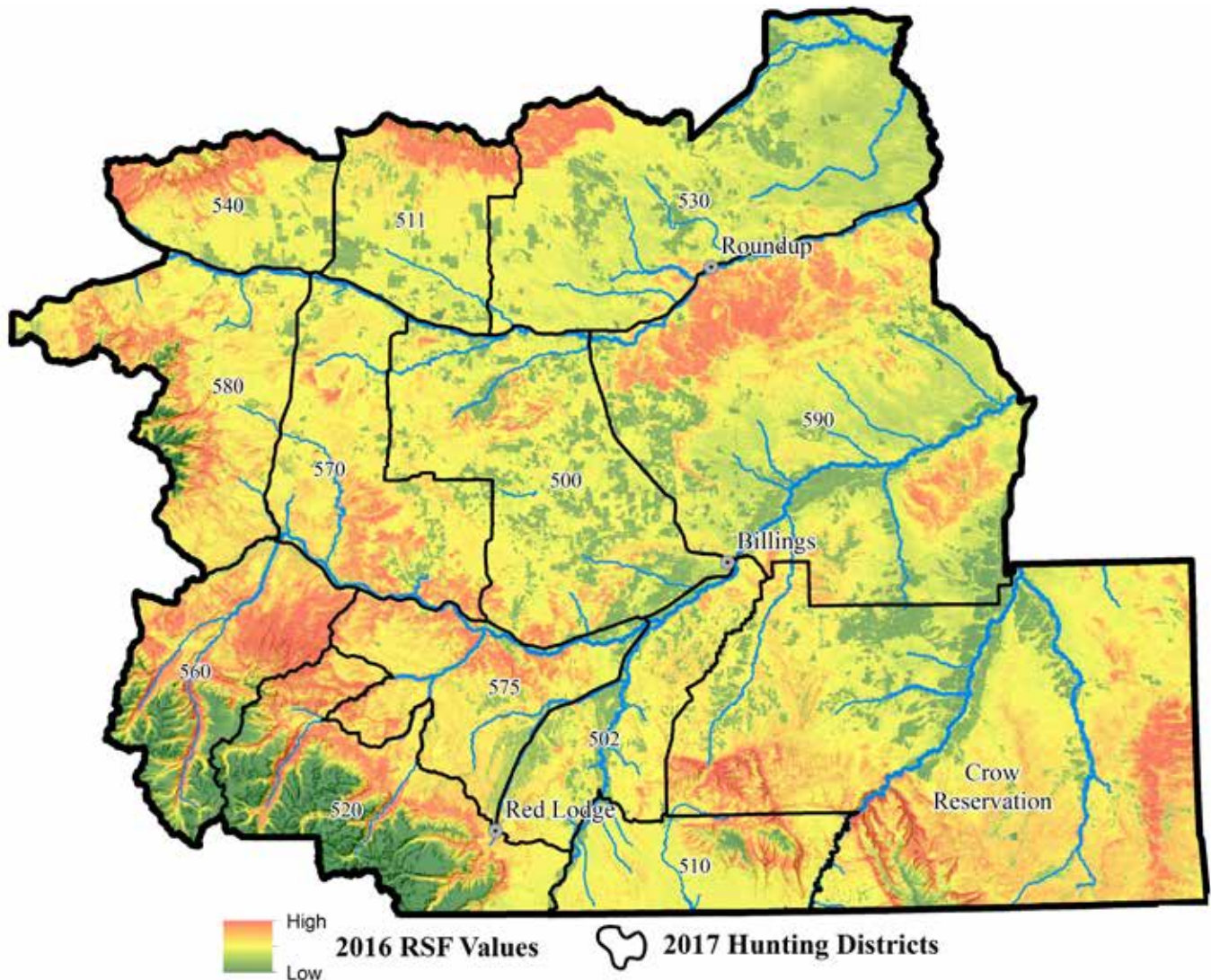
Although Region 5 harvest is well distributed across suitable lion habitat, individual LMU quotas may not be

consistently reached because annual harvest is dependent on the presence of adequate tracking snow. Region 5 may consider reducing the number of Regional LMUs to simplify harvest management.

Managers will generally recommend harvest objectives that maintain stable lion abundance, distribution, and harvest across all suitable habitat in Region 5. Biologists and the public will work with their counterparts in other Regions to set objectives for, and adaptively manage, the Southwest and Eastern Ecoregions' mountain lion populations.

Region 5 historically used overall LMU quotas (with female subquotas) to manage harvest (Table 16). The Region will be able to meet lion management objectives by using the similar Model Harvest Regulation **Season Type 2: General**

Figure 33. FWP Region 5 2016 mountain lion winter RSF and hunting districts.



License season type that employs individual male and female quotas.

Minimizing human-lion conflicts and livestock depredation is a high Regional priority. Region 5 will use both hunter harvest and effective responses to individual incidents that are consistent with the Depredation and Control Guidelines to reduce potential conflicts.

Table 15. Region 5 mountain lion harvest, 1971 – 2016.

License Year	R5													
	F	M	Unk	Tot.	1985	3	6	0	9	2001	25	25	0	50
1971	2	0	0	2	1986	4	11	0	15	2002	16	17	0	33
1972	1	1	0	2	1987	9	6	0	15	2003	9	18	0	27
1973	2	1	0	3	1988	7	11	0	18	2004	12	22	0	34
1974	0	0	0	0	1989	4	9	0	13	2005	12	15	0	27
1975	1	2	0	3	1990	8	13	0	21	2006	12	13	0	25
1976	3	1	0	4	1991	8	12	0	20	2007	10	18	0	28
1977	4	4	0	8	1992	10	21	0	31	2008	10	21	0	31
1978	3	0	0	3	1993	15	20	0	35	2009	12	24	0	36
1979	5	6	0	11	1994	13	19	0	32	2010	8	10	0	18
1980	4	4	0	8	1995	19	23	0	42	2011	13	21	0	34
1981	3	6	0	9	1996	13	22	0	35	2012	11	20	0	31
1982	3	2	0	5	1997	23	21	0	44	2013	16	20	0	36
1983	4	7	0	11	1998	17	23	1	41	2014	8	28	0	36
1984	2	12	0	14	1999	23	21	0	44	2015	11	12	0	23
					2000	19	24	0	43	2016	13	26	0	39

Figure 34. FWP Region 5 hunting districts and mountain lion ecoregions.

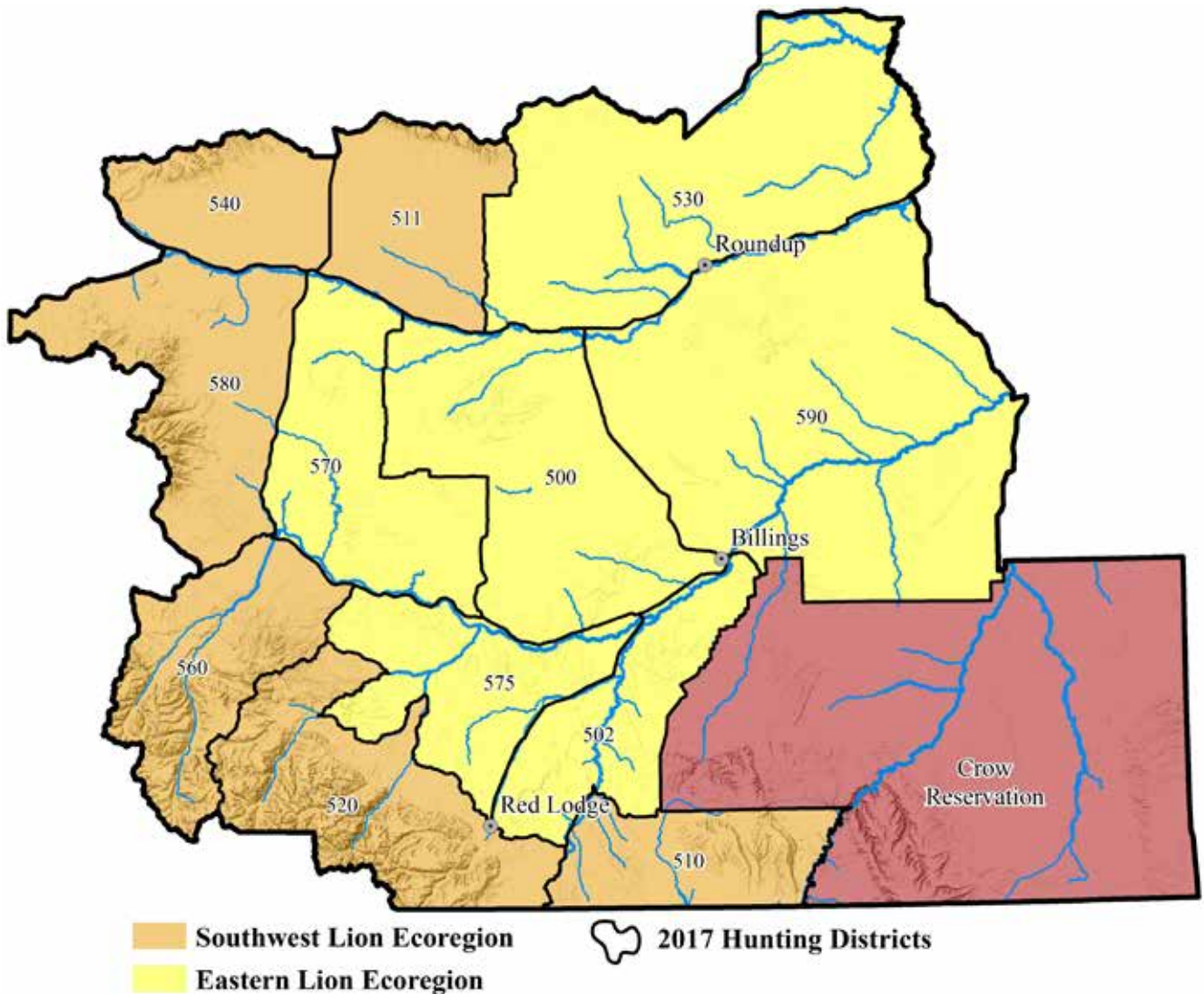


Table 16. Summary of Region 5 mountain lion harvest regulations, 1971 – 2017.

License Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Mandatory Inspection	None			10 Day Inspection					4 Day Inspection			48 Hr. Inspection		10 Day Inspection	72 Hr. Inspection	48 Hr. Inspection
Hunting season		Opening of General D/E - 4/30					12/1 - 4/30						12/1 - 2/15			
Chase/Hound Training Season				None											2/16 - 4/30	
Regional Quotas	UNLIMITED; One ES Adult Lion per Hunter															

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection			48 Hr. Report; 10 Day Inspection							24 Hr. Report; 5 Day Inspection		24 Hr. Report; 10 Day Inspection	12 Hr. Report; 10 Day Inspection			
Hunting season							12/1 - 2/15					12/1 - 4/14	Fall Season w/o dogs; 12/1 - 4/14			
Chase/Hound Training Season							2/16 - 4/30					No dedicated Chase Season, Hound Training allowed during Winter Hunting Season				
Regional Quotas	UNLIMITED One ES Adult Lion per Hunter	Total = 22; FSQ = 10	Total = 25; FSQ = 11	Total = 30; FSQ = 13	Total = 33; FSQ = 13	Total = 37; FSQ = 15	Total = 37; FSQ = 15	Total = 44; FSQ = 22	Total = 44; FSQ = 22	Total = 50; FSQ (some LMUs) = 20	Total = 52; FSQ (some LMUs) = 21	Total = 58; FSQ (some LMUs) = 23	Total = 56; FSQ (some LMUs) = 22	Total = 56; FSQ (some LMUs) = 22	Total = 57; FSQ (some LMUs) = 22	Total = 57; FSQ (some LMUs) = 22

License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection										12 Hr. Report; 10 Day Inspection					
Hunting season			Fall Season w/o dogs; 12/1 - 4/14							Archery-only Season; Fall Season w/o dogs; 12/1 - 4/14					
Chase/Hound Training Season															
Regional Quotas	Total = 57; FSQ (some LMUs) = 22	Total = 49; FSQ (some LMUs) = 18	Total = 49; FSQ (some LMUs) = 18	Total = 49; FSQ (some LMUs) = 18	Total = 49; FSQ (some LMUs) = 18	Total = 49; FSQ (some LMUs) = 18	Total = 49; FSQ (some LMUs) = 21	Total = 44; FSQ (some LMUs) = 15	Total = 44; FSQ (some LMUs) = 15	Total = 44; FSQ (some LMUs) = 15	Total = 44; FSQ (some LMUs) = 15	Total = 47; FSQ (some LMUs) = 15	Total = 47; FSQ (some LMUs) = 15	Total = 47; FSQ (some LMUs) = 15	Total = 47; FSQ (some LMUs) = 15

REGION 6

Most suitable mountain lion habitat in Region 6 lies in the Bears Paw and Little Rockies ranges, as well as along the Missouri River (Figure 35). A significant portion of the Region's lion habitat is included within the Rocky Boy's and Fort Belknap Reservations—FWP does not have wildlife management authority within these jurisdictions.

There was no open mountain lion hunting season between 1976 and 1992 in Region 6 (Table 18); mountain lions became increasingly common in the Region 6 during this period. Harvest quotas have remained relatively stable since hunting seasons were re-opened in 1993 but the annual FWP managed harvest varies annually depending on winter tracking conditions, hunter access, and individual hunters' participation in the harvest season (Table 17).

Mountain lion harvest that occurs on the Rocky Boy's and Fort Belknap reservations may not be reported to FWP, and thus, regional harvest totals should be viewed as minimums. Kunkel et al. (2012) documented a relatively high annual hunter harvest rate and low adult survival for Region 6 lions during their study. The authors suggested that Region 6 lion populations may be sustained by immigration rather than local recruitment. If so, continuing to protect adult females from harvest may allow local reproduction to supplement lions that disperse into the Region.

Lions are only likely to be resident in hunting districts 680, 690, 621, 622, 631 and 632. The remainder of the Region may be considered a Special Management Area where tolerance for lions is low. In this area, liberal quotas may be recommended so that hunter harvest is available when needed to minimize conflict while still allowing for lion movement between resident populations.

All of Region 6 lies within the Eastern Mountain Lion ecoregion (Figure 36). Routine lion abundance estimates and population modeling will not be available in this ecoregion. Because of annual variations in

Table 17. Region 6 mountain lion harvest, 1971 – 2016.

License Year	R6		
	F	M	Tot.
1971	0	0	0
1972	0	0	0
1973	0	0	0
1974	0	0	0
1975	0	0	0
1976	0	0	0
1977	0	0	0
1978	0	0	0
1979	0	0	0
1980	0	0	0
1981	0	0	0
1982	0	0	0
1983	0	0	0
1984	0	0	0
1985	0	0	0
1986	0	0	0
1987	0	0	0
1988	0	0	0
1989	0	0	0
1990	0	0	0
1991	0	0	0
1992	2	2	4
1993	2	2	4
1994	2	4	6
1995	3	3	6
1996	1	2	3
1997	5	2	7
1998	4	3	7
1999	4	4	8
2000	2	1	3
2001	3	2	5
2002	1	1	2
2003	0	0	0
2004	0	1	1
2005	0	0	0
2006	0	1	1
2007	1	2	3
2008	0	7	7
2009	1	3	4
2010	2	4	6
2011	5	4	9
2012	4	3	7
2013	2	3	5
2014	2	3	5
2015	2	4	6
2016	4	9	13

tracking snow cover, annual harvest varies independent of population trend. Regional managers will therefore rely on indirect indications of lion abundance and public input to monitor lion populations. Region 6 may also choose to produce a baseline Regional abundance estimate (either alone or in collaboration with Tribal partners) following SCR or other field methods (Chapter 5) if funding is available.

Region 6 will be able to meet lion management objectives by using Model Harvest Regulation **Season Type 2: General License** with individual male and female quotas or subquotas.

Figure 35. FWP Region 6 2016 mountain lion winter RSF and hunting districts.

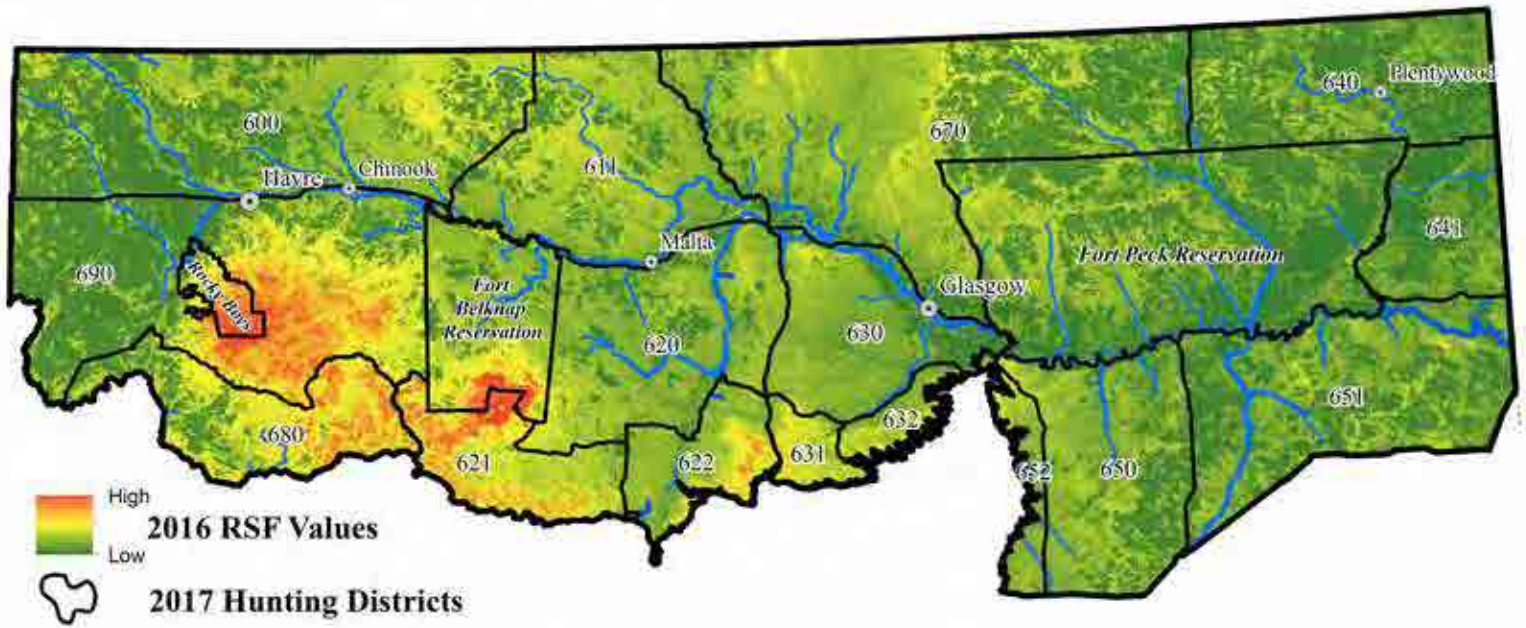


Figure 36. FWP Region 6 hunting districts and mountain lion ecoregion.

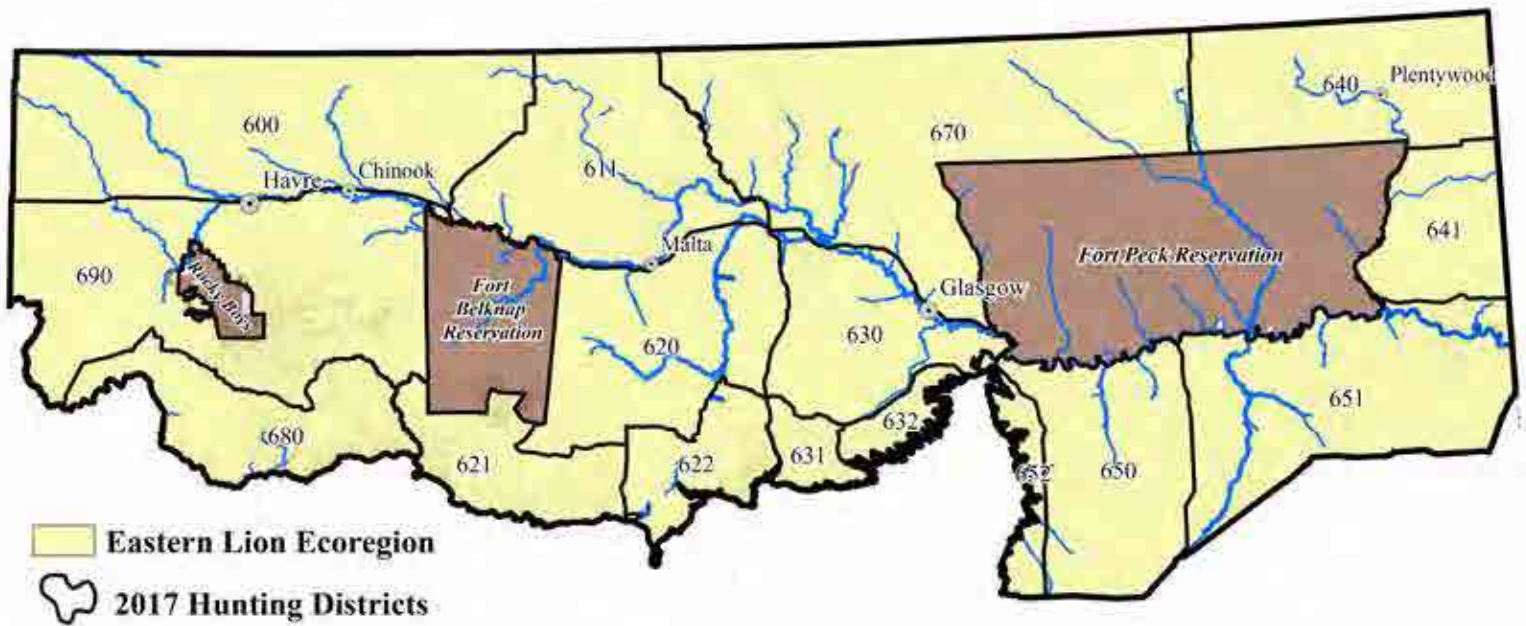


Table 18. Summary of Region 6 mountain lion harvest regulations, 1971 – 2017.

License Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Mandatory Inspection	NONE		10 Day Inspection													
Hunting season	Opening of General D/E - 4/30															
Chase/Hound Training Season	NONE									CLOSED		2/16 - 4/30				
Regional Quotas	UNLIMITED; One ES Adult Lion per Hunter					CLOSED										

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection						48 Hr. Report; 10 Day Inspection		24 Hr. Report; 10 Day Inspection	24 Hr. Report; 5 Day Inspection		24 Hr. Report; 10 Day Inspection		12 Hr. Report; 10 Day Inspection			
Hunting season	CLOSED					12/1 - 2/15					12/1 - 4/14		Fall Season w/o dogs; 12/1 - 4/14			
Chase/Hound Training Season	12/1 - 4/30					2/16 - 4/30					No dedicated Chase Season, Hound Training allowed during Winter Hunting Season					
Regional Quotas	CLOSED					3 Any Legal Lion	3 Any Legal Lion	5 Any Legal Lion	Total = 10 ; FSQ = 3	Total = 10 ; FSQ = 3	Total = 13 ; FSQ (some LMUs) = 5; MSQ (some LMUs) = 3	Total = 13 ; FSQ (some LMUs) = 6	Total = 13 ; FSQ (one LMUs) = 6	Total = 16 ; FSQ (one LMUs) = 5	Total = 11 ; FSQ (one LMUs) = 3	Total = 11 ; FSQ (one LMUs) = 3

License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection	12 Hr. Report; 10 Day Inspection														
Hunting season	Fall Season w/o dogs; 12/1 - 4/14						Archery-only Season; Fall Season w/o dogs; 12/1 - 4/14								
Chase/Hound Training Season	Hound Training Season 12/2 - 4/14														
Regional Quotas	Total = 11; FSQ (one LMU) = 3	Total = 11; FSQ (one LMU) = 3	Total = 11; FSQ (one LMU) = 3	Total = 11; FSQ (one LMU) = 3	Total = 11; FSQ (one LMU) = 3	Total = 11; FSQ (one LMU) = 3	Total = 12; FSQ = 3	Total = 11; FSQ (one LMU) = 3	Total = 11; FSQ (one LMU) = 2	Total = 11; FSQ (one LMU) = 2	Total = 12; FSQ = 4	Total = 12; FSQ = 4	Total = 12; FSQ = 4	Total = 12; FSQ = 4	Total = 12; FSQ = 4

REGION 7

Mountain lions have expanded their range into eastern Montana since the 1980s and are now found in all suitable Region 7 habitats (Figure 37). The first mountain lion hunting season in Region 7 occurred in 1985 but no harvest was recorded until 1990. FWP incrementally raised quotas as the Region's lion abundance and distribution increased. Mountain lion age-in-harvest, harvest sex ratios, and hunter effort remained stable through the late 2010s.

Because lions only recently recovered in Region 7, neither biological nor social carrying capacities are as well known. Incidents of human-lion conflict and livestock depredation remained low through the mid-2010s and landowners were generally tolerant of mountain lion presence.

Region 7 lies entirely within the Eastern mountain lion ecoregion (Figure 38). Estimates of lion abundance will not be routinely produced using SCR or other field methods for this ecoregion. Managers will need to instead rely in indirect indices of abundance, harvest success, and public input to help guide management decisions.

Intermittent winter snow cover in the Region limits hound hunting's effectiveness. Annual lion harvest is correlated with the number of days the Region has snow cover (FWP data). Therefore, Region 7 quotas are more likely to serve as limits on harvest during years when snow conditions are favorable than as reliable annual harvest prescriptions. If quotas are met despite annually variable environmental conditions, managers may consider whether an increase is appropriate. Overharvest in Region 7 is unlikely because these favorable tracking conditions are rare and hunters have limited access to occupied habitat.

Region 7 traditionally prescribed a single, Region-wide, harvest quota. This approach was intended to both maximize hunter opportunity and regulation simplicity. It also allowed flexibility to direct harvest to areas with higher lion densities, more conflicts, or better tracking conditions. Region 7 may continue to comprise a single LMU within the Eastern ecoregion to maintain this management approach.

Table 19. Region 7 mountain lion harvest, 1971 – 2016.

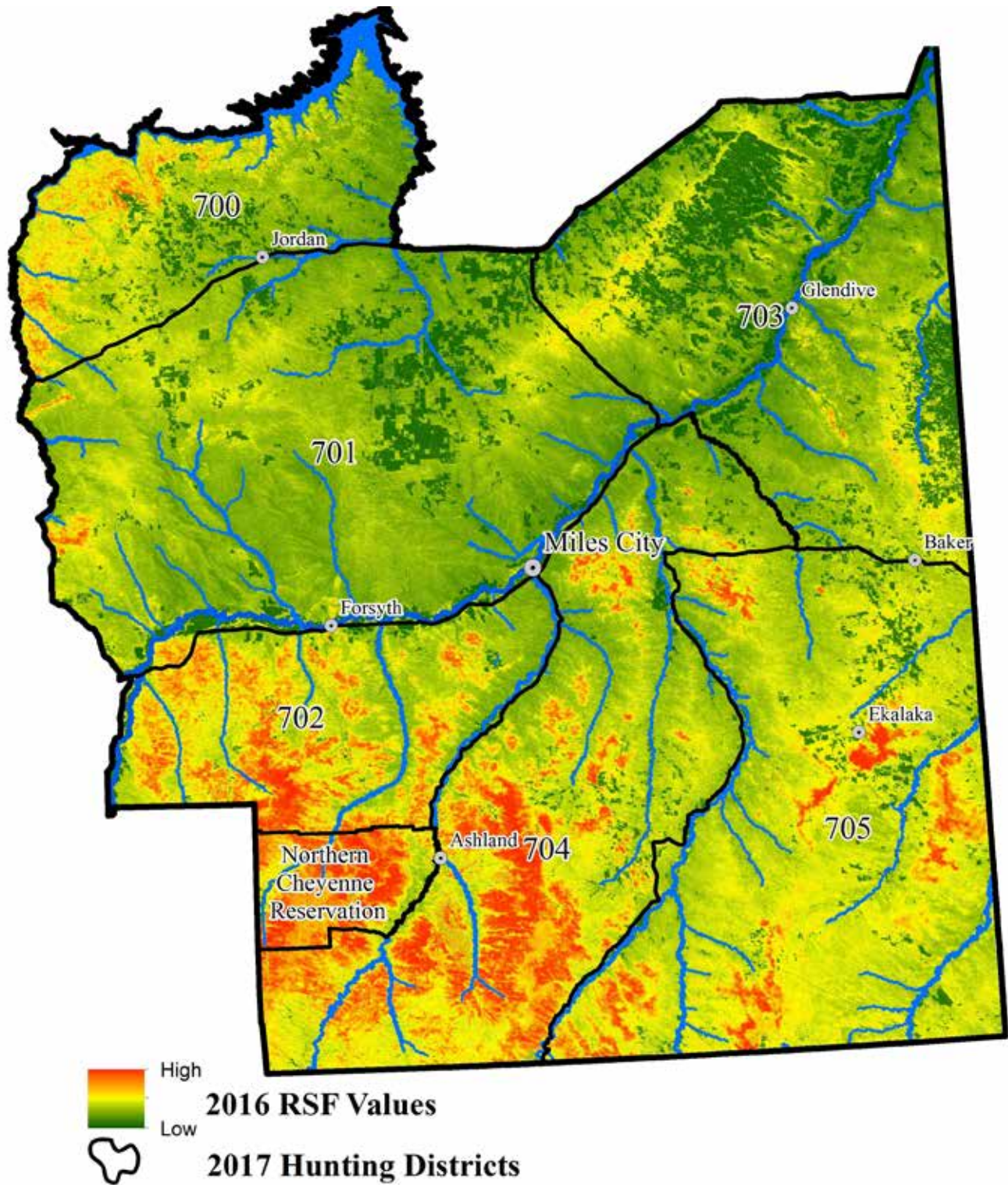
License Year	R7		
	F	M	Tot.
1971	0	1	1
1972	0	0	0
1973	0	0	0
1974	0	0	0
1975	0	0	0
1976	0	0	0
1977	0	0	0
1978	0	0	0
1979	0	0	0
1980	0	0	0
1981	0	0	0
1982	0	0	0
1983	0	0	0
1984	0	0	0
1985	0	0	0
1986	0	0	0
1987	0	0	0
1988	0	0	0
1989	0	0	0
1990	1	0	1
1991	0	0	0
1992	1	2	3

1993	1	2	3
1994	0	5	5
1995	2	1	3
1996	2	1	3
1997	1	1	2
1998	1	4	5
1999	3	4	7
2000	5	5	10
2001	4	11	15
2002	3	10	13
2003	1	5	6
2004	4	7	11
2005	0	7	7
2006	9	12	21
2007	6	11	17
2008	9	12	21
2009	8	17	25
2010	11	15	26
2011	17	14	31
2012	15	16	31
2013	10	26	36
2014	18	20	38
2015	8	16	24
2016	12	17	29

FWP biologists will carefully monitor harvest distribution within the Region. Region 7 contains three lion management areas: 1) the Ashland Ranger District of the Custer National Forest (where the majority of Region 7 mountain lion harvests occurs) and adjacent lands, 2) the Sioux Ranger District (Chalk Butte, Ekalaka Hills and Long Pines units) of the Custer National Forest, plus several adjacent large tracts of BLM and private land and, 3) lands on and adjacent to the Charles M. Russell Wildlife Refuge.

Patterns in harvest among these units will be tracked over time. If there is a significant reduction in the distribution of harvest that cannot be attributed to tracking conditions

Figure 37. FWP Region 7 2016 mountain lion winter RSF and hunting districts.

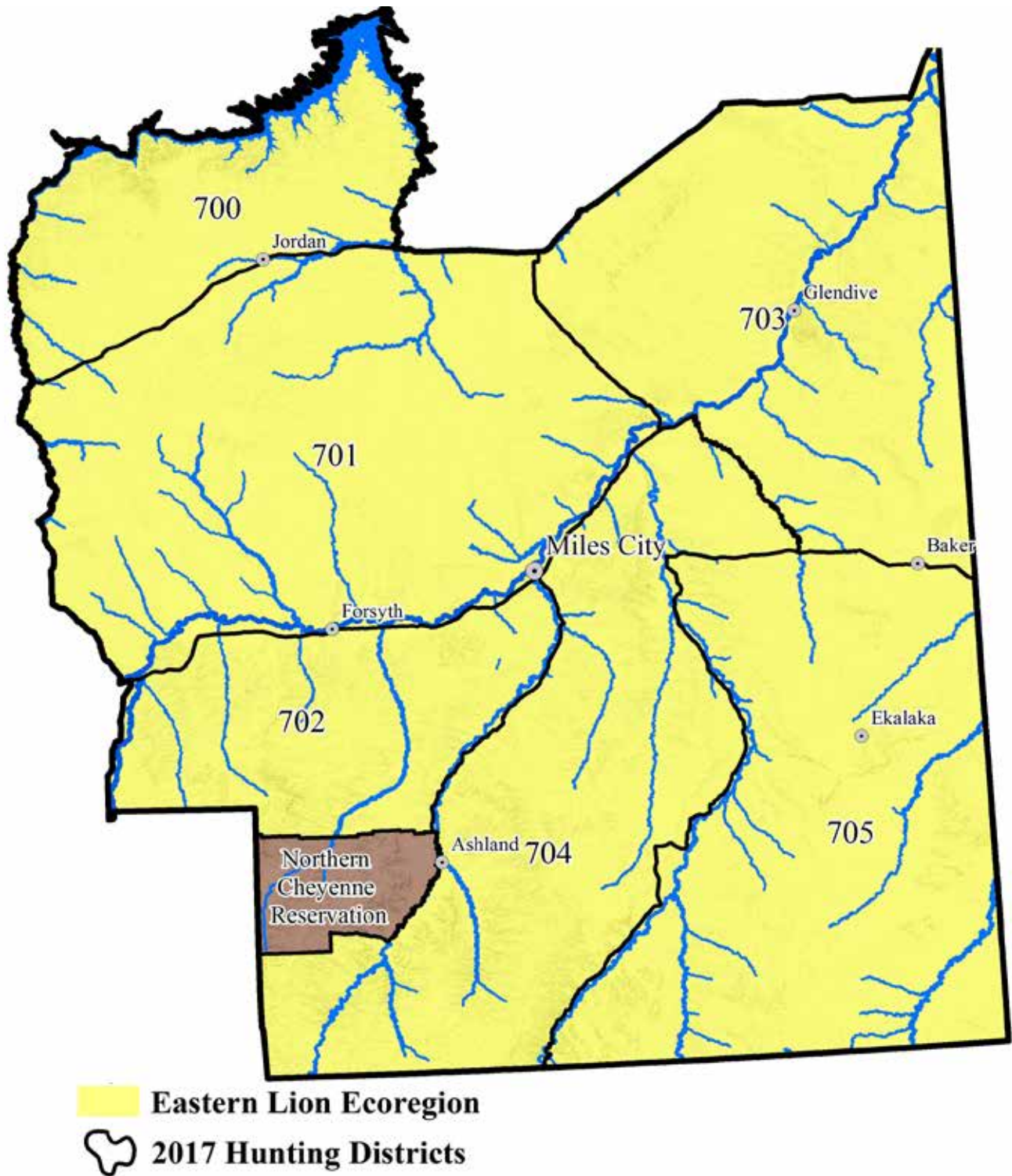


or changes in hunter access, the Region may consider management alternatives. Regional managers will also consider the pattern and rate of Regional human-lion conflicts and landowner input when evaluating these alternatives.

Nonresident hunters take an average of 15% of the lions harvested in Region 7 each year.

Minimizing human-lion conflicts and livestock depredation is a high priority in Region 7. The Region will use both

Figure 38. FWP Region 7 hunting districts and mountain lion ecoregion.



hunter harvest and effective responses to individual incidents that are consistent with the Depredation and Control Guidelines to minimize potential conflicts.

Region 7 will be able to meet lion management objectives by using Model Harvest Regulation **Season Type 2: General License**.

Table 20. Summary of Region 7 mountain lion harvest regulations, 1971 – 2017.

License Year	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Mandatory Inspection	None				10 Day Inspection				4 Day Inspection	48 Hr. Inspection				10 Day Inspection	72 Hr. Inspection	48 Hr. Inspection
Hunting season	Opening of General D/E - 4/30		CLOSED													
Chase/Hound Training Season	NONE		CLOSED													
Regional Quotas	UNLIMITED; One ES Adult Lion per Hunter		CLOSED													

License Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Mandatory Inspection	48 Hr. Report; 10 Day Inspection		24 Hr. Report; 5 Day Inspection													
Hunting season	12/1 - 2/15		12/1 - 4/14													
Chase/Hound Training Season	CLOSED		2/16 - 4/30													
Regional Quotas	3 Any Legal Lion	3 Any Legal Lion	3 Any Legal Lion	3 Any Legal Lion	3 Any Legal Lion	3 Any Legal Lion	3 Any Legal Lion	5 Any Legal Lion	7 Any Legal Lion	7 Any Legal Lion	7 Any Legal Lion	7 Any Legal Lion	7 Any Legal Lion	10 Any Legal Lion	15 Any Legal Lion	20 Any Legal Lion

License Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mandatory Inspection	12 Hr. Report; 10 Day Inspection														
Hunting season	Fall Season w/o dogs; 12/1 - 4/14						Archery-only Season; Fall Season w/o dogs; 12/1 - 4/14								
Chase/Hound Training Season	Hound Training Season 12/2 - 4/14														
Regional Quotas	20 Any Legal Lion	20 Any Legal Lion	20 Any Legal Lion	20 Any Legal Lion	25 Any Legal Lion	25 Any Legal Lion	25 Any Legal Lion	25 Any Legal Lion	30 Any Legal Lion	30 Any Legal Lion	35 Any Legal Lion	45 Any Legal Lion	45 Any Legal Lion	45 Any Legal Lion	45 Any Legal Lion

APPENDIX 1

POPULATION MONITORING, FIELD PROTOCOL,
AND DATA ANALYSIS

Trend Monitoring Area Selection

FWP identified permanent trend monitoring areas within the Northwest, West-central, and Southwest ecoregions based on the following criteria:

- The area is approximately 2,600 km² (1,000 mi²) in size, and
- The habitat quality (assessed both qualitatively and as predicted by the 2016 RSF) within the trend area is representative of the lion habitat type and quality present in the remainder of the ecoregion, and
- There is current and long term physical and legal access to the majority of the trend monitoring area during winter, and
- Regional wildlife managers and the public are committed to prescribing annual mountain lion harvest rates for the trend monitoring area’s LMUs that are representative of the annual harvest rate in the larger ecoregion.

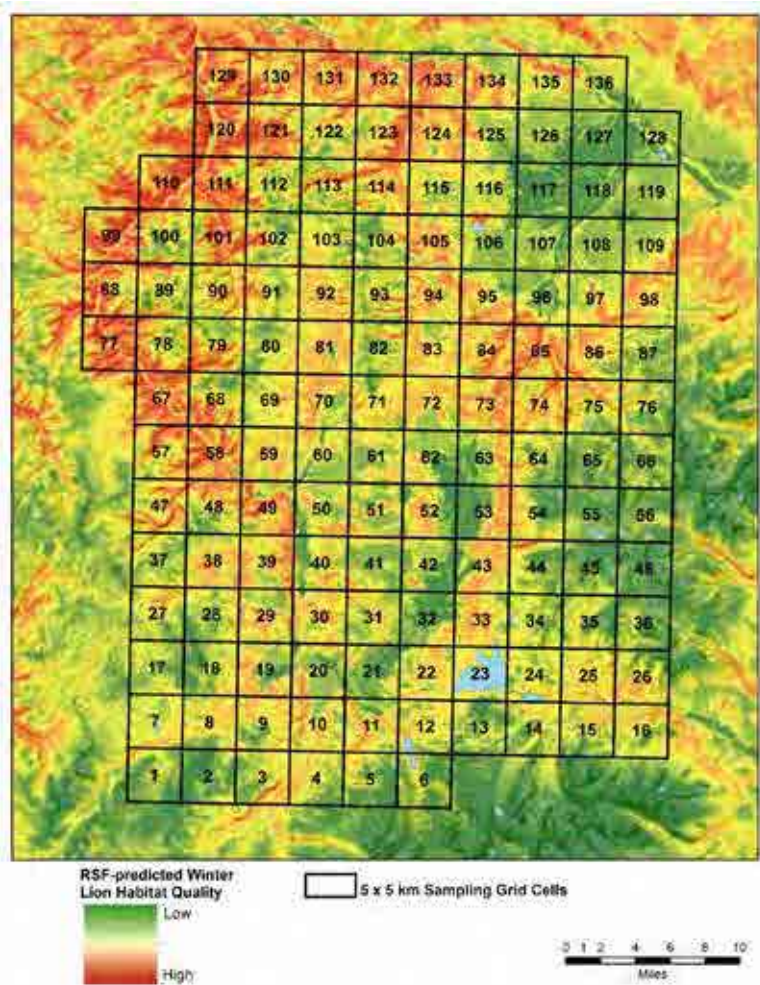
Locations of the Northwest, West-central, and Southwest trend monitoring areas are shown in Chapter 4.

Supplemental Monitoring Area Selection

Supplemental monitoring areas in each of the Northwest, West-central, and Southwest ecoregions may be sampled the year after each ecoregion’s trend monitoring area is sampled. The supplemental monitoring areas will be selected using the following criteria:

- The area is approximately 2,600 km² (1,000 mi.2) in size, and
- There is sufficient physical and legal access (i.e. public land or prior permission from private landowners) to allow sampling of most of the predicted mountain lion habitat in the monitoring area during winter, and
- Harvest rates for the proposed supplemental monitoring area’s LMUs have been representative of the annual harvest rate in the larger ecoregion for at least the last 6 years.

Figure 39. An example of a sampling grid overlaid on a 3,400 km² monitoring area and the underlying 2016 RSF for the area (Proffitt et al. 2014; Upper Clark Fork River, MT).



Initial Field Protocol

Collection and analysis of field data will initially follow methods described in detail by Proffitt et al. (2015). Population monitoring and field sampling techniques may change as improved methods are developed and validated in the future.

Monitoring areas will be sampled between 12/1 and 4/15. Field staff will overlay a 5x5 km grid across the study area and assign each cell a number. Cells will then be stratified into classes according to their habitat quality (RSF value) and a random search order will be assigned to cells in each class. Although each day’s search effort will begin in a randomly assigned grid cell, more overall search effort will be dedicated to cells with higher quality habitat (Figure 39).

Trackers and hound handlers will search their assigned cell(s) to collect genetic samples from mountain lion hair,

scat, and muscle. The location where each sample is collected will be recorded, as will the search route trackers used to survey the cells (Figure 40).

When a fresh track of a suspected independent-aged mountain lion is located, the hound handlers will attempt to tree the lion and collect a muscle sample using a biopsy dart fired from a pneumatic gun. The tracks will then be backtracked and inspected to determine if the lion was independent or associated with a family group—if it was traveling with other animals, the group size will be recorded. Sex of the treed lion will be determined based on genetic analysis.

When older mountain lion tracks are located, a tracker or hound handler will backtrack and collect any hair or scat samples present along the track. All field crews will use a Global Positioning System to record the length and location of their search effort (Figure 40).

Figure 40. An example of the distribution of search effort within a SCR sampling area. In total, 12,785 km of trails within 127 grid cells were sampled over 121 days (Proffitt et al. 2014; Upper Clark Fork River, MT).

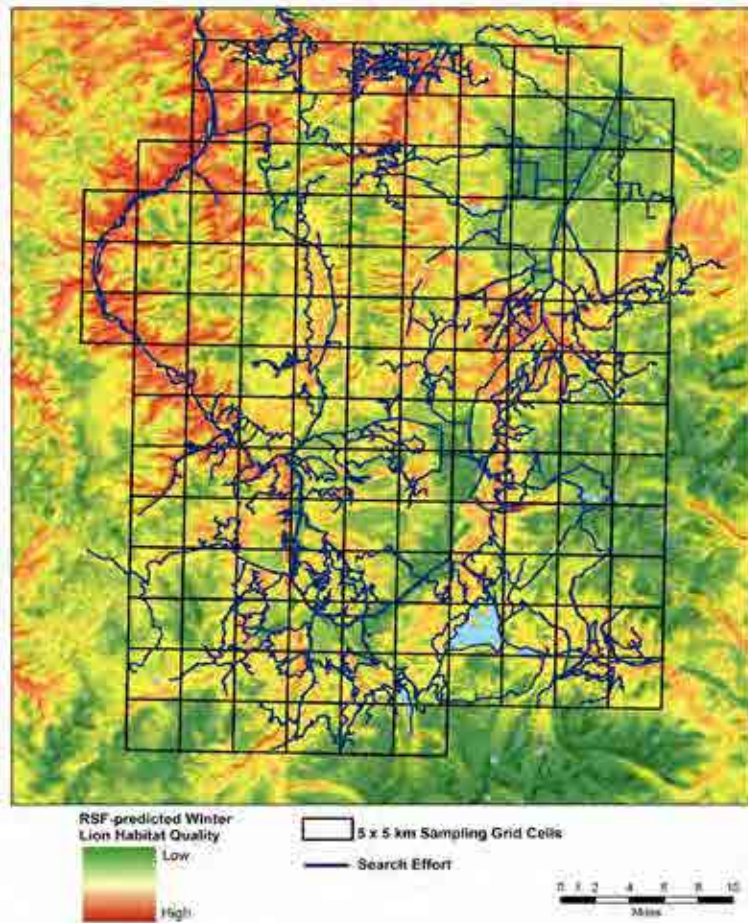
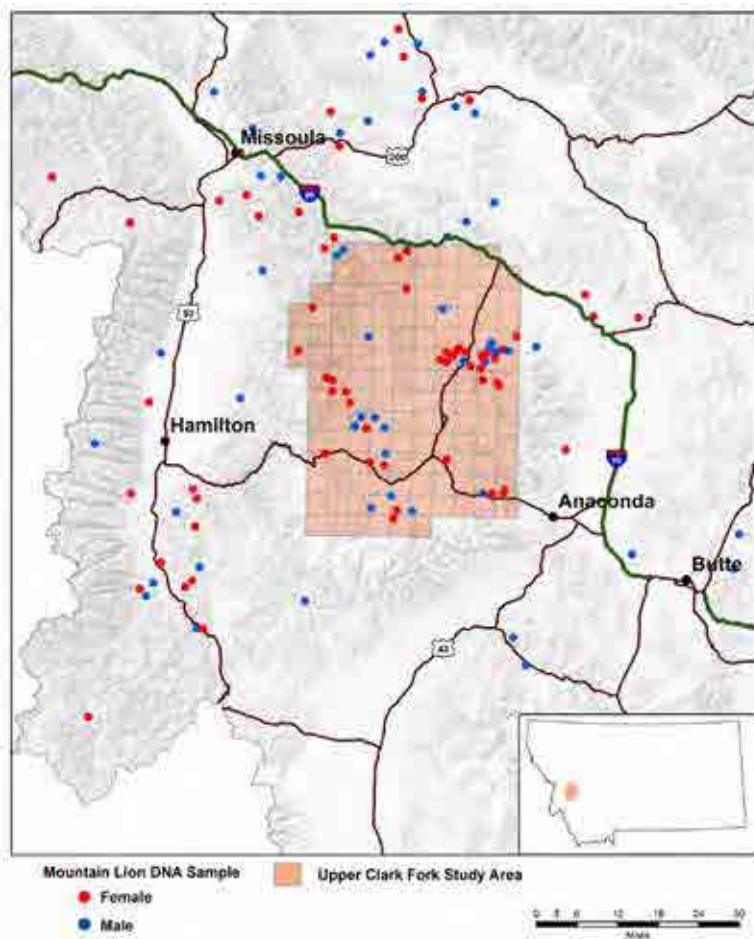


Figure 41. An example of a SCR sampling area and the locations of 132 mountain lion tissue samples (from both field sampling and harvest) that had DNA successfully extracted and analyzed to determine individual ID (Proffitt et al. 2014).



In Montana, the hide and skull of all harvested mountain lions must be presented to a FWP employee within 10 days. FWP will collect genetic samples from all known lion mortalities that occur in or adjacent to the monitoring area. Hair and muscle samples from these lions will be genetically analyzed to determine sex and the individual lions' identities (Figure 41).

Field Sampling Recommendations

A "sample" is a successfully extracted and identified individual mountain lion DNA sequence. Because not all non-invasive DNA samples will generate amplifiable DNA, not all material collected in the field will provide a useful DNA sample. Even after a single sample is collected in a cell, field staff are generally encouraged to continue to expend effort in that cell to obtain either additional lower quality samples (scat, hairs) or a high-quality sample (muscle biopsy). For hound handlers, this means collecting

a biopsy dart sample, and a backup high-quality hair sample. For snow backtrackers, multiple scat samples from different scats, and/or hair samples are ideal.

Field staff will collect tissue from biopsy darts, scats from backtracking, hairs from both biopsy darting (as a backup sample) and hairs from snow tracking, and harvested lion muscle samples. During previous studies (Russell et al. 2012, Proffitt et al. 2015) DNA extraction success was highest for muscle/biopsy samples and lowest for hair and scat. Because not all biopsy samples generate successful DNA sequences, a second set of high-quality hair samples (with follicles attached) should also be collected. Hound handlers should collect these samples opportunistically while tracking the animal to the tree, then search for hair and/or scat around the tree and while back tracking from the tree.

There is a critical difference between when a survey cell has been searched versus when a cell has been successfully sampled. Survey effort was an important predictor of detection in previous SCR studies of lions (Russell et al. 2012). Therefore, field staff must carefully collect a GPS track log of all daily search effort. If a cell is searched and lion sign is present but a sample is not obtained, then the cell was not successfully sampled.

Search effort should be spatially distributed by randomly assigning cells to be searched each day. These random grid cells are the starting point for the day's search. However, if new tracks are encountered while traveling to the day's starting grid cell, the tracker should follow those tracks if that grid cell has not been successfully sampled yet. If tracks of a lion previously captured in that grid cell are detected, however, the tracker should proceed to the day's assigned starting location.

The hound handler/tracker should confine search activity to the assigned focal cell or its 8 adjacent grid cells on any particular day. Field crews may choose to skip a randomly assigned cell if multiple teams are working nearby and the randomly assigned cell could lead to survey overlap. Likewise, assigned cells may be skipped if that cell has been surveyed within the previous month and a high-quality sample already obtained. Field crews may choose

to skip assigned cells if conditions in the assigned cell will not allow snow tracking.

Once a hound handler is assigned a starting grid cell, subsequent sampling effort may proceed in one of several ways. If the assigned cell and adjacent cells are searched, no sign is detected, and the hound handler believes the area is likely void of lions at that time (e.g. too high of an elevation, too much snow, etc.), the hound handler will receive a new randomly assigned starting cell the next day. The cell will remain on the sampling list for that period.

If after the assigned cell and adjacent cells are searched, all tracks are followed, and the hound handler believes that all lions currently detected within the area have been sampled, the cell(s) from which samples were collected will be removed from the sample list for that period. The hound handler will then get a new starting cell from the sampling list the next day.

If the assigned cell and adjacent cells are searched, multiple tracks are found, and the hound handler believes that NOT all lions currently within the area have been sampled, only the cell(s) from which samples were collected will be removed from the list. The hound handler will then return to the area and continue to work there until their shift is over, or they believe they have sampled all of the lions thought to be in the area. A new starting cell from the sampling list will be assigned the next day.

All samples will be carefully stored in desiccant and labeled with a unique sample ID. Hound handlers and trackers will record their daily search effort using GPS tracks from GPS units.

Estimating Ecoregional Lion Abundance

Montana FWP will monitor and manage mountain lions within large (>35,000 km²) ecoregions. To do so, managers will need to periodically estimate lion population size within these ecoregions and make predictions about the effect of future harvest at this scale. Once an overall harvest prescription has been developed for an ecoregion, individual harvest limits will be assigned to the ecoregions' LMUs to distribute harvest and address local management objectives.

Spatially explicit abundance estimates from representative sampling areas can be extrapolated across a broader area of inference to estimate that landscape's population size (Boyce & McDonald 1999). This method of extrapolating animal abundance as a function of RSF-predicted habitat quality has been used to estimate populations of many species (Boyce et al. 2016), including mountain lions in Montana (Robinson et al. 2015).

Several important factors must be considered when using data collected from sampling areas to estimate a species' population size across a larger area (Wiens et al. 2008, Boyce et al. 2016):

- The relationship between the observed number of animals and available habitat (ie. the 2016 RSF) within a sampling area should be similar to that same relationship across the larger landscape, and
- Harvest management within sampling areas should be representative of the broader area of inference (Reynolds et al. 2016). Specifically, it's important that the long-term mountain lion hunter-harvest rate within an ecoregion's monitoring areas is similar to the harvest rate within the larger landscape for which the estimate is being made, and
- Because a species' abundance can vary over time for reasons unrelated to habitat quality (ie. hunting or changes in prey density), representative sampling area(s) must be periodically re-sampled. This helps ensure that up-to-date relationships between abundance and RSF values are used to estimate current populations.

Producing Ecoregion Population Estimates

The relationship between mountain lion density and habitat within an ecoregion's monitoring area(s) will be most similar to other areas within that same ecoregion. Therefore, the mountain lion abundance data collected on monitoring areas will only be used to estimate the population size of the ecoregion where that monitoring area is located—they will not be used to develop population estimates for other ecoregions.

Even within ecoregions, the relationship between mountain lion abundance and habitat quality varies. To improve the

accuracy of an ecoregion's population estimate, FWP may initially collect data from both a fixed Trend Monitoring Area (sampled Year 1) and a Supplemental Monitoring Area (sampled Year 2). The locations of Supplemental Monitoring Areas may vary over time, Trend Monitoring Area locations will not.

Combining the data collected from both the trend and supplemental monitoring areas may generate a more representative ecoregional estimate of the relationship between lion abundance and the RSF as compared to using data from the trend monitoring area alone (Howe et al. 2013). Therefore, the results of the two subsequent samples will be pooled to describe the current relationship between lion abundance and the RSF within an ecoregion. This pooled relationship will be used to estimate the population of independent-aged mountain lions within that ecoregion.

Ecoregion population estimates will also be produced using monitoring data from the fixed trend monitoring area alone. FWP will compare the estimate derived using the pooled areas' data and the estimate using only the trend monitoring area data. If the two methods consistently produce similar estimates, supplemental monitoring areas will not continue to be sampled.

The initial FWP SCR model predicts the abundance of independent-aged mountain lions at a 4 km² resolution (Proffitt et al. 2015). The following regression equation is an example of one way to estimate the effect of RSF on abundance across the ecoregion:

$$\text{Abundance} = \beta_0 + \beta_1 \cdot \text{RSF} + e$$

FWP continues to test and validate extrapolation methods.

FWP will estimate the mean RSF value over the same spatial extent (4 km²) for both the trend and supplemental monitoring areas, and use these mean RSF values in the regression model. The above regression equation represents the effect of the mean 4 km² RSF on predicted spatial abundances within the pooled trend and supplemental monitoring areas. Using this relationship, FWP will predict mountain lion abundance for the entire ecoregion by extrapolating the observed relationship

between RSF values and mountain lion abundance (Boyce & McDonald 1999). FWP will use the 95% confidence interval around β RSF to estimate the 95% upper and lower confidence intervals around the predicted mean abundance for the ecoregion.

FWP will periodically sample mountain lion populations and produce estimates for the Northwest, West-central, and Southwest ecoregions. An estimate of the overall abundance of mountain lions within these ecoregions will then be developed based on the sampling data. These estimates will be input into the IPM (Chapter 6) as additional data. The IPM then considers the field-based abundance estimates along with harvest prescriptions and lion vital rates when generating more complete predictions of past and future ecoregional population trends.

Data Analysis

To estimate the abundance of independent lions in the sampling area, FWP will initially fit the SCR model to a dataset that includes only samples from independent animals or the adult female of a family group. This eliminates multiple samples from within family groups as well as all groups where only a subadult animal was sampled.

The monitoring period will be divided into sampling periods within the winter season (December, January, February, and March-April). An encounter history will be developed for each detected individual during each sampling period and the detection probability for harvested animals will be adjusted to ‘0’ for the sampling periods following their death.

FWP will initially use a Bayesian SCR model to estimate the number of mountain lions present within the sampling area. This method explicitly incorporates the spatial organization of individuals through the estimation of specific capture probabilities (Efford 2004, Efford et al. 2009, Gardner et al. 2010, Royle et al. 2013).

To account for individuals that had a home range only partially within the sampling area, FWP will buffer the study area by 10 km and estimate spatial densities within the larger area. We will then evaluate potential models

that include all possible combinations of the covariates for search effort and sex, RSF-driven densities, and sex-specific activity center distributions (Russell et al. 2012). We will conduct model selection using a combination of Bayesian Information Criteria (BIC), examination of the posterior significance of the parameters in each model, and two goodness of fit statistics (as described in Proffitt et al. 2015). All of these factors will be weighted by our prior knowledge of mountain lion biology.

We will then estimate the independent-aged lion abundance, with confidence intervals, for the trend and supplemental monitoring areas. Because these abundances are spatially explicit functions of the areas’ underlying habitat quality, we will then extrapolate the monitoring areas’ relationship between abundance and the RSF to produce an estimate of lion abundance across the larger ecoregion.

Cost

Field monitoring will occur at a significant periodic cost to Fish, Wildlife and Parks. The Department will need to hire one staff biologist who will work half-time (6 months) to plan and organize logistics, contract field staff, coordinate day-to-day field operations, and prepare data for analysis. Enough hound handlers will be contracted to successfully sample approximately 60% of grid cells within the Monitoring Area during the four sampling periods. The number of contractors may vary depending on each contractor’s seasonal availability. Genetic analysis of the collected samples will also be contracted through an independent laboratory.

Table 21. Approximate costs (2016) to collect and analyze mountain lion monitoring area data.

Contracted Hound Handlers	\$65,000
Genetic Analysis	\$9,500
Fuel and housing	\$6,500
FWP Biologist (1/2 FTE)	\$32,500
Misc. Supplies	\$2,000
Total	\$115,500

APPENDIX 2

MOUNTAIN LION INTEGRATED POPULATION MODEL DEFINITION AND USER INPUTS

The Montana mountain lion integrated population model is generally described in Chapter 6 and in Nowak et al. 2018. Following are more complete descriptions of the several internal models, the data and prior assumptions that the IPM includes, and an explanation of the controls that users can manipulate to improve the IPM's outputs.

Reproduction Model Definition

The equation describing the number of kittens in year y is as follows:

$$N_{kit,f,y} = (N_{sa,f,y} * P_{sa} * LS_{sa} * 0.5 + N_{a,f,y} * P_a * LS_a * 0.5 * 0.5) * Survival_{kit,y-1}$$

Thus, we calculate the number of female kittens f in year y as a function of the number of subadult sa and adult a females f in year y . For the subadult contribution we take the product of the number of subadults, the age specific pregnancy rate P , and litter size LS .

Only a fraction of the resulting kittens will be female and so the final term in the product simply assumes that half of the kittens born are female. The adult contribution to the kitten population is calculated as the product of the number of adults, the age specific pregnancy rate, litter size, and 0.25 ($0.5 * 0.5$). Because we assume the adult inter-birth interval is 24 months, only half of the adult females are available to reproduce in any given year. We therefore multiply the reproductive term by 0.5. Said another way, the first 0.5 represents the assumption that half of the kittens born are females and the second 0.5 reflects our assumption that the birth interval is 24 months, which results in half of the adult female population giving birth each year.

Multi-state Survival Model Definition

The mountain lion IPM in **PopR** is built around a 4-age class and 2-sex population model. The 4 age classes are **kittens** (0-6 months), **juveniles** (6-18 months), **subadults** (18-30 months) and **adults** (30+ months). We assume a 50:50 sex ratio at birth but, starting with the juvenile age class, each sex is modeled separately. The process model describing lion ecology is represented by a series of equations that describe transitions from one age class to the next each year.

$$N_{kit,f,y} = (N_{sa,f,y} * P_{sa} * LS_{sa} * 0.5 + N_{a,f,y} * P_a * LS_a * 0.5 * 0.5) * Survival_{kit,y-1}$$

$$N_{juv,f,y} = N_{kit,f,y-1} * Survival_{juv,f,y-1} - harvest_{juv,f,y-1} + \epsilon_{juv,f,y}$$

$$N_{sa,f,y} = N_{juv,f,y-1} * Survival_{sa,f,y-1} - harvest_{sa,f,y-1} + \epsilon_{sa,f,y}$$

$$N_{ad,f,y} = (N_{sa,f,y-1} + N_{ad,f,y-1}) * Survival_{ad,f,y-1} - harvest_{ad,f,y-1} + \epsilon_{ad,f,y}$$

where,

$N_{age,sex,y}$

is the abundance of age class age, sex sex in year y

$Survival_{age,sex,y}$

is the survival of age class age, sex sex in year y

P_{age}

is the age-specific pregnancy rate

LS_{age}

LS is the age-specific litter size

$\epsilon_{age,sex,y}$

is the age, sex and year-specific residual variation

Kittens born to subadults and adults the previous year are recruited as juveniles on December 1st each year. The number of subadults and adults is indexed to year **y** based on the number of reproductive females in the population on December 1. The model then takes into account the probability these females will survive until they give birth (assumed to be July 1). We also assume that kittens whose mothers die within the first six months after giving birth will not survive.

The model does not make kittens available for harvest because it assumes they become juveniles on December 1 at 6 months old but would not be independent (and legally harvestable) until after the winter hunting season ends. Although some subadults may reproduce, they do so at a lower rate than adults. Subadults transition to adults on December 1st of the following year. Any mountain lion older than 30 months is considered either an adult male or female. As adults, the model assumes that each sex survives (except for harvest) and reproduces at the same respective rate for the remainder of their lives.

The lion IPM primarily uses estimates and variability of documented vital rates (from the research literature)

rather than raw field data itself (Table 22). This model structure provides several advantages. First, it allows lion research data collected using a wide variety of field sampling protocols to fit into the IPM framework—once the parameter and its error distribution is described it can be entered into the IPM. Because we also include a measure of the field estimate's precision, all sources of uncertainty remain in the IPM.

The general form of the observation model in **PopR** is:

$$\hat{\theta} \sim \text{Normal}(\bar{\theta}, \widehat{SE}(\hat{\theta}))$$

where,

θ = field estimate

$\widehat{SE}(\hat{\theta})$ = estimated standard error of

$\bar{\theta}$ = IPM parameter.

The observation model is like a multi-dimension regression model. The model fitting process seeks to minimize the distance between the IPM parameter (ie. Adult Female Survival) and the associated field estimate simultaneously across all IPM parameters.

Population Reconstruction Model Definition

The IPM uses survival estimates along with the annual harvest rate to reconstruct past mountain lion populations. It is based on examples of live recapture/dead recovery models from the literature that consider sex, age and year specific abundance estimates from records of harvested animals (Brownie et al. 1985, Link et al. 2003, Conn et al. 2008, Buderman et al. 2014). Current hunter harvest by sex, age, and location is input to the model after the close of the harvest season each year. By combining the multi-state survival model with observed harvest data, we can intuitively estimate population size by assuming a simple binomial distribution whose expectation is equivalent to:

$$N_{age,sex,y} = \frac{\text{harvest}_{age,sex,y}}{\text{harvestMortality}_{age,sex,y}}$$

where,

$harvest_{age,sex,y}$

is the number of age a, sex s, animals harvested in year y

$N_{age,sex,y}$

is the age, sex and year specific abundance

$harvestMortality_{age,sex,y}$

describes the relationship between abundance and harvest.

In practice, we implement harvest reconstruction as a binomial distribution:

$$harvest_{age,sex,y} \sim \text{Binomial}(harvestMortality_{age,sex,y}, N_{age,sex,y})$$

Because the model requires that annual harvest data are input annually by both sex and age, FWP determines the age of harvested lions using cementum age analysis (Trainer & Matson 1988). In cases where teeth cannot be successfully extracted or an age confidently determined, the model randomly samples the distribution of known-age animals by sex and assigns an age to that animal for the purpose of the population reconstruction.

Direct estimates of population abundance (Proffitt et al. 2015) will be input into the model when they are available. These periodic field estimates can significantly improve past and future population estimates for individual lion ecoregions. Direct population estimates will be periodically developed for most lion ecoregions following the methods described in Chapter 5.

PopR uses Markov Chain Monte Carlo (MCMC) methods to “fit” IPM population estimates to the available data. MCMC methods estimate parameters in complex models by systematically updating informed prior distributions with information gleaned from field data (e.g. observed harvest). Therefore, they allow us to describe each parameter in terms of a distribution and that distribution’s shape. Parameters described by a narrow and peaked distribution are more precisely estimated than those that are flatter and less peaked.

PopR provides generally acceptable default MCMC settings but also allows users to easily adjust them in the web-based user interface. Typically, 25,000-100,000 MCMC iterations will be required to fit an IPM. **PopR** provides convergence diagnostics in the output report.

IPM USER CONTROLS

Demographic Variation

These settings allow users to decide whether to allow estimates of population vital rates to be drawn from a single distribution (“Constant”) or from a range of all possible distributions that differs every year (“Time Varying”). Biologists should only choose “Time Varying” if they have reason to believe that non-harvest factors (such as weather or prey density) introduce additional volatility in these vital rates that would not have been present during the field research projects from which the “Constant” rate distribution was developed. Research has demonstrated that mountain lion non-harvest survival and reproductive rates are remarkably stable and the “Constant” setting should be considered the default.

Burn-in Length

“Burn-in” is a colloquial term for an initial process that gives the Markov Chain time to approach the solution to the problem by throwing away some less reasonable starting points at the beginning of a Markov Chain Monte Carlo run. Allowing the Burn-in process to establish an equilibrium distribution reduces the number of subsequent MCMC sampling iterations needed to provide an estimate with reasonable certainty. In **PopR**, managers should simply use the default Burn-in Length setting when developing an estimate through the standard user interface.

Markov Chain Monte Carlo (MCMC) Iterations

If the number of MCMC iterations is set too low the uncertainty about an estimate is likely to be misrepresented. In **PopR**, we use the Brooks-Gelman-Rubin (BGR) statistic as an initial assessment and this is the statistic used when automating convergence. The BGR statistic suggests convergence when estimates of Rhat are below 1.1 or more generally close to 1. This statistic is reported under the “Table” tab and highlighted in red when Rhat estimates are above 1.1. The default settings will produce results that are unlikely to change even if run longer, but users should increase the number of MCMC iterations to 15,000 or greater if either Rhat estimates are above 1.1 and/or computing time allows.

Thinning Rate

Thinning tells the sampler to only retain every nth value from the chains. This technique is sometimes used to

reduce autocorrelation in the chains, but comes at the cost of reduced efficiency of the sampler. A more reasonable use of thinning is when hardware limitations are being reached, which typically comes in the form of running out of memory. This will not be an issue in **PopR** and, therefore, the recommended setting for the Thinning slider is **1**.

Automate Convergence

Users may choose to simply check the “Automate Convergence” box below the MCMC sliders menu in the **PopR** interface. Although this option will increase the time necessary to produce an estimate, it will assure that an adequate Burn-in Length and number of MCMC Iterations have been used to produce a statistically sound estimate and error distribution.

Table 22. Default mountain lion vital rates used in Montana’s 2016 Integrated Population Model. Rates are based on field data collected from 263 radio-monitored lions from Montana, Wyoming and Washington.

Parameter	Age	Sex	Mean	SE
Survival	YOY	F	0.5	0.1
Survival	Juvenile	F	0.75	0.1
Survival	SubAdult	F	0.57	0.1
Survival	Adult	F	0.8	0.05
Survival	YOY	M	0.5	0.1
Survival	Juvenile	M	0.75	0.1
Survival	SubAdult	M	0.49	0.1
Survival	Adult	M	0.65	0.05
HarvMort	Juvenile	F	0.01	0.01
HarvMort	SubAdult	F	0.25	0.1
HarvMort	Adult	F	0.1	0.1
HarvMort	Juvenile	M	0.01	0.1
HarvMort	SubAdult	M	0.35	0.1
HarvMort	Adult	M	0.2	0.1
OtherMort	Juvenile	F	0.24	0.1
OtherMort	SubAdult	F	0.18	0.1
OtherMort	Adult	F	0.05	0.1
OtherMort	Juvenile	M	0.24	0.1
OtherMort	SubAdult	M	0.16	0.1
OtherMort	Adult	M	0.15	0.1
Fetus Count	SubAdult	F	3	0.1
Fetus Count	Adult	F	3	0.1
Pregnancy	SubAdult	F	0.5	0.01
Pregnancy	Adult	F	1	0.01

APPENDIX 3

MOUNTAIN LION DEPREDAATION AND CONTROL GUIDELINES

In accordance with Montana Code Annotated 87-1-201, 87-1-217, 87-1-225, 87-1-301, 87-1-304, 87-3-127, 87-3-128, 87-5-713, 87-5-725, and 87-6-106, Montana Fish, Wildlife and Parks (FWP) and the Fish and Wildlife Commission are both authorized and charged with the duties of protecting persons and personal property from damage and depredation resulting from ingress or attack by wildlife. The goal of the **Mountain Lion Depredation and Control Guidelines** is to minimize damage to property and to prevent public safety problems. For the purpose of these Guidelines, a Public Safety Problem is defined as: Any situation where a FWP employee (or their agent) reasonably determines that a human has been physically injured or killed as a result of contact with a mountain lion, that an attack by a mountain lion has resulted in the loss of livestock or pets, or that the continued presence of a mountain lion poses a threat to human safety.

Any mountain lion that is lethally removed by FWP or its agents must be retained and transferred to the Montana Livestock Loss Board for sale or auction pursuant to MCA 2-15-3110 to 3113 and 87-1-217.

I. DEFINITIONS

The following are definitions designed to standardize the vocabulary used in the investigation and reporting of human/lion conflicts. It is important that the same terms be used to describe the different types of encounters that occur between humans and mountain lions. The definitions presented here are similar to those used in other western states.

Sighting: A visual observation of a mountain lion.

Encounter: An unexpected direct meeting between a human and a mountain lion without incident or the recurrent sighting in close proximity to human development or habitation.

Incident: A conflict between a human and mountain lion that may have serious results (i.e. a mountain lion killing or attempting to kill a pet that must be forced to back down).

Attack: When a human is bodily injured or killed by physical contact by a mountain lion.

Nuisance Lion: A mountain lion involved in encounters and incidents (i.e. pet attacks, continual presence around humans or areas of high human activity, presence near where children are or will be shortly) but is showing no aggression and/or flees when encountered by a human.

Depredation Lion: A mountain lion involved in the killing of livestock.

Aggressive Lion: An individual mountain lion exhibiting aggressive behavior towards humans including a mountain lion that attacks a person without provocation, intentionally approaches humans or fails to retreat when a human takes aggressive actions, or forces a human to take evasive action to avoid attack.

Livestock Depredation: Livestock attacked or killed by a mountain lion.

Conflict: When a human and mountain lion are involved in an encounter, incident or attack, or a mountain lion is determined to be aggressive, a nuisance, or involved in livestock depredation.

II. DOCUMENTATION OF HUMAN-MOUNTAIN LION CONFLICTS

- 1. Each FWP Region is responsible for responding to reports of mountain lion damage to property and human-mountain lion encounters, incidents, or attacks. Regional Supervisors shall ensure the following procedures are used upon FWP employees’ receiving such reports.
 - a. Obtain the name, address, and telephone number of the person making the report, the person receiving the call, and the time and date of the call.
 - b. Record if the conflict involves an Encounter, an Incident, an Attack, or a Livestock Depredation.
 - c. If a Livestock Depredation is reported or suspected, record the number and type of livestock involved and immediately contact the USDA APHIS Wildlife Services agent with responsibility for the area where the incident occurred.
 - d. Record the number of mountain lions involved, its/ their age class (if known), and the date and time of the conflict.
 - e. If the conflict was a human Attack, record the name, sex, and age of the victim, location, and the extent of any injuries. IMMEDIATELY notify both 911 (if that had not already occurred) AND FWP Enforcement Division staff, who will determine whether a Wildlife Human Attack Response Team (WHART) should be convened to initiate a response following WHART Guidelines (Appendix 4).
 - f. Record the location of Encounters, Incidents, and Attacks as specifically as possible, including physical address and/or geospatial coordinates.
 - g. For Encounters, Incidents, or Attacks, record the behavior of the mountain lion and what, if any, action was taken on the part of the person involved.

- h. Record which FWP personnel responded to investigate, the time and date of the response, and what action(s) was taken.

- 2. A description of all reported conflict incidents, including the above information, will be entered into the designated FWP wildlife conflict database as soon as possible following receipt of the report. This record should be updated when the situation is resolved.

III. FWP ACTIONS TO BE TAKEN WHEN HUMAN-MOUNTAIN LION CONFLICTS ARE REPORTED

A FWP employee shall promptly investigate the validity, severity, and details of any reported human-mountain lion conflict. The following guidelines are the minimum actions required of FWP when conflicts are reported. Additional investigation into a conflict, or higher levels of response, will occur at the discretion of the Regional Supervisor and the investigating FWP employee. All interviews and investigations will begin no more than 48 hours after the conflict is reported in accordance with MCA 87-1-225.

<u>CONFLICT</u>	<u>ACTIONS THAT WILL BE TAKEN</u>
Encounter	The reporting party will be contacted and the details of the Encounter (Section II. (1)) will be documented. If the mountain lion involved in the conflict is determined to be a Nuisance Lion, the responding FWP employee and Regional Supervisor may choose to either haze (i.e. using less-than-lethal ammunition or pursued with trained dogs) or lethally remove the mountain lion(s). This decision will depend on the severity of the conflict, location, pattern of habituation, escalation of behavior, or other relevant factors. FWP may also issue a kill permit to the affected landowner. Mountain lions shall not be captured and translocated under any circumstances. Information about the Encounter and FWP’s response will be

	recorded and entered into the FWP wildlife conflict database.			attacking, killing, or threatening to kill a person or livestock. Private citizens may also kill a mountain lion that is in the act of attacking or killing a domestic dog. A person who kills a mountain lion under this statute must notify a FWP employee within 72 hours and surrender the carcass to FWP.
Incident	A FWP employee will conduct an on-site investigation to determine if the mountain lion involved in the conflict is Aggressive. All Aggressive mountain lions will be lethally removed as soon as is practical. If the mountain lion involved in the conflict is determined to be a Nuisance Lion, the responding FWP employee and Regional Supervisor may choose to either haze (i.e. using less-than-lethal ammunition or pursued with trained dogs) or lethally remove the mountain lion(s) depending on the severity of the conflict, location, pattern of habituation, escalation of behavior, or other relevant factors. FWP may also issue a kill permit to the affected landowner. Mountain lions shall not be captured and translocated under any circumstances. Information about the Encounter and FWP's response will be recorded and entered into the FWP wildlife conflict database.			
Depredation		Livestock	If a Livestock Depredation is reported or suspected, the FWP employee will record the number and type of livestock involved, location, livestock owner's contact information, and number of mountain lions involved. The FWP employee will then immediately contact the USDA APHIS Wildlife Services agent with responsibility for the area where the incident occurred and convey that information. That Wildlife Services agent will be responsible for investigating the reported Livestock Depredation and determining the appropriate response.	
Attack	The FWP employee receiving a report of an Attack will record the name, sex, and age of the victim, location, and the extent of any injuries. The employee will IMMEDIATELY notify both 911 (if that had not already occurred) AND FWP Enforcement Division staff, who will determine whether a Wildlife Human Attack Response Team should be convened and to initiate a response following WHART Guidelines. Measures to lethally remove the offending mountain lion(s) will be immediately initiated.		Montana law (MCA 87-6-106) gives private citizens the right to kill, without fear of penalty, any mountain lion attacking, killing, or threatening to kill a person or livestock. Private citizens may also kill a mountain lion that is in the act of attacking or killing a domestic dog. A person who kills a mountain lion under this statute must notify a FWP employee within 72 hours and surrender the carcass to FWP.	
	Montana law (MCA 87-6-106) gives private citizens the right to kill, without fear of penalty, any mountain lion		These Mountain Lion Depredation and Control Guidelines are effective upon Fish and Wildlife Commission's adoption of this Strategy and supersede any previously-adopted versions.	

APPENDIX 4

GUIDELINES FOR RESPONDING TO WILDLIFE ATTACKS THAT RESULT IN HUMAN INJURY OR DEATH: “WHART” GUIDELINES

(Note: attachments and appendices referenced in this section are available from FWP Enforcement Division, upon request)

INTRODUCTION:

This document will provide guidance in the process for handling responses to a wildlife attack that causes human injury or death. In order to provide guidance and standardize the response of FWP personnel, the following guidelines will direct their actions in dealing with wildlife attacks on humans that result in injury and/or death to human victims. It may not be possible to follow these guidelines in every situation.

FIRST RESPONDERS:

An immediate field response is required for any wildlife-caused human injury or death.

In the event of an attack, the responding department employee may take any action necessary that is in the scope of the employee's authority to protect public safety. The following steps should be taken:

1. Secure the safety of the public (ensure proper medical aid for the victim, aid with evacuation of injured or other members of a group, and assist other agencies in removal of the body or victim. Identify the victim's name, address and phone number).
2. Report the incident to 911.
3. Immediately notify the Regional FWP Enforcement Personnel and/or WHART Team personnel.
4. FWP Enforcement personnel confirm as wildlife attack and identify species if possible; if the offending animal is identified the wild animal may

be humanely killed, if possible and depending on the circumstances. Always consult with WHART Team leader and Warden Captain if unsure of actions to be taken with offending animal.

5. If medical, rescue and/or sheriff department personnel arrive on scene before the FWP Incident Commander, advise them about the Wildlife Attack-Victim Kit (Attachment 1 (follow guidelines in Appendix B)) for collecting possible animal saliva stains or hair that might be on the victim prior to cleaning the victim's wounds.

INITIATE THE INCIDENT COMMAND SYSTEM:

- **If a human death or injury has occurred, the Region Warden Captain or other Enforcement designee shall:**
 - Respond to the scene and assume the lead role for FWP.
 - The County Sheriff's Office/Coroner has the initial lead in the investigation of a human death and at first FWP's role is that of assistance.
 - The Warden Captain or Enforcement designee holds FWP Incident Commander responsibility and authority over the scene, locating the animal, its resultant carcass, and any other physical evidence from the attack.
 - The Warden Captain or Enforcement designee will ensure proper collection, transfer, and disposition of all physical evidence and reports.
 - Contact the appropriate landownership, enforcement, and wildlife governing agencies. (refer to Inter Agency Jurisdiction Section)

- **The first warden on the scene shall secure the area in order:**

1. To protect as much of the immediate attack scene as possible, establishing a perimeter as large as possible to avoid contamination or destruction of any evidence.
2. To determine the offending animal and preserve as much on-scene evidence as possible.
3. The area should be excluded from public access by using flagging tape and/or signing stating "Do Not Enter".
4. To preserve the scene, one entry and exit port should be established; only essential personnel should be permitted in the area.

- **If a warden is the first Law Enforcement person on the scene of an attack:**

1. Their first notification should be the County Sheriff's Office.
2. If it appears the incident is an attack only and not a death then FWP will be the lead agency in the incident investigation.
3. If it appears there is a human death the warden should advise the Sheriff's Office that a Coroner will be needed.
4. In the case of a death it should be clear that FWP would at first be in an assisting role to the Sheriff's Office and the Coroner, but FWP's guidelines should be followed as closely as possible.
5. In a human fatality FWP is the lead agency in processing and handling of the offending wildlife, if possible in coordination with County Sheriff/Coroner.
6. Before the victim's body is removed and with

the Coroners assistance it is important to use a Wildlife Attack -Victim Kit (Appendix B and Attachment 1) to collect any forensic evidence possible.

7. The lead investigator must complete Attachment 5 and the investigator will need to work with the Coroner, in the case of a fatality, or the attending physician/medical personnel, in the case of an attack incident victim(s).

- **Once the Warden Captain or the Enforcement designee has been notified of an attack that resulted in human injury or death, he/she must:**

1. Notify the FWP Regional Supervisor (who will notify the Directors Office), FWP Regional Wildlife Management Specialist, and Regional Wildlife Manager.
2. Notify the Regional Information Officer to give him/her initial information; and once notified the Regional Information Officer will become the only contact with the media for FWP in regards to this incident.

- **Upon arrival on scene the Warden Captain or Enforcement designee will set up an area outside the initial crime scene as the Command Post.**

- **The Warden Captain or Enforcement designee will formulate a plan for the systematic investigation of the scene using available manpower and resources.**

- **If applicable, (not all FWP regions utilize this option) activate the Wildlife Human Attack Response Team (WHART).**

- **If applicable, the Enforcement designee, shall assume the role of WHART leader, and shall coordinate and delegate duties before attending the attack site and are responsible for the management of the attack scene from the FWP purview.**

- **WHART Team members will wear fluorescent vests with the Team leader wearing a different color fluorescent vest. These vests will designate the team to other individuals and aid in the safety of the team members while at the scene.**

At this time, with the information available, options should be discussed with the Regional Supervisor and Regional Wildlife Manager on what actions to take regarding the offending animal.

- The suggested approach to a systematic investigation would include:
 1. The Warden Captain, Enforcement designee, or WHART leader will appoint a lead investigator. The lead investigator will conduct the investigation and write a final report of their investigation findings. The lead investigator will be responsible for the investigation at the attack site. The lead investigator should have a team of at least three individuals to assist in evidence collection, securing the scene and photographing and logging of all evidence. One of those members should be the Wildlife Management Specialist or another person that is very experienced in wildlife behavior. The lead investigator shall refer to the “Forensic Guidelines/Wildlife attack Scene Investigation/Management” (Appendix A) as a possible baseline to conduct their investigation and should have attended at least one Wildlife Human Attack Response Training Course. If necessary, the Warden Captain, Enforcement Designee, or WHART leader will appoint a lead person for the potential capture or kill of the offending animal. This person will have to rely on their experience/training and the resources available to locate the offending animal as quickly as possible. If necessary, the animal may be tranquilized, captured, held for DNA testing, or removed from the system. The animal should be shot in the body, to preserve the head. After capture, use the Wildlife Carcass Collection Kit (Appendix C &

Attachment 4) and the Wildlife Attack Kit for Sampling the Animal and Evidence at the Scene (Appendix D & Attachment 4); and the listed Appendices are only suggested guides. The animal should be handled with rubber gloves. The animal must be treated as evidence and be handled to protect the animal’s external body from loss of bloodstains or other such physical evidence originating from the victim. Tape paper or cloth bags over the head and paws. Plug wounds with tight gauze to minimize contamination of the animal with its own blood. Place the carcass inside a protective durable body bag. Avoid dragging the carcass, if possible.

2. The Warden Captain, Enforcement Designee, or WHART leader will designate the task of notifying surrounding residences or persons of the event and safety concerns (usually wildlife biologists will be assigned this task). Land/area closures will have to involve the agencies or owner of the property involved, but it is necessary to restrict public access to the area until the attack scene has been processed and the offending animal captured.
3. The Warden Captain, Enforcement Designee, or WHART leader will notify the FWP Wildlife Lab of the attack and inform them that a potential offending animal will be transported as quickly as possible to the FWP Lab directly for forensic examination/necropsy. A completed Wildlife Attack Response Form and Animal Necropsy form (Appendix E & F) must accompany the animal to the lab.
4. In a fatal incident, the Warden Captain and the Enforcement Designee or WHART leader will meet with the County Coroner/Sheriff, the Regional Supervisor, and the Regional Information Officer to decide how and who will approach the victim’s family to gather information and to provide the family with investigation information.

5. In an attack incident, the Warden Captain, Enforcement Designee, or WHART leader will determine who will meet with the victim and family members in order to obtain investigative information and disseminate investigation information to the victim and family. All interviews will follow Attachment 2 and should be recorded when possible.
6. All media questions should be directed to the Regional Information Officer and the media will not be allowed on scene or at the Command Post.
7. Once evidence has been collected, photographed and logged (Attachment 3) it shall be placed into the custody of the Regional Investigator or designee, who will maintain the evidence and the chain of custody.
8. The Warden Captain, Enforcement designee, or WHART leader will keep a log of the events (Attachment 6) as they occurred at the Command Post and this will be included in the final report.

INFORMATION/MEDIA:

In conjunction with the wildlife attack response guidelines listed above, the following provides direction and guidance in handling the media in the event of an attack on a human by wildlife.

1. The Regional Information Officer (RIO) will be notified immediately in the event of an attack resulting in human injury from big game animals or any wildlife species. Complete and accurate information should be provided to the RIO and inquiries regarding the incident should be handled by the RIO or Regional Supervisor. Media consultation regarding human injuries resulting from federally listed grizzly bears will be coordinated with the USFWS.

Incidents that result from interaction with other

species of wildlife will be managed by personnel within the region where the incident occurred.

County Sheriff/Coroner's offices will coordinate all media regarding status of human deaths. In the event of taking of federally listed species by a public citizen, the USFWS will coordinate all media responses.

2. Department personnel should be helpful and open with the media, but specific questions relating to the incident should be directed to the RIO. It is imperative that appropriate personnel with the region be kept current on developments and all involved receive the same information.
3. A fact sheet and/or statewide press release may be developed with information about the situation and provided upon request to media outlets.
4. If deemed necessary by the RIO, Regional Supervisor, Regional Wildlife Manager, and Warden Captain or Enforcement designee a press conference may be initiated.
5. Appropriate information will be made available to citizens in the vicinity of the incident upon request.

GUIDELINE TRAINING:

The Warden Captain or Enforcement designee is responsible for the distribution of the guidelines and annual training of employees that may be involved in wildlife attack incidents, including first responders.

The Warden Captain or Enforcement designee will assign employees to contact County Sheriff and Search and Rescue teams, and Land Management agencies and offer a review of the guidelines and training.

Employees' responding to attacks incidences, as investigators on the incident shall participate in at least one formal Wildlife Attack Response training each year. The FWP Law Enforcement Program Training Officer will approve these annual Wildlife Human Attack Response training sessions.

INTER-AGENCY JURSDICTION ISSUES:

U.S. Fish and Wildlife Service, Grizzly Bear Recovery Coordinator

U.S. Fish and Wildlife Service Special Agent – based upon their administrative region.

Land Management Agencies, Companies and Emergency Response Teams

The Warden Captain or Enforcement designee will delegate FWP personnel to work in advance with the US Forest Service, BLM, DNRC, Plum Creek Timber, and Search & Rescue Teams to arrange for FWP to enact temporary closures or post warnings to protect the public at a moment’s notice as needed. This advanced contact will include an offer to review the guidelines with all contacts. As soon as possible thereafter, FWP would follow up with the agencies to keep them informed and address any issues or concerns. Search and Rescue Teams and other emergency response units should be kept abreast of special risks on recreational lands in the event that these teams are deployed while the risk of a dangerous bear encounter is elevated.

County Sheriff and Coroner

If an FWP employee is the first on the scene of an attack their first notification should be the County Sheriff’s Office and if it appears there is a human death the employee should advise the Sheriff’s Office that a Coroner will be needed. In the event of a human death, FWP will, at first, be in an assisting role to the Sheriff’s Office and the Coroner, but FWP’s guidelines should be followed as closely as possible. Before the victim’s body is removed and with the Coroners assistance it is important to use a Wildlife Attack -Victim Kit (Attachment 1 & Attachment 5) to collect any forensic evidence possible.

FINAL REPORT:

The Warden Captain, Enforcement designee, or WHART leader is responsible for producing a final report. The report will include a detailed Investigative Summary of the events, how it was resolved, evidence and lab reports, and conclusions. The completed report will be reviewed and released in a timely manner by the Regional Supervisor.

Attachments and WHART Appendices (available from FWP Enforcement Division, upon request)

- Attachment 1** – First Responder Kit Wildlife Attack Human Victim Kit
- Attachment 2** – Interview with Victim and/or witness
- Attachment 3** – Wildlife Attack Scene Evidence Log
- Attachment 4** – Wildlife Attack Animal Evidence Collection Information
- Attachment 5** – Wildlife Attack Victim Evidence Collection Information
- Attachment 6** – Events/Contacts Log

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- Appendix A** – Wildlife Attack Scene Investigations/ Management
 - Appendix B** – Carnivore Attack Victim Sampling Kit
 - Appendix C** – Carnivore Carcass Collection Kit
 - Appendix D** – Carnivore Attack Animal Sampling Kit
 - Appendix E** – Wildlife Attack Response Form
 - Appendix F** – Wildlife Attack Animal Necropsy Form

APPENDIX 5

MONTANA MOUNTAIN LION LICENSE SALES, PRICE, AND REVENUE, 1973 - 2015

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
License Type											
Res. Mountain Lion	241	259	286	517	574	639	614	787	893	1,027	1,021
Nonres. Mountain Lion	70	92	120	70	102	123	111	61	69	91	132
Total	311	351	406	587	676	762	725	848	962	1,118	1,153
Fees											
Res. Mountain Lion	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5
Nonres. Mountain Lion	\$25	\$25	\$25	\$25	\$25	\$25	\$25	\$100	\$100	\$100	\$100
License Revenue											
Res. Mountain Lion	\$1,205	\$1,295	\$1,430	\$2,585	\$2,870	\$3,195	\$3,070	\$3,935	\$4,465	\$5,135	\$5,105
Nonres. Mountain Lion	\$1,750	\$2,300	\$3,000	\$1,750	\$2,550	\$3,075	\$2,775	\$6,100	\$6,900	\$9,100	\$13,200
Total	\$2,955	\$3,595	\$4,430	\$4,335	\$5,420	\$6,270	\$5,845	\$10,035	\$11,365	\$14,235	\$18,305

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
License Type											
Res. Mountain Lion	984	1,045	916	1,237	1,210	1,250	1,708	1,687	2,038	2,535	2,984
Nonres. Mountain Lion	80	92	92	108	109	98	136	146	177	230	258
Total	1,064	1,137	1,008	1,345	1,319	1,348	1,844	1,833	2,215	2,765	3,242
Fees											
Res. Mountain Lion	\$10	\$10	\$10	\$10	\$10	\$10	\$10	\$10	\$13	\$13	\$15
Nonres. Mountain Lion	\$300	\$300	\$300	\$300	\$320	\$320	\$320	\$320	\$320	\$320	\$320
License Revenue											
Res. Mountain Lion	\$9,840	\$10,450	\$9,160	\$12,370	\$12,100	\$12,500	\$17,080	\$16,870	\$26,494	\$32,955	\$44,760
Nonres. Mountain Lion	\$24,000	\$27,600	\$27,600	\$32,400	\$34,880	\$31,360	\$43,520	\$46,720	\$56,640	\$73,600	\$82,560
Total	\$33,840	\$38,050	\$36,760	\$44,770	\$46,980	\$43,860	\$60,600	\$63,590	\$83,134	\$106,555	\$127,320

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
License Type											
Res. Mountain Lion	3,056	3,287	4,297	5,421	5,886	5,138	5,116	6,337	6,130	6,635	6,688
Nonres. Mountain Lion	270	301	394	510	519	493	421	281	282	312	311
Res. Hound Training									207	289	340
Total	3,326	3,588	4,691	5,931	6,405	5,631	5,537	6,618	6,619	7,236	7,339
Fees											
Res. Mountain Lion	\$15	\$15	\$15	\$15	\$15	\$15	\$15	\$15	\$15	\$15	\$15
Nonres. Mountain Lion	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320
Res. Hound Training									\$5	\$5	\$5
License Revenue											
Res. Mountain Lion	\$45,840	\$49,305	\$64,455	\$81,315	\$88,290	\$77,070	\$76,740	\$95,055	\$91,950	\$99,525	\$100,320
Nonres. Mountain Lion	\$86,400	\$96,320	\$126,080	\$163,200	\$166,080	\$157,760	\$134,720	\$89,920	\$90,240	\$99,840	\$99,520
Res. Hound Training									\$1,035	\$1,445	\$1,700
Total	\$132,240	\$145,625	\$190,535	\$244,515	\$254,370	\$234,830	\$211,460	\$184,975	\$183,225	\$200,810	\$201,540

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
License Type											
Res. Mountain Lion	3,331	3,922	3,529	3,832	3,535	3,788	4,964	5,007	5,016	5,221	4,912
Nonres. Mountain Lion	133	145	167	179	170	172	182	286	240	292	271
Res. Hound Training	488	423	471	424	441	405	352	364	389	239	216
Total	3,952	4,490	4,167	4,435	4,146	4,365	5,498	5,657	5,645	5,752	5,399
Fees											
Res. Mountain Lion	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19
Nonres. Mountain Lion	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320	\$320
Res. Hound Training	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5
License Revenue											
Res. Mountain Lion	\$63,289	\$74,518	\$67,051	\$72,808	\$67,165	\$71,972	\$94,316	\$95,133	\$95,304	\$99,199	\$93,328
Nonres. Mountain Lion	\$42,560	\$46,400	\$53,440	\$57,280	\$54,400	\$55,040	\$58,240	\$91,520	\$76,800	\$93,440	\$86,720
Res. Hound Training	\$2,440	\$2,115	\$2,355	\$2,120	\$2,205	\$2,025	\$1,760	\$1,820	\$1,945	\$1,195	\$1,080
Total	\$108,289	\$123,033	\$122,846	\$132,208	\$123,770	\$129,037	\$154,316	\$188,473	\$174,049	\$193,834	\$181,128

APPENDIX 6

APPLICABLE MONTANA STATUTE AND ADMINISTRATIVE RULES

Montana Code Annotated statutes and Administrative Rules of Montana describing FWP and the Fish & Wildlife Commission's authorities and responsibilities, regulation of the licensed hunting of mountain lions, enumeration of stock grower and personal protection rights, and disclosure of information.

2-15-3110. (Temporary) Livestock loss board - purpose, membership, and qualifications

(1) There is a livestock loss board. The purpose of the board is to administer the programs called for in the Montana gray wolf conservation and management plan, the Montana mountain lion management plan, and the Montana grizzly bear management plan and established in 2-15-3111 through 2-15-3113, with funds provided through the accounts established in 81-1-110, in order to minimize losses caused by wolves, mountain lions, and grizzly bears to livestock producers and to reimburse livestock producers for livestock losses from wolf, mountain lion, and grizzly bear predation.

(2) The board consists of five members, appointed by the governor, as follows:

- (a) three members who are actively involved in the livestock industry and who have knowledge and experience with regard to wildlife impacts or management; and
- (b) two members of the general public who are or have been actively involved in wildlife conservation or wildlife management and who have knowledge and experience with regard to livestock production or management.

(3) The board is designated as a quasi-judicial board for the purposes of 2-15-124. Notwithstanding the provisions of 2-15-124(1), the governor is not required to appoint an attorney to serve as a member of the board.

(4) The board is allocated to the department of livestock for administrative purposes only as provided in 2-15-121.

(5) The board shall adopt rules to implement the provisions of 2-15-3110 through 2-15-3114 and

(6) The board shall prioritize grants for prevention of wolf and grizzly bear predation over those for mountain lion predation.

2-15-3111. Livestock loss reduction program

The livestock loss board shall establish and administer a program to cost-share with individuals or incorporated entities in implementing measures to prevent wolf, mountain lion, and grizzly bear predation on livestock, including:

- (1) eligibility requirements for program participation;
- (2) application procedures for program participation and procedures for awarding grants for wolf, mountain lion, and grizzly bear predation prevention measures, subject to grant priorities and the availability of funds;
- (3) criteria for the selection of projects and program participants, which may include establishment of grant priorities based on factors such as chronic depredation, multiple depredation incidents, single depredation incidents, and potential high-risk geographical or habitat location;
- (4) grant guidelines for prevention measures on public and private lands, including:
 - (a) grant terms that clearly set out the obligations of the livestock producer and that provide for a term of up to 12 months subject to renewal based on availability of funds, satisfaction of program requirements, and prioritization of the project;
 - (b) cost-share for prevention measures, which may be a combination of grant and livestock producer responsibility, payable in cash or in appropriate services, such as labor to install or implement preventive measures, unless the board adjusts the cost-share because of extenuating circumstances related to chronic or multiple depredation; and
 - (c) proactive preventive measures, including but not limited to fencing, fladry, night penning, increased human presence in the form of livestock herders and riders, guard animals, providing hay and dog food, rental of private land or alternative pasture allotments, delayed turnouts, and other preventive measures as information on new or different successful prevention measures becomes available; and
- (5) reporting requirements for program participants to assist in determining the effectiveness of loss reduction relative to each grant."

2-15-3112. Livestock loss mitigation program - definitions

The livestock loss board shall establish and administer a

program to reimburse livestock producers for livestock losses caused by wolves, mountain lions, and grizzly bears, subject to the following provisions:

- (1) The board shall establish eligibility requirements for reimbursement, which must provide that all Montana livestock producers are eligible for coverage for losses by wolves, mountain lions, and grizzly bears to cattle, swine, horses, mules, sheep, goats, llamas, and livestock guard animals on state, federal, and private land and on tribal land that is eligible through agreement pursuant to 2-15-3113(2).
- (2) Confirmed and probable livestock losses must be reimbursed at an amount not to exceed fair market value as determined by the board.
- (3) Other losses may be reimbursed at rates determined by the board.
- (4) A claim process must be established to be used when a livestock producer suffers a livestock loss for which wolves, mountain lions, or grizzly bears may be responsible. The claim process must set out a clear and concise method for documenting and processing claims for reimbursement for livestock losses.
- (5) A process must be established to allow livestock producers to appeal reimbursement decisions. A producer may appeal a staff adjuster's decision by notifying the staff adjuster and the board in writing, stating the reasons for the appeal and providing documentation supporting the appeal. If the documentation is incomplete, the board or a producer may consult with the U.S. department of agriculture wildlife services to complete the documentation. The board may not accept any appeal on the question of whether the loss was or was not a confirmed or probable loss because that final determination lies solely with the U.S. department of agriculture wildlife services and may not be changed by the board. The board shall hold a hearing on the appeal within 90 days of receipt of the written appeal, allowing the staff adjuster and the producer to present their positions. A decision must be rendered by the board within 30 days after the hearing. The producer must be notified in writing of the board's decision.
- (6) As used in this section, the following definitions apply:
 - (a) "Confirmed" means reasonable physical evidence that livestock was actually attacked or killed by a wolf, mountain lion, or grizzly bear, including but not limited to the

presence of bite marks indicative of the spacing of tooth punctures of wolves, mountain lions, or grizzly bears and associated subcutaneous hemorrhaging and tissue damage indicating that the attack occurred while the animal was alive, feeding patterns on the carcass, fresh tracks, scat, hair rubbed off on fences or brush, eyewitness accounts, or other physical evidence that allows a reasonable inference of wolf, mountain lion, or grizzly bear predation on an animal that has been largely consumed.

(b) "Fair market value" means:

- (i) for commercial sheep more than 1 year old, the average price of sheep of similar age and sex paid at the most recent Billings livestock sale ring or other ring as determined by the board;
 - (ii) for commercial lambs, the average market weaning value;
 - (iii) for registered sheep, the average price paid to the specific breeder for sheep of similar age and sex during the past year at public or private sales for that registered breed;
 - (iv) for commercial cattle more than 1 year old, the average price of cattle of similar age and sex paid at the most recent Billings livestock sale ring or other ring as determined by the board;
 - (v) for commercial calves, the average market weaning value;
 - (vi) for registered cattle, the average price paid to the owner for cattle of similar age and sex during the past year at public or private sales for that registered breed;
 - (vii) for other registered livestock, the average price paid to the producer at public or private sales for animals of similar age and sex. A producer may provide documentation that a registered animal has a fair market value in excess of the average price, in which case the board shall seek additional verification of the value of the animal from independent sources. If the board determines that the value of that animal is greater than the average price, then the increased value must be accepted as the fair market value for that animal.
 - (viii) for other livestock, the average price paid at the most recent public auction for the type of animal lost or the replacement price as determined by the board.
- (c) "Probable" means the presence of some evidence to suggest possible predation but a lack of sufficient evidence to clearly confirm predation by a particular species. A

kill may be classified as probable depending on factors including but not limited to recent confirmed predation by the suspected depredating species in the same or a nearby area, recent observation of the livestock by the owner or the owner's employees, and telemetry monitoring data, sightings, howling, or fresh tracks suggesting that the suspected depredating species may have been in the area when the depredation occurred."

2-15-3113. Additional powers and duties of livestock loss board

(1) The livestock loss board shall:

- (a) process claims;
- (b) seek information necessary to ensure that claim documentation is complete;
- (c) provide payments authorized by the board for confirmed and probable livestock losses, along with a written explanation of payment;
- (d) submit monthly and annual reports to the board of livestock summarizing claims and expenditures and the results of action taken on claims and maintain files of all claims received, including supporting documentation;
- (e) provide information to the board of livestock regarding appealed claims and implement any decision by the board;
- (f) prepare the annual budget for the board; and
- (g) provide proper documentation of staff time and expenditures.

(2) The livestock loss board may enter into an agreement with any Montana tribe, if the tribe has adopted a wolf, mountain lion, or grizzly bear management plan for reservation lands that is consistent with the state wolf, mountain lion, or grizzly bear management plan, to provide that tribal lands within reservation boundaries are eligible for mitigation grants pursuant to 2-15-3111 and that livestock losses on tribal lands within reservation boundaries are eligible for reimbursement payments pursuant to 2-15-3112.

(3) The livestock loss board shall:

- (a) coordinate and share information with state, federal, and tribal officials, livestock producers, nongovernmental organizations, and the general public in an effort to reduce livestock losses caused by wolves, mountain lions, and grizzly bears;
- (b) establish an annual budget for the prevention, mitigation, and reimbursement of livestock losses caused

by wolves, mountain lions, and grizzly bears;

(c) perform or contract for the performance of periodic program audits and reviews of program expenditures, including payments to Individuals, incorporated entities, and producers who receive loss reduction grants and reimbursement payments;

(d) adjudicate appeals of claims;

(e) investigate alternative or enhanced funding sources, including possible agreements with public entities and private wildlife or livestock organizations that have active livestock loss reimbursement programs in place;

(f) meet as necessary to conduct business; and

(g) report annually to the governor, the legislature, members of the Montana congressional delegation, the board of livestock, the fish and wildlife commission, and the public regarding results of the programs established in 2-15-3111 through 2-15-3113.

(4) The livestock loss board may sell or auction any carcasses or parts of carcasses from wolves or mountain lions received pursuant to 87-1-217. The proceeds, minus the costs of the sale including the preparation of the carcass or part of the carcass for sale, must be deposited into the livestock loss reduction and mitigation special revenue account established in 81-1-110 and used for the purposes of 2-15-3111 through 2-15-3114."

81-1-110. Livestock loss reduction and mitigation accounts

(1) There are livestock loss reduction and mitigation special revenue accounts administered by the department within the state special revenue fund and the federal special revenue fund established in 17-2-102.

(2)(a) All state proceeds allocated or budgeted for the purposes of 2-15-3110 through 2-15-3114, 81-1-110, and 81-1-111, except those transferred to the account provided for in 81-1-112 [or 81-1-113] or appropriated to the department of livestock, must be deposited in the state special revenue account provided for in subsection (1) of this section.

(b) Money received by the state in the form of gifts, grants, reimbursements, or allocations from any source intended to be used for the purposes of 2-15-3111 through 2-15-3113 must be deposited in the appropriate account provided for in subsection (1) of this section.

(c) All federal funds awarded to the state for compensation for wolf, mountain lion, or grizzly bear depredations on livestock must be deposited in the federal special revenue

account provided for in subsection (1) for the purposes of 2-15-3112.

(3) The livestock loss board may spend funds in the accounts only to carry out the provisions of 2-15-3111 through 2-15-3113.

87-1-201. Powers And Duties

(1) Except as provided in subsection (11), the department shall supervise all the wildlife, fish, game, game and nongame birds, waterfowl, and the game and fur-bearing animals of the state and may implement voluntary programs that encourage hunting access on private lands and that promote harmonious relations between landowners and the hunting public. The department possesses all powers necessary to fulfill the duties prescribed by law and to bring actions in the proper courts of this state for the enforcement of the fish and game laws and the rules adopted by the department.

(2) Except as provided in subsection (11), the department shall enforce all the laws of the state regarding the protection, preservation, management, and propagation of fish, game, fur-bearing animals, and game and nongame birds within the state.

(3) The department has the exclusive power to spend for the protection, preservation, management, and propagation of fish, game, fur-bearing animals, and game and nongame birds all state funds collected or acquired for that purpose, whether arising from state appropriation, licenses, fines, gifts, or otherwise. Money collected or received from the sale of hunting and fishing licenses or permits, from the sale of seized game or hides, from fines or damages collected for violations of the fish and game laws, or from appropriations or received by the department from any other sources is under the control of the department and is available for appropriation to the department.

(4) The department may discharge any appointee or employee of the department for cause at any time.

(5) The department may dispose of all property owned by the state used for the protection, preservation, management, and propagation of fish, game, fur-bearing animals, and game and nongame birds that is of no further value or use to the state and shall turn over the proceeds from the sale to the state treasurer to be credited to the fish and game account in the state special revenue fund.

(6) The department may not issue permits to carry firearms within this state to anyone except regularly appointed officers or wardens.

(7) Except as provided in subsection (11), the department is authorized to make, promulgate, and enforce reasonable rules and regulations not inconsistent with the provisions of Title 87, chapter 2, that in its judgment will accomplish the purpose of chapter 2.

(8) The department is authorized to promulgate rules relative to tagging, possession, or transportation of bear within or outside of the state.

(9) (a) The department shall implement programs that:

(i) manage wildlife, fish, game, and nongame animals in a manner that prevents the need for listing under 87-5-107 or under the federal Endangered Species Act, 16 U.S.C. 1531, et seq.;

(ii) manage listed species, sensitive species, or a species that is a potential candidate for listing under 87-5-107 or under the federal Endangered Species Act, 16 U.S.C. 1531, et seq., in a manner that assists in the maintenance or recovery of those species;

(iii) manage elk, deer, and antelope populations based on habitat estimates determined as provided in 87-1-322 and maintain elk, deer, and antelope population numbers at or below population estimates as provided in 87-1-323. In implementing an elk management plan, the department shall, as necessary to achieve harvest and population objectives, request that land management agencies open public lands and public roads to public access during the big game hunting season.

(iv) in accordance with the forest management plan required by 87-1-622, address fire mitigation, pine beetle infestation, and wildlife habitat enhancement giving priority to forested lands in excess of 50 contiguous acres in any state park, fishing access site, or wildlife management area under the department's jurisdiction.

(b) In maintaining or recovering a listed species, a sensitive species, or a species that is a potential candidate for listing, the department shall seek, to the fullest extent possible, to balance maintenance or recovery of those species with the social and economic impacts of species maintenance or recovery.

(c) Any management plan developed by the department pursuant to this subsection (9) is subject to the requirements of Title 75, chapter 1, part 1.

(d) This subsection (9) does not affect the ownership or possession, as authorized under law, of a privately held listed species, a sensitive species, or a species that is a potential candidate for listing.

(10) The department shall publish an annual game count, estimating to the department's best ability the numbers of each species of game animal, as defined in 87-2-101, in the hunting districts and administrative regions of the state. In preparing the publication, the department may incorporate field observations, hunter reporting statistics, or any other suitable method of determining game numbers. The publication must include an explanation of the basis used in determining the game count.

(11) The department may not regulate the use or possession of firearms, firearm accessories, or ammunition, including the chemical elements of ammunition used for hunting. This does not prevent:

- (a) the restriction of certain hunting seasons to the use of specified hunting arms, such as the establishment of special archery seasons;
- (b) for human safety, the restriction of certain areas to the use of only specified hunting arms, including bows and arrows, traditional handguns, and muzzle loading rifles;
- (c) the restriction of the use of shotguns for the hunting of deer and elk pursuant to 87-6-401(1)(f);
- (d) the regulation of migratory game bird hunting pursuant to 87-3-403; or
- (e) the restriction of the use of rifles for bird hunting pursuant to 87-6-401(1)(g) or (1)(h).

87-1-214. Disclosure Of Information - Legislative Finding - Large Predators

(1) Except for information that is required by law to be reported to state or federal officials, the department may not disclose any information that identifies any person who has lawfully taken a large predator as defined in 87-1-217 during a hunt without the written consent of the person affected. Information that may not be disclosed includes but is not limited to a person's name, address, phone number, date of birth, social security number, and driver's license number.

(2) The legislature finds that the prohibition on disclosure of information pursuant to subsection (1) is necessary to protect an individual's privacy, safety, and welfare.

87-1-217. Policy For Management Of Large Predators - Legislative Intent

(1) In managing large predators, the primary goals of the department, in the order of listed priority, are to:

- (a) protect humans, livestock, and pets;
- (b) preserve and enhance the safety of the public during outdoor recreational and livelihood activities; and
- (c) preserve citizens' opportunities to hunt large game species.

(2) With regard to large predators, it is the intent of the legislature that the specific provisions of this section concerning the management of large predators will control the general supervisory authority of the department regarding the management of all wildlife.

(3) For the management of wolves in accordance with the priorities established in subsection (1), the department may use lethal action to take problem wolves that attack livestock if the state objective for breeding pairs has been met. For the purposes of this subsection, "problem wolves" means any individual wolf or pack of wolves with a history of livestock predation.

(4) The department shall work with the livestock loss board and the United States department of agriculture wildlife services to establish the conditions under which carcasses or parts of carcasses from wolves or mountain lions are retrieved during management activities and when those carcasses or parts of carcasses are made available to the livestock loss board for sale or auction pursuant to 2-15-3113.

(5) The department shall ensure that county commissioners and tribal governments in areas that have identifiable populations of large predators have the opportunity for consultation and coordination with state and federal agencies prior to state and federal policy decisions involving large predators and large game species.

(6) As used in this section:

- (a) "consultation" means to actively provide information to a county or tribal government regarding proposed policy decisions on matters that may have a harmful effect on agricultural production or livestock operations or that may pose a risk to human health or safety in that county or on those tribal lands and to seek information and advice from counties or tribal governments on these matters;
- (b) "large game species" means deer, elk, mountain sheep, moose, antelope, and mountain goats; and

(c) “large predators” means bears, mountain lions, and wolves.

87-1-225. Regulation of Wild Animals Damaging Property - Public Hunting Requirements

(1) Subject to the provisions of subsection (2), a landowner is eligible for game damage assistance under subsection (3) if the landowner:

- (a) allows public hunting during established hunting seasons; or
- (b) does not significantly reduce public hunting through imposed restrictions.

(2) The department may provide game damage assistance when public hunting on a landowner’s property has been denied because of unique or special circumstances that have rendered public hunting inappropriate.

(3) Within 48 hours after receiving a request or complaint from any landholder or person in possession and having charge of any land in the state that wild animals of the state, protected by the fish and game laws and regulations, are doing damage to the property or crops on the property, the department shall investigate and arrange to study the situation with respect to damage and depredation. The department may then decide to open a special season on the game or, if the special season method is not feasible, the department may destroy the animals causing the damage. The department may authorize and grant the holders of the property permission to kill or destroy a specified number of the animals causing the damage. A wild, ferocious animal damaging property or endangering life is not covered by this section.

87-1-271. Annual Lottery Of Hunting Licenses - Proceeds Dedicated To Hunting Access Enhancement

(1) The commission may issue through a lottery one license each year for each of the following:

- (a) deer;
- (b) elk;
- (c) shiras moose;
- (d) mountain sheep;
- (e) mountain goat;
- (f) wild buffalo or bison;
- (g) antelope; and
- (h) mountain lion.

(2) The restriction in 87-2-702(4) that a person who

receives a moose, mountain goat, or mountain sheep special license is not eligible to receive another license for that species for the next 7 years does not apply to a person who receives a license through a lottery conducted pursuant to this section.

(3) The commission shall establish rules regarding:

- (a) the conduct of the lottery authorized in this section;
- (b) the use of licenses issued through the lottery; and
- (c) the price of lottery tickets.

(4) Except as provided in 87-2-903, all proceeds from a lottery conducted pursuant to this section must be used by the department for hunting access enhancement programs and law enforcement.

87-1-301. Powers Of Commission

(1) Except as provided in subsections (7) and (8), the commission:

- (a) shall set the policies for the protection, preservation, management, and propagation of the wildlife, fish, game, furbearers, waterfowl, nongame species, and endangered species of the state and for the fulfillment of all other responsibilities of the department related to fish and wildlife as provided by law;
- (b) shall establish the hunting, fishing, and trapping rules of the department;
- (c) except as provided in 23-1-111 and 87-1-303(3), shall establish the rules of the department governing the use of lands owned or controlled by the department and waters under the jurisdiction of the department;
- (d) must have the power within the department to establish wildlife refuges and bird and game preserves;
- (e) shall approve all acquisitions or transfers by the department of interests in land or water, except as provided in 23-1-111 and 87-1-209(2) and (4);
- (f) except as provided in 23-1-111, shall review and approve the budget of the department prior to its transmittal to the office of budget and program planning;
- (g) except as provided in 23-1-111, shall review and approve construction projects that have an estimated cost of more than \$1,000 but less than \$5,000;
- (h) shall manage elk, deer, and antelope populations based on habitat estimates determined as provided in 87-1-322 and maintain elk, deer, and antelope population numbers at or below population estimates as provided in 87-1-323. In developing or implementing an elk management plan,

the commission shall consider landowner tolerance when deciding whether to restrict elk hunting on surrounding public land in a particular hunting district. As used in this subsection (1)(h), “landowner tolerance” means the written or documented verbal opinion of an affected landowner regarding the impact upon the landowner’s property within the particular hunting district where a restriction on elk hunting on public property is proposed.

(i) shall set the policies for the salvage of antelope, deer, elk, or moose pursuant to 87-3-145; and

(j) shall comply with, adopt policies that comply with, and ensure the department implements in each region the provisions of state wildlife management plans adopted following an environmental review conducted pursuant to Title 75, chapter 1, parts 1 through 3.

(2) The commission may adopt rules regarding the use and type of archery equipment that may be employed for hunting and fishing purposes, taking into account applicable standards as technical innovations in archery equipment change.

(3) The commission may adopt rules regarding the establishment of special licenses or permits, seasons, conditions, programs, or other provisions that the commission considers appropriate to promote or enhance hunting by Montana’s youth and persons with disabilities.

(4) (a) The commission may adopt rules regarding nonresident big game combination licenses to:

(i) separate deer licenses from nonresident elk combination licenses;

(ii) set the fees for the separated deer combination licenses and the elk combination licenses without the deer tag;

(iii) condition the use of the deer licenses; and

(iv) limit the number of licenses sold.

(b) The commission may exercise the rulemaking authority in subsection (4)(a) when it is necessary and appropriate to regulate the harvest by nonresident big game combination license holders:

(i) for the biologically sound management of big game populations of elk, deer, and antelope;

(ii) to control the impacts of those elk, deer, and antelope populations on uses of private property; and

(iii) to ensure that elk, deer, and antelope populations are at a sustainable level as provided in 87-1-321 through 87-1-325.

(5) (a) Subject to the provisions of 87-2-115, the

commission may adopt rules establishing license preference systems to distribute hunting licenses and permits:

(i) giving an applicant who has been unsuccessful for a longer period of time priority over an applicant who has been unsuccessful for a shorter period of time; and

(ii) giving a qualifying landowner a preference in drawings. As used in this subsection (5)(a), “qualifying landowner” means the owner of land that provides some significant habitat benefit for wildlife, as determined by the commission.

(b) The commission shall square the number of points purchased by an applicant per species when conducting drawings for licenses and permits.

(6) (a) The commission may adopt rules to:

(i) limit the number of nonresident mountain lion hunters in designated hunting districts; and

(ii) determine the conditions under which nonresidents may hunt mountain lion in designated hunting districts.

(b) The commission shall consider, but is not limited to consideration of, the following factors:

(i) harvest of lions by resident and nonresident hunters;

(ii) history of quota overruns;

(iii) composition, including age and sex, of the lion harvest;

(iv) historical outfitter use;

(v) conflicts among hunter groups;

(vi) availability of public and private lands; and

(vii) whether restrictions on nonresident hunters are more appropriate than restrictions on all hunters.

(7) The commission may not regulate the use or possession of firearms, firearm accessories, or ammunition, including the chemical elements of ammunition used for hunting.

This does not prevent:

(a) the restriction of certain hunting seasons to the use of specified hunting arms, such as the establishment of special archery seasons;

(b) for human safety, the restriction of certain areas to the use of only specified hunting arms, including bows and arrows, traditional handguns, and muzzle loading rifles;

(c) the restriction of the use of shotguns for the hunting of deer and elk pursuant to 87-6-401(1)(f);

(d) the regulation of migratory game bird hunting pursuant to 87-3-403; or

(e) the restriction of the use of rifles for bird hunting pursuant to 87-6-401(1)(g) or (1)(h).

(8) Pursuant to 23-1-111, the commission does not oversee department activities related to the administration of state parks, primitive parks, state recreational areas, public camping grounds, state historic sites, state monuments, and other heritage and recreational resources, land, and water administered pursuant to Title 23, chapter 1, and Title 23, chapter 2, parts 1, 4, and 9.

87-1-304. Fixing Of Seasons And Bag And Possession Limits

(1) Subject to the provisions of 87-5-302 and subsection (7) of this section, the commission may:

- (a) fix seasons, bag limits, possession limits, and season limits;
- (b) open or close or shorten or lengthen seasons on any species of game, bird, fish, or fur-bearing animal as defined by 87-2-101;
- (c) declare areas open to the hunting of deer, antelope, elk, moose, sheep, goat, mountain lion, bear, wild buffalo or bison, and wolf by persons holding an archery stamp and the required license, permit, or tag and designate times when only bows and arrows may be used to hunt deer, antelope, elk, moose, sheep, goat, mountain lion, bear, wild buffalo or bison, and wolf in those areas;
- (d) subject to the provisions of 87-1-301(7), restrict areas and species to hunting with only specified hunting arms, including bow and arrow, for the reasons of safety or of providing diverse hunting opportunities and experiences; and
- (e) declare areas open to special license holders only and issue special licenses in a limited number when the commission determines, after proper investigation, that a special season is necessary to ensure the maintenance of an adequate supply of game birds, fish, or animals or fur-bearing animals. The commission may declare a special season and issue special licenses when game birds, animals, or fur-bearing animals are causing damage to private property or when a written complaint of damage has been filed with the commission by the owner of that property. In determining to whom special licenses must be issued, the commission may, when more applications are received than the number of animals to be killed, award permits to those chosen under a drawing system. The procedures used for awarding the permits from the drawing system must be determined by the commission.

(2) The commission may adopt rules governing the use of livestock and vehicles by archers during special archery seasons.

(3) Subject to the provisions of 87-5-302 and subsection (7) of this section, the commission may divide the state into fish and game districts and create fish, game, or fur-bearing animal districts throughout the state. The commission may declare a closed season for hunting, fishing, or trapping in any of those districts and later may open those districts to hunting, fishing, or trapping.

(4) The commission may declare a closed season on any species of game, fish, game birds, or fur-bearing animals threatened with undue depletion from any cause. The commission may close any area or district of any stream, public lake, or public water or portions thereof to hunting, trapping, or fishing for limited periods of time when necessary to protect a recently stocked area, district, water, spawning waters, spawn-taking waters, or spawn-taking stations or to prevent the undue depletion of fish, game, fur-bearing animals, game birds, and nongame birds. The commission may open the area or district upon consent of a majority of the property owners affected.

(5) The commission may authorize the director to open or close any special season upon 12 hours' notice to the public.

(6) The commission may declare certain fishing waters closed to fishing except by persons under 15 years of age. The purpose of this subsection is to provide suitable fishing waters for the exclusive use and enjoyment of juveniles under 15 years of age, at times and in areas the commission in its discretion considers advisable and consistent with its policies relating to fishing.

(7) In an area immediately adjacent to a national park, the commission may not:

- (a) prohibit the hunting or trapping of wolves; or
- (b) close the area to wolf hunting or trapping unless a wolf harvest quota established by the commission for that area has been met.

87-2-101. Definitions

As used in Title 87, chapter 3, and this chapter, unless the context clearly indicates otherwise, the following definitions apply:

- (1) "Angling" or "fishing" means to take or the act of a person possessing any instrument, article, or substance for

the purpose of taking fish in any location that a fish might inhabit.

(2) (a) “Bait” means any animal matter, vegetable matter, or natural or artificial scent placed in an area inhabited by wildlife for the purpose of attracting game animals or game birds.

(b) The term does not include:

(i) decoys, silhouettes, or other replicas of wildlife body forms;

(ii) scents used only to mask human odor; or

(iii) types of scents that are approved by the commission for attracting game animals or game birds.

(3) “Fur-bearing animals” means marten or sable, otter, muskrat, fisher, mink, bobcat, lynx, wolverine, northern swift fox, and beaver.

(4) “Game animals” means deer, elk, moose, antelope, caribou, mountain sheep, mountain goat, mountain lion, bear, and wild buffalo.

(5) “Game fish” means all species of the family Salmonidae (chars, trout, salmon, grayling, and whitefish); all species of the genus *Sander* (sandpike or sauger and walleyed pike or yellowpike perch); all species of the genus *Esox* (northern pike, pickerel, and muskellunge); all species of the genus *Micropterus* (bass); all species of the genus *Polyodon* (paddlefish); all species of the family Acipenseridae (sturgeon); all species of the genus *Lota* (burbot or ling); the species *Perca flavescens* (yellow perch); all species of the genus *Pomoxis* (crappie); and the species *Ictalurus punctatus* (channel catfish).

(6) “Hunt” means to pursue, shoot, wound, kill, chase, lure, possess, or capture or the act of a person possessing a weapon, as defined in 45-2-101, or using a dog or a bird of prey for the purpose of shooting, wounding, killing, possessing, or capturing wildlife protected by the laws of this state in any location that wildlife may inhabit, whether or not the wildlife is then or subsequently taken. The term includes an attempt to take by any means, including but not limited to pursuing, shooting, wounding, killing, chasing, luring, possessing, or capturing.

(7) “Migratory game birds” means waterfowl, including wild ducks, wild geese, brant, and swans; cranes, including little brown and sandhill; rails, including coots; Wilson’s snipes or jacksnipes; and mourning doves.

(8) “Nongame wildlife” means any wild mammal, bird, amphibian, reptile, fish, mollusk, crustacean, or other

animal not otherwise legally classified by statute or regulation of this state.

(9) “Open season” means the time during which game birds, game fish, game animals, and fur-bearing animals may be lawfully taken.

(10) “Person” means an individual, association, partnership, or corporation.

(11) “Predatory animals” means coyote, weasel, skunk, and civet cat.

(12) “Trap” means to take or participate in the taking of any wildlife protected by the laws of the state by setting or placing any mechanical device, snare, deadfall, pit, or device intended to take wildlife or to remove wildlife from any of these devices.

(13) “Upland game birds” means sharp-tailed grouse, blue grouse, spruce (Franklin) grouse, prairie chicken, sage hen or sage grouse, ruffed grouse, ring-necked pheasant, Hungarian partridge, ptarmigan, wild turkey, and chukar partridge.

(14) “Wild buffalo” means buffalo or bison that have not been reduced to captivity.

87-2-506. Restrictions On Hunting Licenses

Restrictions on hunting licenses. (1) The department may prescribe by rule the number of hunting licenses to be issued. Any license sold may be restricted to a specific administrative region, hunting district, or other designated area and may specify the species, age, and sex to be taken and the time period for which the license is valid.

(2) When the number of valid resident applications for big game licenses or permits of a single class or type exceeds the number of licenses or permits the department desires to issue in an administrative region, hunting district, or other designated area, then the number of big game licenses or permits issued to nonresident license or permit holders in the region, district, or area may not exceed 10% of the total issued.

(3) Disabled veterans who meet the qualifying criteria provided in 87-2-817(1) must be provided a total of 50 Class A-3 deer A tags, 50 Class A-4 deer B tags, 50 Class B-7 deer A tags, 50 Class B-8 deer B tags, and 50 special antelope licenses annually, which may be used within the administrative region, hunting district, or other designated area of the disabled veteran’s choice, except in a region, district, or area where the number of licenses are less than

the number of applicants, in which case qualifying disabled veterans are eligible for no more than 10% of the total licenses for that region, district, or area.

87-2-507. Class D-1-Nonresident Mountain Lion License

Except as otherwise provided in this chapter, a person who is not a resident, as defined in 87-2-102, but who is 12 years of age or older or who will turn 12 years old before or during the season for which the license is issued may, upon payment of a fee of \$320, receive a Class D-1 license that entitles a holder who is 12 years of age or older to hunt mountain lion and possess the carcass of the mountain lion as authorized by department rules.

87-2-508. Class D-2-Resident Mountain Lion License

Except as otherwise provided in this chapter, a person who is a resident, as defined in 87-2-102, and who is 12 years of age or older or who will turn 12 years old before or during the season for which the license is issued may, upon payment of a fee of \$19, receive a Class D-2 license that entitles a holder who is 12 years of age or older to hunt mountain lion and possess the carcass of the mountain lion as authorized by department rules.

87-2-521. Class D-3-Resident Hound Training License

A person who is a resident, as defined in 87-2-102, and who is 12 years of age or older or who will turn 12 years old before or during the season for which the license is issued, upon payment of a fee of \$5, may receive a Class D-3 hound training license that entitles the holder to use a dog or dogs to aid in pursuing mountain lions or bobcats during the training season established in 87-6-404(4).

87-2-702. Restrictions On Special Licenses - Availability Of Bear And Mountain Lion Licenses

(1) A person who has killed or taken any game animal, except a deer, an elk, or an antelope, during the current license year is not permitted to receive a special license under this chapter to hunt or kill a second game animal of the same species.

(2) The commission may require applicants for special permits authorized by this chapter to obtain a valid big game license for that species for the current year prior to applying for a special permit.

(3) Except as provided in 87-2-815, a person may take only

one grizzly bear in Montana with a license authorized by 87-2-701.

(4) (a) Except as provided in 87-1-271(2) and 87-2-815, a person who receives a moose, mountain goat, or limited mountain sheep license, as authorized by 87-2-701, with the exception of an antlerless moose or an adult ewe game management license issued under 87-2-104, is not eligible to receive another special license for that species for the next 7 years. For the purposes of this subsection (4)(a), “limited mountain sheep license” means a license that is valid for an area in which the number of licenses issued is restricted.

(b) Except as provided in 87-1-271(2) and 87-2-815, a person who takes a mountain sheep using an unlimited mountain sheep license, with the exception of a mountain sheep taken pursuant to an adult ewe license, as authorized by 87-2-701, is not eligible to receive another special license for that species for the next 7 years. For the purposes of this subsection (4)(b), “unlimited mountain sheep license” means a license that is valid for an area in which the number of licenses issued is not restricted.

(5) An application for a wild buffalo or bison license must be made on the same form and is subject to the same license application deadline as the special license for moose, mountain goat, and mountain sheep.

(6) (a) Licenses for spring bear hunts must be available for purchase at department offices after April 15 of any license year. However, a person who purchases a license for a spring bear hunt after April 15 of any license year may not use the license until 24 hours after the license is issued.

(b) Licenses for fall bear hunts must be available for purchase at department offices after August 31 of any license year. However, a person who purchases a license for a fall bear hunt after August 31 of any license year may not use the license until 24 hours after the license is issued.

(7) Licenses for mountain lion hunts must be available for purchase at department offices after August 31 of any license year. However, a person who purchases a license for a mountain lion hunt after August 31 of any license year may not use the license until 5 days after the license is issued.

87-2-806. Taking Fish Or Game For Scientific Purposes

(1) An accredited representative of an accredited school, college, university, or other institution of learning or

of any governmental agency or an individual who is investigating a scientific subject for which collection is necessary, may take, kill, capture, and possess for that purpose any birds, fish, or animals protected by Montana law or department or commission rule if a permit to collect is authorized by the department. Under the provisions of this section, a permittee may take, kill, and capture protected or unprotected birds, fish, or animals in any way that is approved by the department, except by the use of explosives. A permittee may not take, kill, or capture more birds, fish, or animals than are necessary for the investigation. A collection permit may not be given for a species for which a taking is prohibited by statute or rule.

(2) A person who desires to engage in the scientific investigation shall apply to the department for a permit. The department may require the applicant to submit a plan of operations that includes the purpose for the collection, collection methodology to be employed, and the qualifications of the person who will be doing the collecting. The department may set qualifications for persons to whom permits are issued and may place special authorizations or special requirements and limitations on any permit. If the department is satisfied of the good faith and qualifications of the applicant and that the collecting is necessary for a valid purpose, the department:

(a) may issue a permit that must place a time limit on the collections and may place a restriction on the number of birds, fish, or animals to be taken; and

(b) shall require a report of the numbers and species of animals taken by collection areas.

(3) The department may deny a permit if:

(a) the applicant is not qualified to make the scientific investigation;

(b) the proposed collecting is not necessary for the proposed scientific investigation;

(c) the method of collecting is not appropriate;

(d) the proposed collecting may threaten the viability of the species; or

(e) there is no valid reason or need for the proposed scientific investigation.

(4) By December 31 of each year, a permittee shall submit a report to the department that lists the species and numbers of individuals of the species taken and locations from which collections were taken. A permittee who fails to file a required report may not be issued another permit.

(5) The permittee shall pay \$50 for the permit, except that a permittee who is a representative of an accredited school, college, university, or other institution of learning or of any governmental agency is exempt from payment of the fee.

(6) The permittee may not take, have, or capture any other or greater number of birds, fish, or animals than are allowed in the permit.

(7) A representative of an accredited school, college, university, or other institution of learning or an individual permittee who may have various students or associates assisting throughout the year may apply to have a permit issued that includes the individual and the students or associates. The department shall approve the qualifications of a student or an associate and the level of supervision required by the primary permittee. The students or associates, when carrying a copy of the permit, have the same authorizations and restrictions as the primary applicant. The primary applicant shall keep a record of all students or associates listed on the permit and of the dates when each student or associate conducts a collection under the permit. The primary applicant is responsible for the students' or associates' use of the permit or copies of the permit.

87-3-127. Taking Of Stock-killing Animals

(1) Livestock owners, their agents, or employees of the department or a federal agency may use dogs in pursuit of stock-killing black bears, stock-killing mountain lions, and stock-killing bobcats. Other means of taking stock-killing black bears, stock-killing mountain lions, and stock-killing bobcats may be used, except the deadfall.

(2) Traps used in capturing bears must be inspected twice each day with the inspections 12 hours apart.

87-3-128. Exceptions - Department Personnel

The provisions of this chapter relating to methods of herding, driving, capturing, taking, locating, or concentrating of fish, game animals, game birds, or fur-bearing animals do not apply to the department or to any employee thereof while acting within the scope and course of the powers and duties of the department.

87-5-713. Control Of Wildlife Species Permitted To Be Transplanted Or Introduced

Any wildlife species listed in 87-5-714 or approved by the commission for introduction or transplantation may be introduced or transplanted only subject to a plan developed by the department to assure that the population can be controlled if any unforeseen harm should occur.

87-5-725. Notification Of Transplantation Or Introduction Of Wildlife

Notification of transplantation or introduction of wildlife.

(1) When the decision to introduce or transplant a wolf, bear, or mountain lion is made pursuant to this part, the department shall:

(a) provide public notice on its website and, when practical, by personal contact in the general area where the animal is released; and

(b) notify the public through print and broadcast media of the availability of release information on the department's website.

(2) Prior permission from the landowner is required before any animal may be transplanted onto private property.

87-6-106. Lawful Taking To Protect Livestock Or Person

(1) This chapter may not be construed to impose, by implication or otherwise, criminal liability for the taking of wildlife protected by this title if the wildlife is attacking, killing, or threatening to kill a person or livestock. However, for purposes of protecting livestock, a person may not kill or attempt to kill a grizzly bear unless the grizzly bear is in the act of attacking or killing livestock.

(2) A person may kill or attempt to kill a wolf or mountain lion that is in the act of attacking or killing a domestic dog.

(3) A person who, under this section, takes wildlife protected by this title shall notify the department within 72 hours and shall surrender or arrange to surrender the wildlife to the department.

87-6-404. Unlawful Use Of Dog While Hunting

(1) Except as provided in subsections (3) through (6), a person may not:

(a) chase any game animal or fur-bearing animal with a dog; or

(b) purposely, knowingly, or negligently permit a dog to chase, stalk, pursue, attack, or kill a hooved game animal.

If the dog is not under the control of an adult at the time of the violation, the owner of the dog is personally

responsible. A defense that the dog was allowed to run at large by another person is not allowable unless it is shown that at the time of the violation, the dog was running at large without the consent of the owner and that the owner took reasonable precautions to prevent the dog from running at large.

(2) Except as provided in subsection (3)(d), a peace officer, game warden, or other person authorized to enforce the Montana fish and game laws who witnesses a dog chasing, stalking, pursuing, attacking, or killing a hooved game animal may destroy that dog on public land or on private land at the request of the landowner without criminal or civil liability.

(3) A person may:

(a) take game birds during the appropriate open season with the aid of a dog;

(b) hunt mountain lions during the winter open season, as established by the commission, with the aid of a dog or dogs;

(c) hunt bobcats during the trapping season, as established by the commission, with the aid of a dog or dogs; and

(d) use trained or controlled dogs to chase or herd away game animals or fur-bearing animals to protect humans, lawns, gardens, livestock, or agricultural products, including growing crops and stored hay and grain. The dog may not be destroyed pursuant to subsection (2).

(4) A resident who possesses a Class D-3 resident hound training license may pursue mountain lions and bobcats with a dog or dogs during a training season from December 2 of each year to April 14 of the following year.

(5) (a) A person with a valid hunting license issued pursuant to Title 87, chapter 2, may use a dog to track a wounded game animal during an appropriate open season. Any person using a dog in this manner:

(i) shall maintain physical control of the dog at all times by means of a maximum 50-foot lead attached to the dog's collar or harness;

(ii) during the general season, whether handling or accompanying the dog, shall wear hunter orange material pursuant to 87-6-414;

(iii) may carry any weapon allowed by law;

(iv) may dispose of the wounded game animal using any weapon allowed by the valid hunting license; and

(v) shall tag an animal that has been reduced to possession in accordance with 87-6-411.

(b) Dog handlers tracking a wounded game animal with a dog are exempt from licensing requirements under Title 87, chapter 2, as long as they are accompanied by the licensed hunter who wounded the game animal.

(6) Any person or association organized for the protection of game may run field trials at any time upon obtaining written permission from the director.

(7) A person who is convicted of or who forfeits bond or bail after being charged with a violation of this section shall be fined not less than \$50 or more than \$1,000 or be imprisoned in the county detention center for not more than 6 months, or both. In addition, the person, upon conviction or forfeiture of bond or bail, may be subject to forfeiture of any current hunting, fishing, or trapping license issued by this state and the privilege to hunt, fish, and trap in this state or to use state lands, as defined in 77-1-101, for recreational purposes for a period of time set by the court.

(8) A violation of this section may also result in an order to pay restitution pursuant to 87-6-905 through 87-6-907.

87-6-701. Failure To Report Or Tattoo

Failure to report or tattoo. (1) Any bear, wolf, tiger, mountain lion, or coyote that is captured alive to be released later or that is held in captivity for any purpose must be reported to the department within 3 days of the capture or commencement of captivity.

(2) Each animal reported as required in subsection (1) must be permanently tattooed or otherwise permanently identified in a manner that will provide positive individual identification of the animal. No tattoo is required if the animal is subject to a permanent, individual identification process by another state or federal agency.

(3) Any person holding a bear, wolf, tiger, mountain lion, or coyote in captivity shall immediately report to the department any death, escape, release, transfer of custody, or other disposition of the animal.

(4) A person convicted of a violation of this section shall be fined not less than \$50 or more than \$1,000 or be imprisoned in the county detention center for not more than 6 months, or both. In addition, the person, upon conviction or forfeiture of bond or bail, may be subject to forfeiture of any current hunting, fishing, or trapping license issued by this state and the privilege to hunt, fish, or trap in this state or to use state lands, as defined in 77-1-101,

for recreational purposes for a period of time set by the court.

ADMINISTRATIVE RULES OF MONTANA

12.3.105 Limitation On Number Of Hunting Licenses

(1) When the department sets a limitation or quota for the number of hunting licenses to be issued in any hunting district or other designated area, resident applicants shall receive at least 90% of the total hunting licenses to be issued for that game species in that district. When the number of resident applicants totals less than 90% of the quota for that district, all resident applicants shall receive a hunting license for that game species.

(2) The remaining licenses will be issued to the nonresident applicants for that district by drawing.

(3) Any thereafter remaining licenses for that district shall be issued in such manner as the director determines.

12.3.111. License/Permit Prerequisites

(1) Deer. All valid resident conservation license holders and all valid nonresident big game (class B-10) and deer combination (class B-11) license holders may apply for deer permits. However, a holder of a B-11 license obtained through a landowner sponsor can only apply for a deer permit where the permitted area includes the landowner sponsor's property and can only use the permit for hunting on the landowner sponsor's property. All valid conservation license holders may apply for deer B licenses. All nonresident conservation license holders who do not possess a B-10 or B-11 license may apply for a nonresident deer A (B-7) license, if available.

(2) Elk. Only persons who possess a valid resident A-5 elk license or a valid nonresident class B-10 license may apply for a special elk permit or A-7 license.

(3) All valid conservation license holders may apply for moose, sheep, goat, deer B, antelope, black bear, grizzly bear, buffalo, swan, and mountain lion licenses, and turkey permits/licenses. Resident sportsman and nonresident big game combination license holders may not apply for a black bear license if the black bear license is included as part of the combination license.

(4) A nonresident who uses a class B-11 landowner sponsored license in conjunction with a deer permit or a wild turkey license may hunt only on the landowner

sponsor's property. A nonresident who possesses a class B-1 landowner sponsored license and who hunts turkey off the landowner sponsor's property must also hold a class B-1, nonresident bird license valid statewide which is different than the restrictive B-1 license contained in the B-11 license. A nonresident holding both the class B-11 license and the class B-1 license valid statewide may purchase only the number of wild turkey licenses specified on the annual regulations for that season.

12.3.116 Moose, Sheep, And Goat Licenses

- (1) The department shall issue moose, sheep, and goat licenses as described in sections 87-2-701 and 87-2-506 , MCA according to the following policy and procedures:
- (a) Applicants for moose and goat must specify one choice for a hunting district. However, for bighorn sheep, an applicant may specify a second choice.
- (b) Application for unlimited sheep must be postmarked no later than May 1. The deadline may be extended by the department if necessary to provide adequate time for the applicants to apply.
- (2) The following procedure will be used when allocating 10% license opportunities for nonresidents in moose, sheep and goat drawings:
- (a) The total regional license quota, by species and region, will be used to determine 10% nonresident quota.
- (b) Nonresident license allocations will be applied to those hunting districts and season types with a quota of ten or more in the tentative regulations.
- (c) Any remaining license allocation will be put, on a rotating basis, in those districts and season types with a quota of less than ten of the tentative regulations.
- (d) If no district in a region has a quota of ten or more licenses on the tentative regulations, all of the nonresident license authority will be allocated as described in (c).
- (e) If a region has a total quota of less than ten, no nonresident license allocations will be made for that region.

12.3.140 Application For Drawings

- (1) The deadline date for the moose, sheep, and goat special drawings is on or before May 1. The deadline date for elk, deer and antelope special drawings is on or before June 1. All applications for participation in any special permit/license drawing, except drawings under ARM 12.9.801 (damage hunts) provided for by these regulations

must be postmarked by the U.S. Postal Service on or before the deadline date of the current license year, or delivered by private mail service on or before the deadline date; or if personally delivered, received in the Helena Fish, Wildlife and Parks office by 5:00 p.m., on the deadline date of the current license year. If the deadline date for application for any license or drawings, as set by the department, falls on a Sunday or state holiday, that date shall be automatically extended to 5:00 p.m. of the next full work day. The deadline may be extended by the department if necessary to provide adequate time for the applicants to apply.

- (2) The department shall reject an application for any permit/license drawing or for surplus, mountain lion, black bear, trapping, buffalo, or grizzly bear licenses if:
- (a) application is not made on the current year's form provided by the department;
- (b) applicant fails to provide mandatory information on the form;
- (c) applicant fails to sign the application; or
- (d) applicant fails to submit the proper fee. The department will not accept personal checks from nonresidents for nonresident license applications and drawing fees.
- (3) Submittal of more than one application for any one drawing by an individual will disqualify that individual's applications from the drawing for which the multiple applications were submitted.
- (4) No corrections or changes may be made after the department has received the drawing application, except those types that can be made without contacting the applicant. These include:
- (a) adding hunter safety numbers;
- (b) moving valid district choices up to replace invalid choices;
- (c) eliminating species choices on those applications that are short money when the shortfall is the amount for that species; and
- (d) adjusting party applications to insure party consistency.
- (5) Any category of correction made by the department must be applied to all applications. In addition, the department will accept corrections on the applications of those seeking landowner preference. Unless otherwise provided by these rules, all drawings will take place in Helena.
- (6) All applications for participation in buffalo, spring grizzly bear, swan and turkey drawings must be

postmarked by the U.S. Postal Service by the advertised deadline date, or delivered by private mail service on or before the date to the address indicated for the particular drawing which is being applied for.

(7) If an application for any species is rejected by the department pursuant to this rule:

- (a) the application must not be included in the procedure for awarding the permits/licenses applied for;
- (b) the applicant must not be awarded a bonus point for that drawing for that species; and
- (c) the drawing fee, and any bonus point fee, once the application is entered into the drawing, will be retained by the department. Applications not processed in the drawing because of errors will be returned to the applicant with all fees.

12.3.185. Super-tag Hunting Licenses

(1) The department will issue one deer, one elk, one shiras moose, one mountain sheep, one mountain goat, one wild buffalo or bison, one antelope, and one mountain lion hunting license each year through a lottery. These hunting licenses are known as “super-tags.”

(2) For each species, an unlimited number of chances to draw a super-tag will be sold at \$5 per chance. Chances will be sold by license agents as defined in ARM 12.3.201A or through the department authorized web site on the internet. License agents will receive a commission of \$0.50 for each super-tag transaction for a species. A transaction in this case means the purchase of one or more super-tag chances of the same species at one time. Individuals purchasing a ticket through the internet shall pay a convenience fee in accordance with the current internet provider contract.

(3) After the completion of the special license drawing for a species, the department will conduct a computerized drawing selecting randomly the super-tag winner for that species. The department shall issue the appropriate super-tag to the lottery winner.

(4) Only a person legally able to be licensed under current Montana statutes may purchase chances to draw a super-tag or use a super-tag. A person must possess a valid conservation license to be eligible to purchase a chance to draw a super-tag.

(5) The super-tag is valid for the taking of one animal of the species for which it is issued and is valid only for

the current license year. A super-tag may be used in any legally described hunting district open for hunting of that species. A super-tag may be used only during the legal hunting season for the species for which it is issued. The person using the super-tag may use it only during a hunting district’s open season and is subject to all hunting regulations, including special weapons regulations, that apply to a hunting district. However, if a hunting district requires a permit to hunt that species in that district, a super-tag can be used without the special permit.

(6) In the event that a person who drew a license or purchased a license is also drawn for the super-tag for the same species, the person must surrender the license to the department before receiving the super-tag. The department will refund the license fee paid by the winner of the super-tag. The person winning the super-tag shall retain any accumulated bonus points for that species.

(7) The super-tag is a nontransferable license.

APPENDIX 7

MONTANA MOUNTAIN LION IPM MODEL CODE

The Montana Mountain Lion Integrated Population Model was constructed using the statistical programming language R (R Development Core Team 2013).

```
model{
  # Naming
  # Parameter names begin with a capitalized letter
  # Data are all lower case
  # Indexing always follows - DAU, Year, Age, Sex
  # If fewer indices are needed they follow the same order despite
  # omissions

  # Priors
  # Pregnancy rates - [age, sex, mean:tau]
  Preg[1] ~ dnorm(preg[3,1,1], preg[3,1,2])T(0,1)
  Preg[2] ~ dnorm(preg[4,1,1], preg[4,1,2])T(0,1)

  # Fetus Counts - [age, sex, mean:tau]
  FC[1] ~ dnorm(fc[3,1,1], fc[3,1,2])T(0,3)
  FC[2] ~ dnorm(fc[4,1,1], fc[4,1,2])T(0,3)

  # Survival
  # Priors on survival - First age class, not available for harvest, so
  # survival is the only parameter
  # Informative prior stored as probability
  yS_mu ~ dnorm(means[1,1,1], means[1,1,2])T(0,1)

  # Transform probability back to real scale and use as the intercept
  for(u in 1:ndau){
    for(yr in 1:nyr){
      for(s in 1:2){
        logit(S[u,yr, 1, s]) <- log(yS_mu/(1 - yS_mu))
        H[u,yr,1,s] <- 0
        O[u,yr,1,s] <- 0
      }
    }
  }

  # Priors on survival - Juveniles - two sexes, cause specific mortality
  for(s in 1:2){
    # Informative priors are stored as probabilities
    jS_tmp[1,s] ~ dnorm(means[2,s,1], means[2,s,2])T(0, 1)
    jS_tmp[2,s] ~ dnorm(meanh[2,s,1], meanh[2,s,2])T(0, 1)
    jS_tmp[3,s] ~ dnorm(meano[2,s,1], meano[2,s,2])T(0, 1)

    # Transform probability to real scale
    for(i in 1:3){
      jS_mu[i,s] <- log(jS_tmp[i,s]/jS_tmp[3,s])
    }

    # Describe rate as function of linear predictor and define link
    # function
    for(u in 1:ndau){
      for(yr in 1:nyr){
        log(jS_log[u,yr,s]) <- jS_mu[1,s]
        log(jH_log[u,yr,s]) <- jS_mu[2,s]
      }
    }
  }
}
```

```

    log(j0_log[u,yr,s]) <- 0
    jSums[u,yr,s] <- jS_log[u,yr,s] + jH_log[u,yr,s] + j0_log[u,yr,s]
    S[u,yr,2,s] <- jS_log[u,yr,s]/jSums[u,yr,s]
    H[u,yr,2,s] <- jH_log[u,yr,s]/jSums[u,yr,s]
    O[u,yr,2,s] <- j0_log[u,yr,s]/jSums[u,yr,s]
  }
}
}

# Priors on survival - SubAdults - two sexes, cause specific mortality
for(s in 1:2){
  # Informative priors are stored as probabilities
  sS_tmp[1,s] ~ dnorm(means[3,s,1], means[3,s,2])T(0, 1)
  sS_tmp[2,s] ~ dnorm(meanh[3,s,1], meanh[3,s,2])T(0, 1)
  sS_tmp[3,s] ~ dnorm(meano[3,s,1], meano[3,s,2])T(0, 1)

  # Transform probability to real scale
  for(i in 1:3){
    sS_mu[i,s] <- log(sS_tmp[i,s]/sS_tmp[3,s])
  }

  # Describe rate as function of linear predictor and define link
  # function
  for(u in 1:ndau){
    for(yr in 1:nyr){
      log(sS_log[u,yr,s]) <- sS_mu[1,s]
      log(sH_log[u,yr,s]) <- sS_mu[2,s]
      log(s0_log[u,yr,s]) <- 0
      sSums[u,yr,s] <- sS_log[u,yr,s] + sH_log[u,yr,s] + s0_log[u,yr,s]
      S[u,yr,3,s] <- sS_log[u,yr,s]/sSums[u,yr,s]
      H[u,yr,3,s] <- sH_log[u,yr,s]/sSums[u,yr,s]
      O[u,yr,3,s] <- s0_log[u,yr,s]/sSums[u,yr,s]
    }
  }
}

# Priors on survival - Adults, two sexes, cause specific mortality
for(s in 1:2){
  # Informative priors are stored as probabilities
  aS_tmp[1,s] ~ dnorm(means[4,s,1], means[4,s,2])T(0, 1)
  aS_tmp[2,s] ~ dnorm(meanh[4,s,1], meanh[4,s,2])T(0, 1)
  aS_tmp[3,s] ~ dnorm(meano[4,s,1], meano[4,s,2])T(0, 1)

  # Transform probability to real scale
  for(i in 1:3){
    aS_mu[i,s] <- log(aS_tmp[i,s]/aS_tmp[3,s])
  }

  # Describe rate as function of linear predictor and define link
  # function
  for(u in 1:ndau){
    for(yr in 1:nyr){
      log(aS_log[u,yr,s]) <- aS_mu[1,s]
      log(aH_log[u,yr,s]) <- aS_mu[2,s]
      log(a0_log[u,yr,s]) <- 0
      aSums[u,yr,s] <- aS_log[u,yr,s] + aH_log[u,yr,s] + a0_log[u,yr,s]
      S[u,yr,4,s] <- aS_log[u,yr,s]/aSums[u,yr,s]
      H[u,yr,4,s] <- aH_log[u,yr,s]/aSums[u,yr,s]
      O[u,yr,4,s] <- a0_log[u,yr,s]/aSums[u,yr,s]
    }
  }
}

### Prior on first year population size
# Indexing - Year, Age, Sex
for(u in 1:ndau){
  N[u,1,1,1] ~ dnorm(n1[1,2], 1/n1[1,2])T(0,)
}

```

```

N[u,1,1,2] <- N[u,1,1,1]

for(a in 2:nage){
  for(s in 1:2){
    N[u,1,a,s] ~ dnorm(n1[a,s+1], 1/n1[a,s+1])T(0,)
  }
}

yN[u,1] <- N[u,1,1,1] + N[u,1,1,2]
fN[u,1] <- N[u,1,2,1] + N[u,1,3,1] + N[u,1,4,1]
mN[u,1] <- N[u,1,2,2] + N[u,1,3,2] + N[u,1,4,2]
totN[u,1] <- yN[u,1] + fN[u,1] + mN[u,1]
}

### Process model - 4 ages, 2 sex
# Using normal approximation because it is fast and mixes well
# Sex = 1 is a female
# Indexing follows - DAU, Year, Age, Sex
for(u in 1:ndau){
  for(yr in 2:nyr){
    # Kittens
    # Normal approximation of Poisson
    nMu[u,yr,1,1] <-
      ((N[u,yr,3,1] * 0.5 * FC[1] * Preg[1]) +
       (N[u,yr,4,1] * 0.5 * FC[2] * Preg[2])) *
      S[u,yr-1,1,1]
    nMu[u,yr,1,2] <- nMu[u,yr,1,1]

    N[u,yr,1,1] ~ dnorm(nMu[u,yr,1,1], 1/(nMu[u,yr,1,1]))
    N[u,yr,1,2] <- N[u,yr,1,1]

    for(s in 1:2){
      # Juveniles
      # Normal approximation of Binomial
      nMu[u,yr,2,s] <-
        (1 - O[u,yr-1,2,s]) * (N[u,yr-1,1,s] - harv[u,yr-1,2,s])

      nTau[u,yr,2,s] <- 1/((N[u,yr-1,1,s] - harv[u,yr-1,2,s]) *
        (O[u,yr-1,2,s]) * (1 - O[u,yr-1,2,s]))

      N[u,yr,2,s] ~ dnorm(nMu[u,yr,2,s], nTau[u,yr,2,s])

      # SubAdults
      # Normal approximation of Binomial
      nMu[u,yr,3,s] <-
        (1 - O[u,yr-1,3,s]) * (N[u,yr-1,2,s] - harv[u,yr-1,3,s])

      nTau[u,yr,3,s] <- 1/((N[u,yr-1,2,s] - harv[u,yr-1,3,s]) *
        (O[u,yr-1,3,s]) * (1 - O[u,yr-1,3,s]))

      N[u,yr,3,s] ~ dnorm(nMu[u,yr,3,s], nTau[u,yr,3,s])

      # Adults
      # Normal approximation of Binomial
      # Female Other Mortality shared between the sexes
      nMu[u,yr,4,s] <-
        (N[u,yr-1,3,s] + N[u,yr-1,4,s] - harv[u,yr-1,4,s]) *
        (1 - O[u,yr-1,4,s])

      nTau[u,yr,4,s] <-
        1/((N[u,yr-1,3,s] + N[u,yr-1,4,s] - harv[u,yr-1,4,s]) *
          (O[u,yr-1,4,s]) * (1 - O[u,yr-1,4,s]))

      N[u,yr,4,s] ~ dnorm(nMu[u,yr,4,s], nTau[u,yr,4,s])
    }
  }
}

```

```

    }

    # Totals in each year
    yN[u,yr] <- N[u,yr,1,1] + N[u,yr,1,2]
    fN[u,yr] <- N[u,yr,2,1] + N[u,yr,3,1] + N[u,yr,4,1]
    mN[u,yr] <- N[u,yr,2,2] + N[u,yr,3,2] + N[u,yr,4,2]
    totN[u,yr] <- yN[u,yr] + fN[u,yr] + mN[u,yr]
  }
}

##### Observation Models
# Indexing/columns always follows
#   1   2   3   4   5   6
# DAU, Year, Age, Sex, Mean, Tau

# Abundance Observation - [dau, yr]
for(i in 1:nn){
  ndat[i,5] ~ dnorm(totN[1,ndat[i,2]], ndat[i,6])T(0,)
}

# Harvest Observations - [dau,yr,a,s]
for(u in 1:ndau){
  for(yr in 1:nobs_yr){
    for(a in 1:nage){
      for(s in 1:2){
        harv[u,yr,a,s] ~ dbinom(H[u,yr,a,s], round(N[u,yr,a,s]))
      }
    }
  }
}

# Survival Observations
for(i in 1:ns){
  sdat[i,5] ~ dnorm(S[1, sdat[i,2], sdat[i,3], sdat[i,4]], sdat[i,6])T(0, 1)
}

# Harvest Mortality Rate Observations
for(i in 1:nhm){
  hmdat[i,5] ~ dnorm(H[1, hmdat[i,2], hmdat[i,3], hmdat[i,4]], hmdat[i,6])T(0, 1)
}

# Other (Non-Harvest) Mortality Rate Observations
for(i in 1:nom){
  omdat[i,5] ~ dnorm(O[1, omdat[i,2], omdat[i,3], omdat[i,4]], omdat[i,6])T(0, 1)
}

# Derived - the constant is added to avoid division by 0
for(u in 1:ndau){
  for(yr in 1:nyr){
    mf[u,yr] <- (mN[u,yr] + 0.001)/(fN[u,yr] + 0.001)
  }
}

# Incomplete vectors cannot be monitored, so arbitrary value is given
# to the first year
# Same constant trick is used here for the division
# Using the log and exp handles 0 gracefully, recall that
# log(x) + log(y) = log(xy), so the geometric mean is calculated using
# an algebraic rearrangement that is more robust to 0's
for(u in 1:ndau){
  lambda[u,1] <- 1
  for(yr in 2:nyr){
    lambda[u,yr] <- (totN[u,yr] + 0.001)/(totN[u,yr-1] + 0.001)
    logla[u,yr] <- log(lambda[u,yr])
  }
  geoLambda[u] <- exp((1/(nyr-1))*sum(logla[u,2:(nyr)]))
}
}

```


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Hound baying treed mountain lion near Missoula, Montana, O. Smith

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Utah Cougar Management Plan V.3

2015-2025



Photo Credit: Tom Becker, Utah Division of Wildlife Resources

Utah Division of Wildlife Resources
and the
Cougar Advisory Group
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* These members of the Cougar Advisory Group support the majority of the plan but are *of the opinion* that the approved targets allow for the possibility of excessive cougar harvest as judged from the standpoint of the best available science.

Utah Cougar Management Plan V. 3

2015 – 2025

PLAN GOAL: Maintain a healthy cougar population within their current distribution while considering human safety, economic concerns, other wildlife species, and maintaining hunting traditions through 2025.

Definition: A healthy cougar population is one that maintains: 1) a reasonable proportion of older age animals; 2) breeding females; 3) healthy individuals; 4) balance with its natural prey; 5) and genetic variability.

Introduction

The purpose of the Utah Cougar Management Plan is to direct the management of cougars (*Puma concolor*) in accordance with the mission of the Utah Division of Wildlife Resources (Division or DWR) through 2025. An internal review of the plan will be completed 5 years after implementation to ensure that established targets, goals, and objectives meet both management and social needs.

The mission of DWR is:

Serve the people of Utah as trustee and guardian of the state's wildlife

In 1997, the DWR initiated a process to obtain public input on issues and concerns with cougar management. Individuals representing many diverse points of view were invited to form a Cougar Advisory Group. The mission of this group was to aid the Division in preparing a cougar management plan that would gain agreement from diverse groups.

The first version of the Utah Cougar Management Plan (UDWR 1999) resulted from these meetings and was used to direct cougar management efforts from 1999 to 2009. In 2009, the DWR reformed the Cougar Advisory Group to review and update the plan. The group met 8 times between December and May 2010 which resulted in Version 2 (UDWR 2010). After approval of this version several social and management issues led to an emergency meeting of the Wildlife Board. The outcome of the meeting was Version 2.1 of the Utah Cougar Management Plan (UDWR 2011). Subsequently, this version did not fully address the concerns of the public or wildlife managers and the Wildlife Board directed the Division to reform the Cougar Advisory Group with the goal of simplifying the cougar management plan.

This document is version 3 of the Utah Cougar Management Plan which seeks to simplify cougar management and address social and management issues created through previous versions of the plan. The Cougar Advisory Group met 5 times between December and April 2015. The first meeting of the group focused on developing a list of issues and concerns that the group could focus on and address in this document (see Attachment D. Issues and Concerns).

The natural history and ecology of cougars is not included or described in this document because more detailed information on cougar ecology can be found in “Managing Cougars in North America” (WAFWA 2011).

Management History

Cougars were persecuted as vermin in Utah from the time of European settlement in 1847 until 1966. In 1967 the Utah State Legislature changed the status of cougars to that of *protected wildlife*, and since that time they have been considered a game species with established hunting regulations. The first Utah Cougar Management Plan (UDWR 1999) guided cougar management through 2009. Consequently, two additional

versions of the plan were adopted by the Wildlife Board to guide cougar management between 2010 and 2014 (UDWR 2010, 2011).

Cougars use very broad and diverse areas in Utah. The large scale dynamics and interconnectivity of the states cougar populations have been demonstrated through multiple telemetry and GPS radio collar studies (Stoner et al. 2006; 2008; 2013b). Evaluation of the genetic relatedness of cougars in Utah also provides evidence that gene flow occurs over large geographic areas (Sinclair et al. 2001). Cougar harvest has traditionally been controlled in specific geographic areas or hunting units. Version 2 of the management plan sought to tie smaller hunting units to larger home ranges or eco-regions to account for the large spatial scale and source-sink population dynamics (Stoner et al. 2013b; cougar management areas; Figure 1). However, implementation of the eco-region concept limited the ability of the Division to distribute hunters adequately which resulted in heavy hunting pressure and high harvest in easily accessible areas and low to no harvest in areas with limited access.



Figure 1. Cougar Management Areas and Hunting Units

Cougar harvest in Utah has been accomplished using three harvest strategies: harvest objective (quota), limited entry and split (limited entry followed by harvest objective). Under the *harvest objective strategy*, managers prescribe a quota, or number of cougars to be harvested on the unit. An unlimited number of licensed hunters are allowed to hunt during a season which closes as soon as the quota is filled or when the season end date is reached. Hunters are required to check daily to ensure the quota has not been filled. Under the *limited entry strategy*, harvest is managed by limiting the number of hunters on a unit. The number of hunters is determined based upon an expectation of hunting success and the desired harvest size. Individuals are usually selected for hunting on the unit through a random drawing process. Under the *split strategy*, units start the season under the limited entry strategy and then transition to a harvest objective strategy on a set date using the number of limited entry permits that remained unfilled at the time of the transition as the quota for the remaining weeks of the season.

Predator-Prey Relationships

Mule deer are known to be the preferred prey species of cougars (Seidensticker et al. 1973, Ackerman 1982, Mitchell 2013), and in Utah both deer and elk have been identified as primary prey species. In areas where both deer and elk co-exist cougars will usually select deer (Lindzey et al. 1989, Mitchell 2013). Other prey species include lagomorphs, turkey, skunk, fox, porcupines, rodents, bighorn sheep, feral horses, domestic sheep, cattle, bobcat and coyote (Russell 1978, Ackerman et al. 1982, Knopf 2010, Mitchell 2013).

Cougar populations may be limited by prey abundance, availability, and vulnerability (Pierce et al 2000b, Logan and Sweanor 2001), and the relationship between predator and prey is very complex. Much controversy surrounds whether cougar predation can restrict or limit population growth of prey species; the majority of evidence is circumstantial, revolving around observations that deer are preferred prey, high cougar densities, and/or prey populations are declining. Most research indicates that cougars

and predation alone are not a major limiting factor of prey species abundance (Hornocker 1970, Russell 1978, Lindzey et al. 1994, Logan et al. 1996, Pierce et al. 2012). Ballard et al. (2001) reviewed a total of 17 published studies and concluded that deer-predator relationships are confounded by many factors including the relationship of deer to available habitat and carrying capacity. For example in New Mexico, Logan et al. (1996) found that cougar predation was the major cause of mortality in mule deer but that habitat quality was the critical limiting factor. Conversely, when habitat quality was good and the deer population was below carrying capacity, cougar predation did not prevent the deer population from increasing. In Idaho, Hurley et al. (2011) examined mule deer survival in response to removal of both coyote and cougars. Their data indicated that winter severity had the largest influence on population growth rate and predator removal only resulted in slight prey population increases for short term periods.

In contrast, predator-prey dynamics between cougar and bighorn sheep are less ambiguous because most bighorn sheep populations are small in number and isolated in space. Cougar predation on bighorn sheep typically occurs randomly and most often when one individual learns to specialize on bighorn sheep (Logan et al. 1996, Ross et al. 1997, Ernst et al. 2002, Sawyer and Lindzey 2002, Festa-Bianchet. et al. 2006). In a population of desert bighorn sheep radio collared in southeastern Utah, cougar predation was responsible for 53% of radio collared adult mortalities (UDWR unpublished data). In California and Arizona, cougars were implicated in the decline of bighorn sheep populations (Hayes et al. 2000, Schaefer et al. 2000, Kamler et al. 2002), and in Alberta, a single cougar was responsible for killing 9% of the early-winter bighorn sheep population including 26% of the lambs (Ross et al. 1997). Targeted removal of cougar that learn to specialize on bighorn sheep can be beneficial for both cougar and sheep populations (Ernest et al 2002).

The availability and abundance of different prey species in an area as well as the presence of other predators are also factors that may influence prey populations. In some cases a “predator pit” effect can occur when the primary prey experiences a

reduction in numbers but an alternate prey source is available to the predator. This helps artificially keep predator populations high because the predator can switch to other prey, and their population size does not decrease in response to lower availability or preferred prey. The predator can then keep the primary prey species from recovering (Dale et al. 1994, Gassaway 1992).

In 1996 the Utah Wildlife Board approved a Predator Management Policy (DWR Policy No. W1AG-4, last updated in 2006) that authorizes the Division to increase cougar harvest on management units where big game populations are depressed, or where big game has recently been released to establish or supplement new populations. The policy acts under the assumption that predators can slow recovery of prey populations when they are depressed or that a prey population can be kept at a lower density due to predation (Cougar Management Guidelines Working Group 2005). Predator management plans are reviewed by regional staff, the Mammals Program Coordinator, and approved by both the Wildlife Section Chief and DWR Director.

Most predator management plans that affect cougars have been designed to benefit mule deer and/or bighorn sheep. Cougar harvest has been liberalized where mule deer or bighorn sheep are below population management objective, and adult survival is lower than normal under the assumption that large harvests will reduce cougar numbers and hence predation rates, therefore encouraging growth of populations by improving survival. However, drought, habitat alteration and loss and predation all substantially impact big game populations making the effectiveness of predator management plans difficult to evaluate.

This version of the cougar management plan differs from previous versions in that aspects of the Divisions predator management policy are being incorporated into the plan. Mule deer and bighorn sheep population abundance and survival estimates will be used to help determine annual cougar harvest recommendations. This was one of the key social and management issues with previous versions of the Cougar

Management Plan identified through both the public recommendations process and by the Cougar Advisory Group.

In 1999, UDWR implemented a Nuisance Cougar Complaints policy (DWR Policy No. W5WLD-5, last updated in 2006) to provide guidance for reducing damage to private property, reducing public safety concerns, and direction to Division personnel responding to cougar depredation, nuisance, and human safety situations. Any cougar that poses a threat to human safety or preys upon livestock or pets is euthanized, as are sick or injured adult cougars and kittens that are unable to care for themselves in the wild. The Division does not rehabilitate cougars. The only cougars that are captured and translocated are healthy adults and subadults that wander into urban or suburban areas in situations where they have not been aggressive toward humans, pets, or livestock.

Harvest Information

The Division began managing cougar harvests through statewide limited entry hunting in 1990 and increased numbers of permits through 1995-1996. In 1996-1997, additional harvest pressure was added by switching some management units to the harvest objective (quota) system and a record high of 1,496 Permits were sold (Table 1).

Utah's cougar population is monitored through mandatory reporting of all hunter-harvested cougars, cougars that are killed on highways or in accidents and those taken as a result of livestock depredation. Location of kill, sex and age (through a premolar for age estimation) are recorded for every cougar killed and provide the data used to assess management performance in relation to established target values that serve as indicators of population status. Since 1990 cougar mortality in Utah has ranged from 275 (1990) to 666 (1996) and has averaged 421 animals (Figure 2).

	Limited Entry Permits				Harvest Objective Permits			Total Permits	Pursuit Permits
Year	Resident	Nonresident	Conservation / Expo	Total	Resident	Nonresident	Total		
1989-90	385	142		527				527	355
1990-91	383	142		525				525	364
1991-92	383	142		525				525	524
1992-93	431	160		591				591	570
1993-94	479	180		659				659	552
1994-95	559	232		791				791	505
1995-96	611	261		872				872	627
1996-97	425	170		595			901	1,496	638
1997-98	381	128		509	472	199	671	1,180	635
1998-99	337	109		446	386	189	575	1,021	630
1999-00	259	84		343	374	170	544	887	545
2000-01	206	66		272	880	290	1,170	1,442	692
2001-02	228	30	8	266	897	300	1,197	1,463	681
2002-03	326	36	12	374	685	266	951	1,325	703
2003-04	215	29	20	264	533	209	742	1,006	772
2004-05	233	30	10	273	841	290	1,131	1,404	703
2005-06	356	38	12	406	464	222	686	1,092	730
2006-07	313	35	18	366	600	245	845	1,211	714
2007-08	283	34	20	337	587	238	825	1,162	880
2008-09	271	34	18	323	543	220	763	1,086	855
2009-10	263	32	18	313	566	192	758	1,071	900
2010-11	330	38	15	383	595	190	785	1,168	909
2011-12	312	36	16	364	613	202	815	1,178	777
2012-13	312	36	17	365	564	226	790	1,096	769
Total	8,281	2,224	184	10,689	9,600	3,648	14,149	24,778	16,030
Mean	345	93	15	445	600	228	832	1,032	668

Table 1. Utah Cougar Permits 1990-2013.

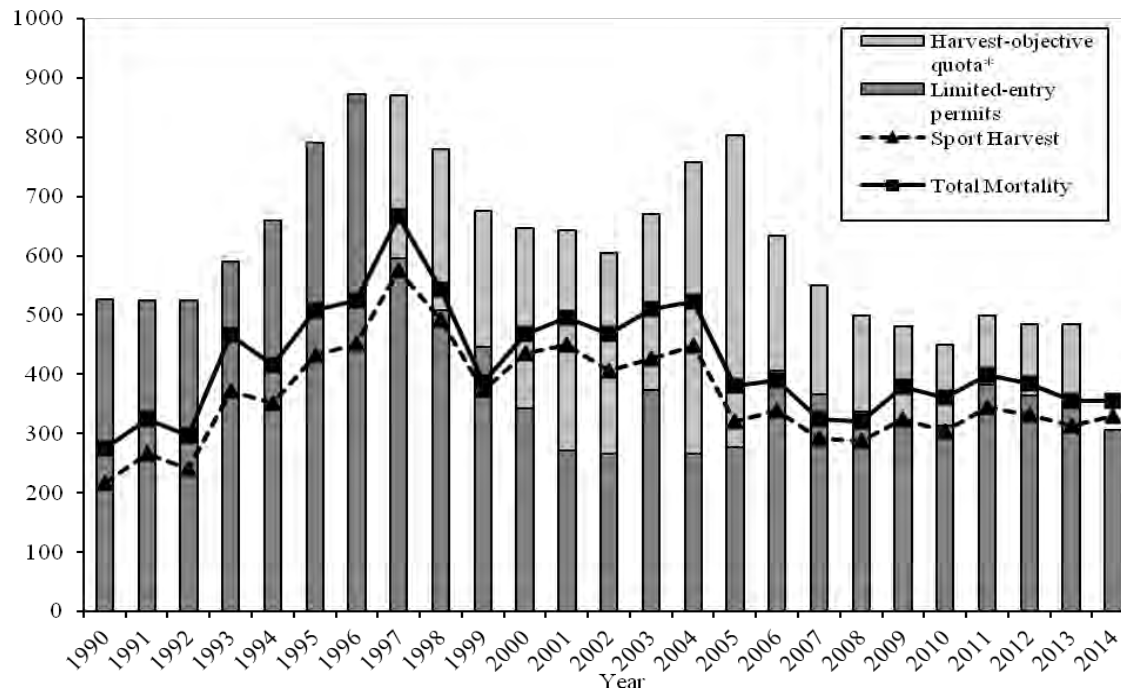


Figure 2. Cougar Mortality 1990-2014

Nearly all cougars harvested in Utah are taken with the aid of dogs. An individual hunter is restricted to holding either a limited entry permit or a harvest objective permit per season, and must wait 3 years to reapply once they acquire a limited entry permit. The bag limit is 1 cougar per season. Kittens and females accompanied by young are protected from harvest. The cougar hunting season runs from late November through early June on both limited entry and most harvest objective units. Some units are open year round and some have earlier or later opening dates. Because harvest objective units close as soon as the objective (quota) is reached, hunters must call a toll-free number or check the Division website daily to ensure that the unit they plan to hunt is still open.

Pursuit (chase or no-kill) seasons provide additional recreational opportunities over most of the state. The pursuit season generally follows the hunt season, but specific units have year round pursuit, and a few units are closed to pursuit.

A valuable way to assess cougar population response to hunting is to follow the trend of age structure in harvest over time. The effect hunting has on cougar populations depends on the level of harvest and the sex and age of cougars that are removed. In general transient males are most susceptible to harvest (Barnhurst 1996). Under more intensive harvest pressures fewer juveniles tend to be harvested, followed by a decrease in adult males, and then finally a steady increase in adult females. The longer and more intensive the harvest pressure the more young females will occur in the harvest. This happens because older age animals and males are not available in the population. Likewise, relatively light harvest allows hunters to be more selective and tends to produce more males and older animals (WAFWA 2011).

Most cougar populations can sustain harvest rates of 20-30% of the adult population depending on the age and sex composition of the harvest (Beck et al. 2005). However, recent work in Washington state suggests the natural rate of increase is approximately 12-14% per year (Beausoleil et al. 2013). Large and well connected cougar populations can recover rapidly from over-exploitation (Cougar Management Guidelines 2005) given relaxation from hunting pressure and an adequate influx of immigrants. Cougar populations are most sensitive to the survival or removal of adult females (Martorello and Beusoleil 2003) which may slow or reduce population growth and may eventually lead to population decline (Stoner et al. 2006, Robinson et al. 2008, Cooley et al. 2009*a*, 2009*b*). For example, evaluation of cougar harvest for two different hunting regimes in Utah demonstrated negative impacts on fecundity, density, and age structures when the annual harvest consisted of >30% of the adult population with ≥42% females for periods greater than 3 years (Stoner 2004). Harvest and population data from southern Wyoming indicates that cougar populations can maintain themselves with a harvest comprised of 10-15% adult females (Anderson and Lindzey 2005). For these reasons most states limit female hunting mortality to <50% of the total harvest.

Distribution and Abundance

In Utah cougars occupy 92,696 km² (35,790 mi²) of habitat. Cougars are distributed throughout all available eco-regions (Figure 3) and exhibit a broad habitat tolerance occurring from the semi-arid low-elevation pinion-juniper belt, to the mesic, aspen and conifer dominated forests of the higher mountains and plateaus. Habitat quality varies by ecoregion with the Colorado Plateau and Great Basin containing smaller, naturally fragmented habitats with lower cougar densities, and the mountain ecoregions comprised of relatively large, mesic patches (Stoner et al. 2013a). Residential and commercial development is incrementally reducing cougar distribution through habitat alteration and destruction, particularly along the western border of the Wasatch Mountains in northern and central Utah.

The last statewide cougar population estimates were developed in conjunction with the Utah Cougar Management Plan in 1999 (UDWR 1999). These estimates used extrapolations of cougar densities from published studies in the southwestern United States to: 1) the total area within all management units that comprise cougar range, and 2) the total amount of occupied cougar habitat within Utah. The habitat quality within each management unit was classified as either high, medium or low based on vegetative characteristics, terrain ruggedness (Riley 1998) and prey density. Cougar densities derived from research within Utah, California and New Mexico were associated with each habitat quality level. High quality habitat was assigned a density range of 2.5-3.9 cougars/100 km², medium quality habitat was assigned a density of 1.7-2.5 cougars/100 km² and a density of 0.26-0.52 cougar/100 km² was assigned to low quality habitat. The first statewide population estimate of 2,528-3,936 cougars resulted from summing unit population estimates.

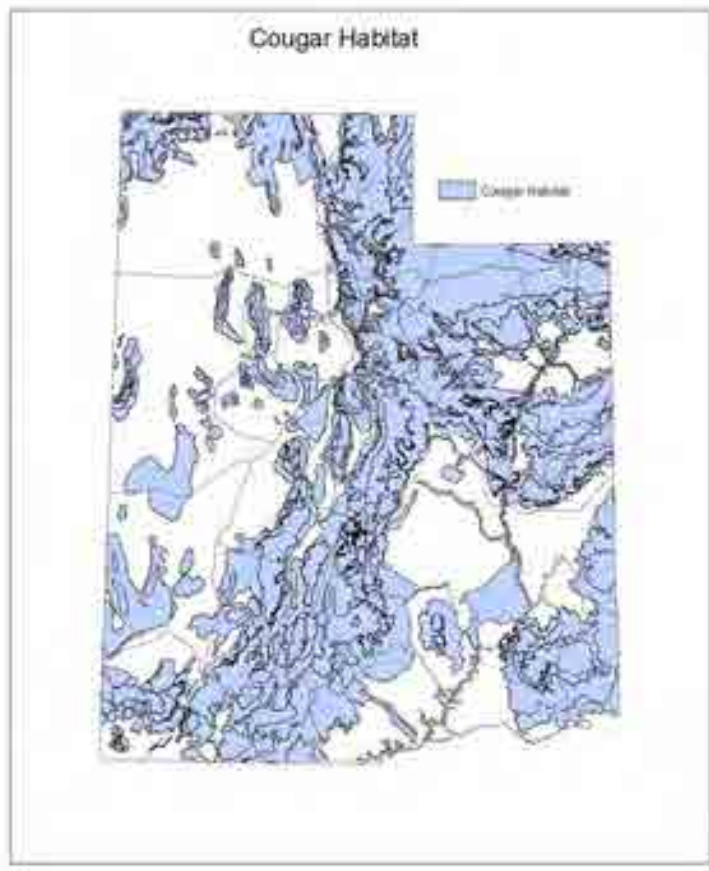


Figure 3. Cougar Habitat in Utah

For comparison, a second estimate of 2,927 cougars statewide was generated based upon mean cougar densities and total occupied cougar habitat within the state. Each management unit's cougar population was estimated by extrapolating the mean cougar density assigned to the unit (based on the respective range indicated above) to the amount of occupied cougar habitat within the unit, and unit estimates were summed to obtain the statewide figure. The two methods produced population estimates that show considerable agreement, but they should be only viewed as general approximations of the statewide cougar population.

Research

Beginning with the observational work of Connolly (1949), up through current investigations of cougar-coyote-mule deer interactions by Julie Young and colleagues,

Utah has a rich history of research on cougar ecology and management. Two topics dominate the literature on the species: predation effects on big game species, and population estimation techniques. In Utah and most western states cougars are often managed from conflicting standpoints. As a predator of mule deer, elk, and bighorn sheep, cougars can be managed as a pest, in which measureable changes in density are desired in order to evaluate the numerical responses of prey. However, when prey survival is not a concern, cougars may be managed as a trophy game species, in which harvest can be fairly conservative. Under both conditions, the ability to estimate and track changes in local abundance is central to effective management.

Cougar research can be subdivided into a few broad topics; natural history, foraging habits and predation, habitat use, and population dynamics. The latter category has received the most attention and involves estimation of abundance, reproduction, and survival rates. In order for management to be effective, a solid understanding of these life history characteristics is essential. The earliest work in Utah was conducted by houndsman and district Predatory Animal and Rodent Control agent, Edward Connolly, who used snow tracking to evaluate predation rates and prey selection in the Wasatch Mountains. These efforts were followed in the 1950s by W. L. Robinette who made further evaluations of food habits by examining the stomach contents of harvested cougars (Robinette et al. 1959). Similarly, these authors used necropsy of females removed through harvest and depredation control to evaluate pregnancy rates, litter size, and breeding seasons (Robinette et al. 1961). Other investigations elaborated on causes of natural mortality (Gashwiler and Robinette 1957). Robinette et al (1977) summarized their findings about cougars and their role in mule deer population dynamics in their study, *The Oak Creek Mule Deer Herd in Utah*. Because of the large sample sizes and relatively simple analyses, some of these papers are still relevant as more recent efforts have only reinforced early findings.

The advent of radio-telemetry in the 1960's facilitated a detailed view of cougar behavior. This tool removed much of the speculation from field work by providing

investigators a means of tracking animals in real time. Telemetry allowed for rigorous measures of home range size, sociality, movement behavior, and predation rates. The work of Lindzey et al. (1989) was the first use of radio-telemetry on cougars in the state. This project was conducted on the Boulder Plateau and adjacent Henry Mountains in southern Utah from 1978 to 1989. By the time this study was initiated, cougars had been classified as a big game species for over a decade, and many of the uncertainties associated with managing a secretive carnivore were apparent. Lindzey focused on applied questions related to cougar predation impacts on deer, elk, and livestock (Ackerman et al. 1984, 1986), population dynamics (Hemker et al. 1984, 1986; Lindzey et al. 1988, 1994), and survey techniques (Van Dyke et al. 1986; Van Sickle and Lindzey 1991, 1992). During the latter years of the study, Lindzey and his students evaluated cougar demographic responses to typical harvesting regimes (Barnhurst and Lindzey 1989; Lindzey et al. 1992; Laing and Lindzey 1993). In 1991 Lindzey published a brief paper on recommendations for future research. Due largely to an inability to accurately census cougars and an increasing concern over human/cougar conflicts the development of reliable survey techniques and evaluation of cougar behaviors in and around urban settings were top among managers concerns.

As the human population in the west have increased and became progressively more urban, societal values have evolved. Along with these changes restructuring of wildlife management policy has changed to include greater public input. Wildlife commissions and advisory boards are the avenue for public input in most western states. Continued debate over abundance, reactions to hunting pressure, and the burgeoning issue of cougars living near people prompted the initiation of Utah's second radio-telemetry effort to examine cougars. This project was led by Dr. Michael Wolfe at Utah State University, and Clint Mecham, a veteran from Lindzey's fieldwork on the Boulder. This new project involved two study areas; one in central Utah on the Fishlake National Forest (Monroe Mountain), and the other due west of the rapidly expanding Salt Lake metro area in the Oquirrh Mountains. The primary difference between these sites was the pattern of land ownership. The Monroe Mountain site was public land and open to

hunting whereas the Oquirrh Mountain site was a patchwork of private properties with restricted access, including large holdings by the Utah Army National Guard and the Kennecott Copper Company. This created a vast region of un-hunted habitat on the edge of an expanding metro area.

Wolfe's study had three central objectives: 1) evaluating cougar enumeration techniques under differing densities, 2) assessing the demographic effects of sustained harvest on cougar demographics, and 3) assessing cougar movement behavior and resource use in an urban-wildland setting. This project ran from 1996 to 2013 and represents the longest comparative study ever conducted on the species. Unlike many diurnally active, herding, or numerically abundant species, there are no robust and widely accepted techniques for cougar enumeration (Choate et al. 2006) and findings from this study underscored the severe limitations imposed by cougar behavior on the development and use of robust survey techniques. Stubbornly small sample sizes, the inherently open nature of cougar populations, and wide dispersal tendencies mean that classic mark-recapture techniques are of limited utility at scales relevant to management (Sinclair et al. 2001, Stoner et al. 2008).

During his Boulder Plateau study, Lindzey addressed the question of harvest effects, but it was an experiment in time on a single study area (before-after). The second objective Wolfe's project was an attempt to replicate the Boulder study in space. The effort here was the first to employ a Before-After-Control-Impact study design in which two populations were monitored simultaneously while varying harvest levels on one site. The Monroe-Oquirrh study lasted 12 years and demonstrated notable demographic differences between populations subjected to different management regimes. Based on these results and combined with the uncertainty of local abundance, Wolfe et al. (2004) recommended statewide implementation of a source-sink type management structure in which known behavioral tendencies, such as male-biased dispersal are used to backfill territories left vacant following harvest. This idea was developed further by Stoner et al.

(2013*a*, 2013*b*), who parameterized cougar dispersal and identified a series of *de facto* refugia, i.e. areas of suitable habitat that exhibit low levels of hunting.

The third objective of this study was pursued by Rieth (2009), Stoner (2011) and Mitchell (2013). These authors looked at habitat use, movement patterns, and predation behavior in the Oquirrh Mountains- a region that encompassed military training, industrial activities, and suburban land-use. Rieth (2009) demonstrated a shift in cougar habitat selection by behavior, which is correlated with time-of-day. Notably, cougars are farthest from human activity during diurnal hours when human activity is highest, and nearest at night when actively hunting. Subsequently, Stoner (2011) found cougars generally avoided areas of predictable human activity, but that aversion was not absolute and some individuals, particularly males and older females with dependent kittens passed occasionally used human dominated landscapes. Mitchell (2013) followed on this work and noted that despite proximity to urban and mixed-use landscapes, cougar depredation on pets and hobby livestock were rare, and that most livestock depredations were on free-ranging cattle in wilderness parts of the study area.

The capstone of the Monroe-Oquirrh cougar project were the evaluations by Wolfe et al. (2015, in review) of commonly used cougar performance measures with respect to known demographics, and an assessment of the degree to which harvest mortality acts in an additive or compensatory manner in cougar populations. These analyses used radio-telemetry data to calibrate catch-per-unit-effort, survival rates, and percent females in the harvest as an index of population performance. Following these efforts the project moved into a second phase in which the Oquirrh Mountain site was closed and remaining resources were directed to a new study objective on the Monroe site. This segment of the project was lead by Julie Young of the National Wildlife Research Center at Utah State University and changed focus from population demographics to the interaction between coyotes, cougars and mule deer. Results are forthcoming.

Objective, Strategies and Management Systems

Outreach and Education

Objective 1:

Increase awareness and appreciation within the general public for the role of cougars in Utah's ecosystems.

Strategy:

1. Determine (survey) the general public's knowledge and attitudes toward the role of cougars in Utah's ecosystems.
2. Implement the new Wild Aware Utah program; an effort generated by the Conservation Outreach Section.

Objective 2:

Educate and increase awareness of the public that utilize cougar habitat about cougar safety.

Strategy:

1. Implement the Wild Aware Utah program.

Objective 3:

Provide educational opportunities to the big game hunting public about the relationship between cougar and prey populations.

Strategies:

1. Develop an educational presentation highlighting cougar-prey interactions geared toward hunting/conservation organizations such as Sportsmen for Fish and Wildlife, Mule Deer Foundation, Rocky Mountain Elk Foundation, Utah Bowman's Association and others.
2. Write articles addressing cougar prey interactions for publication in sportsmen magazines/news letters published by hunting/conservation organizations such as: Sportsmen for Fish

and Wildlife, Mule Deer Foundation, Rocky Mountain Elk Foundation, Utah Bowman's Association and others

3. Explain cougar-prey interactions through radio, television and print media.
4. Periodically assess big game hunter opinions about the effect of cougars on big game populations.

Objective 4:

Educate all cougar hunters on how to determine the age/sex of cougars to increase harvest selectivity and continue to educate Division employees tagging cougars.

Strategies:

1. Continue to publish information about sex and age identification techniques in the Cougar Guidebook and online.
2. Evaluate the effectiveness of the voluntary online orientation course to determine if desired results are being obtained.
3. Modify the harvest reporting form to gather data on effectiveness of orientation course.
4. Survey unsuccessful cougar hunters to gather data on the effectiveness of orientation course.
5. Obtain high quality digital photographs of cougars for sex and age identification education purposes. Examples: treed cougars, lactating females and track and paw sizes for sex and age differentiation.
6. Explore ways to reward hunters for selective harvest.
7. Train Division employees responsible for tagging cougars at least biannually.

Objective 5:

Increase and develop educational opportunities for sportsmen and other user groups prior to the RAC and Board process

Strategy:

1. Hold informational meetings on recommendations prior to taking them through the public process.

Population Management**Objective 1**

Maintain cougar populations within their current statewide distribution in a manner that: 1) recognizes the large geographic and temporal scales at which cougar populations operate, 2) stresses the importance of social structure for long-term viability, 3) directs hunter pressure on a management unit or subunit basis, and 4) manages cougar abundance with respect to their ungulate prey species.

Performance Targets:

- **Primary Target** - Proportion of all females in the harvest < 40% (within a management unit averaged over 3 years)
- **Secondary Target** – Proportion of cougars ≥5 years old in harvest between 15-20% (within a management unit averaged over 3 years)

Strategies (See Attachment A: Cougar Management Tree):

1. Implement the management system based on data for the previous 3 years for all units that mule deer and bighorn sheep triggers are not met as follows:

a. Select limited entry, harvest objective, or split strategy based on the needs of the unit and what type of hunting pressure is appropriate.

b. If proportion of all females in the harvest $<40\%$ then:

1). Proportion of cougars ≥ 5 years old in harvest $\geq 20\%$ then permits/quota may increase.

2). Proportion of cougars ≥ 5 years old in harvest $=15-20\%$ then permits/quota may be maintained or decrease/increase at biologist discretion.

3) Proportion of cougars ≥ 5 years old in harvest $<15\%$ then permits/quota may decrease.

4) Small sample sizes may bias both sex and age data. In these instances the biologist may increase, decrease or maintain permits at their discretion.

c. If proportion of all females in the harvest $\geq 40\%$ then:

1). Decrease permits/quota

Objective 2:

Be responsive to prey population objectives. Manage cougar populations to reduce predation on big game herds that are below objective when cougar predation is considered a potential limiting factor for herd growth or recovery.

Consider development of a predator management plan and implement according to UDWR policy W1AG-4 if annual recommendations are not meeting the needs of the unit.

Performance Targets for units where mule deer or bighorn sheep triggers are met (See Attachment B: Predator Management Tree – Mule Deer):

- **Primary Target** - Proportion of female cougars in the harvest $\geq 40\%$ (within a management area averaged over 3 years)

Strategies:

1. Implement the management system based on data for the previous 3 years for all units that mule deer and bighorn sheep triggers are met as follows:

a. Select limited entry, harvest objective, or split strategy based on the needs of the unit and what type of hunting pressure is appropriate.

b. If mule deer populations are $<90\%$ of unit or subunit objective and conditions listed in 1) or 2) below are met:

1). Adult deer survival on the representative unit $<84\%$ for 2 of the past 3 years and the herd unit is demonstrating a declining population trend (λ is <1) or;

2). Adult deer survival on the representative unit is $<80\%$ in the previous year and the herd unit is demonstrating a declining population trend (λ is <1).

i. Proportion of all females in the harvest $<40\%$ then permits/quota may be increased and may not exceed $+100\%$ of the previous years permits/quota.

ii. Proportion of all females in the harvest $\geq 40\%$ then permits/quota may be maintained at the current level.

c. If mule deer populations are <65% of unit or subunit objective in the previous year.

1). Proportion of all females in the harvest <40% then permits/quota may be increased and may not exceed +100% of the previous years permits/quota.

2). Proportion of all females in the harvest \geq 40% then quota/permits should be maintained at the current level.

d. Bighorn sheep populations where any of the following conditions are met (See Attachment C: Predator Management Bighorn Sheep and Transplants):

1). Population is <90% of unit or subunit objective or;

2). Bighorn sheep population is below viable levels of <125 animals.

i. Proportion of all females in the harvest <40% then permits/quota may be increased and may not exceed +100% of the previous years permits/quota.

ii. Proportion of all females in the harvest \geq 40% then quota/permits may remain the same.

e. When a bighorn sheep, mountain goat, or mule deer transplant or reintroduction will occur in the next year then (See Attachment C: Predator Management Bighorn Sheep and Transplants):

i. Proportion of all females in the harvest <40% then permits/quota may be increased and may not exceed +100% of the previous years permits/quota.

ii. Proportion of all females in the harvest \geq 40% then quota/permits may be maintained.

f. Evaluate ungulate population response annually (based on 3 year average) to determine the need to continue or discontinue predator management direction.

g. When a split unit transitions from limited entry to harvest objective the quota will equal the number of limited entry permits that were not filled during the limited entry season.

h. Bighorn sheep only management areas are management units that don't have an appreciable deer population. On these units the cougar prey base consists primarily of bighorn sheep. These units consist of low elevation primarily snow-free habitat and as a result too few cougars are harvested to analyze relative to performance targets. No quota is assigned to these management units (San Rafael, Kaiparowits, Book Cliffs-Rattlesnake).

i. Offer multiple permits or allow harvest of up to 2 cougars on units/subunits where harvest and access is limited.

j. In special circumstances where it is determined that a cougar may be preying on bighorn sheep the Division may use DWR employees, contract with USDA Wildlife Services (WS), or hire/authorize a contractor outside of the agency to remove the offending animal. The director may authorize removal of depredating cougars as needed.

Chronic Depredation Criteria:

- The depredation is occurring on private land and;
- The depredation has occurred in the same area for 3 consecutive years or 4 out of 5 years and;

- WS has attempted to remove the offending animal(s) but has been unsuccessful.

Strategies:

1. WS increase efforts and/or bring cougar specialists in from other areas to help resolve chronic depredation problems – option to implement after 2 years.
2. Division request that WS continue efforts to remove the offending animal after livestock have left the area, or before they have arrived to resolve chronic depredation problems – option to implement after 2 years.
3. The Division may authorize the livestock owner, an immediate family member or an employee of the owner (not someone specifically hired to take cougar) to remove the offending animal beyond the 72hr period stipulated in Utah Admin Code R657-10-21.

Conditions to the authorization to remove a cougar(s) should include:

- i. The time period during which the cougar(s) can be removed;
- ii. A description of the geographic area from which a cougar(s) can be removed;
- iii. A description of the cougar(s) authorized to be removed (i.e. male, female.....)
- iv. Other relevant conditions

Any cougars removed are considered depredating cougars and are subject to the reporting and possession requirements in the Utah Administrative Code R657-10-21.

4. DWR and WS will work with the houndsmen community to develop a list of houndsmen willing to volunteer their time to help livestock owners resolve chronic depredation issues.

Cougar Research

Objective:

Increase base understanding through continued research designed to address questions relative to cougar management in Utah. Potential research projects are listed below in order of priority.

High Cost Research Priorities (> \$100,000 / Year)

1. Investigate alternative population estimation techniques for cougars using the relationships between primary productions, ungulate abundance, and cougar home range size.
2. Radio collar cougars in bellwether units to obtain adult survival estimates to monitor population trends. Consider using bellwether mule deer units to evaluate efficacy of predator control on mule deer survival.
3. Prey switching in cougars. In multi-prey systems, do cougars switch to alternative prey (e.g. livestock, elk, or feral horses) when mule deer numbers decline? To what extent is cougar predation additive to other sources of mule deer mortality?
4. Cougar habitat use and predation behavior in multi-prey communities (bighorn sheep, mule deer, elk, feral horses). Can we predict bighorn vulnerability to cougar predation in space?
5. Indirect effects of predation risk on foraging behavior of livestock.

Low to Moderate Cost Research Priorities (< \$100,000 / Year)

1. Examining DWR livestock depredation records to evaluate the influence or efficacy of cougar removal on depredation rates. Does cougar removal affect depredation losses in subsequent years? How does depredation risk vary in space, i.e. are there depredation hotspots? What are the demographic patterns in cougar depredation of livestock – cattle vs sheep vs. pets?

2. Examine DWR pet depredation and public safety complaints with respect to cougar management in adjacent units. Are conflicts predicatable in time and space? What are management regimes in units defined by high and low complaints?
3. To what extent can we manipulate the cougar-deer relationship through habitat manipulation? For example can we use prescribed fire to simultaneously increase forage and reduce stalking cover?
4. Evaluate cougar occupancy of military lands, national parks, and other de facto refugia during winter.
5. Modeling the long-term data set to examine cougar population ecology and demographics; population persistence; possible PhD student interested in population models.

Strategies:

1. Continue collaborative research efforts to maximize knowledge base, funding sources and available resources.
2. Explore new funding sources and ways to leverage those resources.
3. Whenever possible use Division employees enrolled in the educational assistance program to conduct research.
4. Work closely with the big game program, and where possible, develop research projects that improve knowledge and understanding of mule deer and cougar.

Re-visit prioritized list every 5 years after implementation to determine if research direction or funding change or new opportunities become available.

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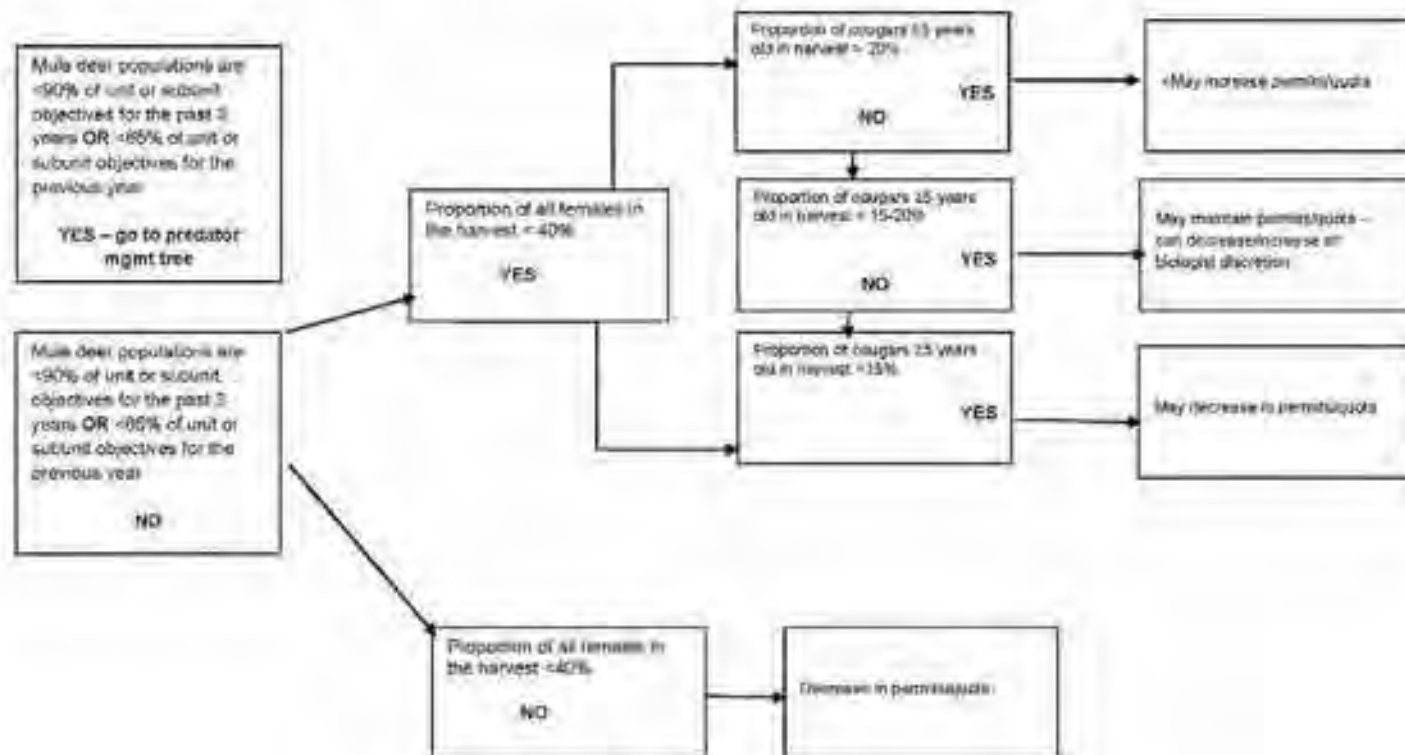
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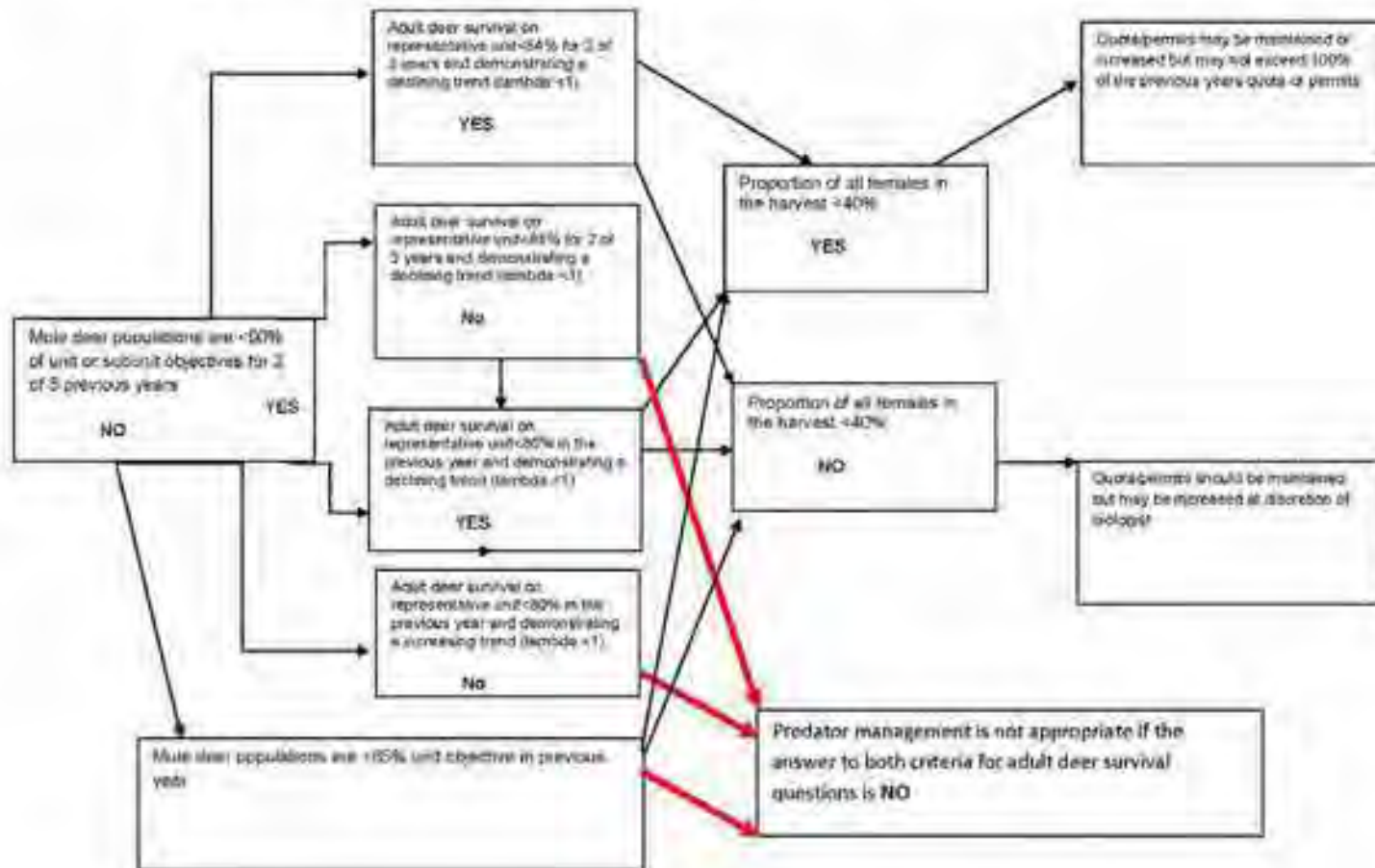
Attachment A: Cougar Management Tree

- **Primary Target** - Proportion of all females in the harvest < 40% (within a management area averaged over 3 years)
- **Secondary Target** – Proportion of cougars ≥5 years old in harvest between 15-20% (within a management area averaged over 3 years)



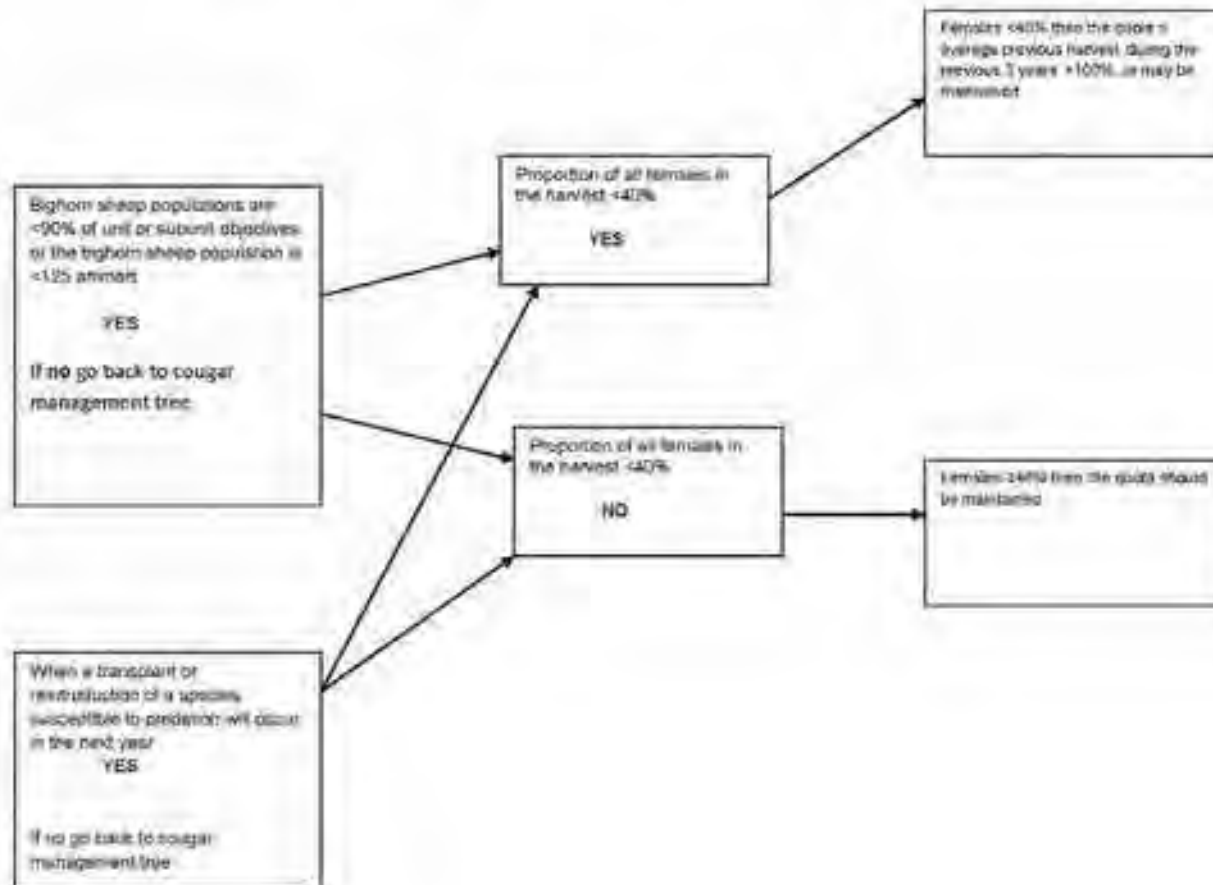
Attachment B: Predator Management Tree - Mule Deer

- Primary Target - Proportion of cougar females in the harvest $\geq 40\%$ (within a management area averaged over 3 years)



Attachment C: Predator Management Tree Bighorn Sheep and Transplants

- **Primary Target** - Proportion of cougar females in the harvest $> 40\%$ (within a management area averaged over 3 years)



Attachment D: Issues and Concerns

During the meetings of the Cougar Advisory Group the following list of issues and concerns were established by the group members. Subsequent meetings focused on discussion, perceptions, and developing, objectives, strategies and management systems to address issues and concerns.

Outreach / Education

- Need to educate the public about the relationship between cougar and prey populations and the need to integrate management of both predator and prey.
- Need to educate hunters on sex/age identification to help protect females and kittens.
- Need to educate the general public about cougars and cougar safety. Especially in communities situated along the urban-wildland interface.
- Need to improve efforts to educate sportsmen and interest groups on our decision making and recommendations process – need more education prior to RAC and Wildlife Board meetings.

Population Management / Harvest Management

- Need tools to solve non-resident issues (pursuit permits, commercial vs recreational).
- Three year plan and recommendation process was too inflexible and didn't allow for responsiveness to depredation, nuisance or population concern responses .
- Need to simplify the management criteria (performance targets).
- Revisit performance criteria.
- Need tools designed to protect all females.
- Female performance targets in previous plan made it difficult to address livestock damage and nuisance using sport harvest .
- Ecoregion/cougar management areas were too broad for hunter management.

- Eco-region/cougar management area quotas shut down entire units too quickly and didn't allow for targeted harvest to address problem areas.
- Need to harvest more females in some situations – female subquota reduces ability to manage in balance with prey.
- Need to recognize the importance of adult males in the social demographic .
- Need to recognize social structure as a predictor of population.
- Need more knowledge and information on source-sink populations.
- Does transition on split units from limited entry to harvest objective lead to over harvest.
- Does harvest objective hunting lead to over harvest of females.
- Hard to encourage harvest in areas that are difficult to hunt.
- Belief that population estimates are too high – need to reevaluate population estimates.
- Would like to require GPS location on all cougar harvests.

Predator Management

- Need to integrate cougar and prey (mule deer and bighorn sheep) management .
- Need to move away from predator management plans.
- Need for evaluation of predator management plans and their effectiveness.
- Need to reduce units under predator management and find a way to balance prey populations with predator populations.
- Need for triggers to be related to livestock depredation, deer survival and populations.

Livestock Depredation

- Need to identify the sex of depredating cougars.
- Develop a way to deal with chronic depredation problems.
- Triggers need to be related to livestock depredation and deer survival.

Research

- Compare ungulate and cougar populations
 - Develop monitoring system to measure deer herd response to variation in cougar abundance on units under predator management
- Explore mark recapture population estimates (DNA sampling).
- Explore cougar survival estimates for population management in relation to representative deer survival units.
- Need more robust population estimates.
- Identify limiting factors for predator management units.

WYOMING GAME & FISH DEPARTMENT

Mountain Lion Management Plan



**Prepared By: Trophy Game Section (Management/Research Branch),
Wyoming Game & Fish Department, Lander, Wyoming**

Sept. 7, 2006

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EXECUTIVE SUMMARY

- The goal of mountain lion management in Wyoming is to sustain mountain lion populations throughout core habitat at varying densities depending on management objectives to provide for recreational/hunting opportunity, maintain ungulate populations at established objectives or in line with current habitat conditions, and minimize mountain lion depredation to pets and livestock and reduce the potential for human injury.
- The intent of this document is to provide guidelines to direct future management efforts for mountain lion populations in Wyoming and not to specifically address local management issues throughout the state; a process that occurs during the 3 year season setting process, when hunt area specific data are presented in the annual mountain lion mortality summaries. The management approach addressed in this document favors an adaptive management process where management objectives are established based on local biological and social conditions and modified/adapted over time relative to management criteria suggesting whether or not objectives have been met, to achieve balance between predator and prey populations, and address changing social factors related to depredation incidents and human-mountain lion interactions.
- Core occupied habitats for adult mountain lions during the winter will be delineated statewide to evaluate impacts from the density of human-caused mountain lion mortalities and to evaluate potential impacts from future development projects. Local (by hunt area) and regional (by Mountain Lion Management Unit-LMU) management objectives will be developed and evaluated based on harvest data. A source-stable-sink adaptive management approach will be applied evaluating (1) density of human-caused mortalities, (2) sex-age composition of mountain lion harvest focusing on relative proportion of adult female harvest, and (3) the relative age of harvested adult females.
- Hunt area management objectives will be based on Regional desires to meet localized situations relative to maintaining low population densities (sink), stable population densities, or to maintain areas with low mountain lion mortality to serve as source areas for mountain lion dispersal into areas experiencing negative population growth (sink areas). Sink management will be applied to maintain low mountain lion densities in areas experiencing high nuisance incidents (livestock depredation, human-lion interactions) and areas where ungulate populations are believed to be depressed primarily due to mountain lion predation; stable management objectives will be implemented to sustain long term hunting opportunity; and source management objectives will be applied to areas where nuisance incidents and predation impacts to prey populations are not an issue. Management objectives at the LMU level will strive for a combination of source, stable, and sink management that will allow for the department to sustain mountain lion populations throughout core habitat at varying densities depending on management objectives.
- Status of representative source areas will be periodically evaluated to verify that these areas are functioning as source areas for mountain lion dispersal using monitoring

techniques that can be reasonably applied relative to Department budget constraints. Success of sink management to address nuisance incidents or predation pressures on ungulate populations will be evaluated over time following the adaptive management process outlined in this plan. Similarly, mountain lion population monitoring criteria will be evaluated and modified as information becomes available addressing the utility of the proposed criteria in defining source, stable, or sink mountain lion habitats.

- Hunting season structure will be based on mountain lion mortality quotas. Mortality quotas will be established for each hunt area, and the hunting season will be closed when the quota has been met. Most of the hunting seasons will run from September 1 through March 31, with the exception of a few hunt areas with chronic livestock depredations. Hunting with hounds will continue to be allowed. Hunters shall present the pelt and skull of harvested mountain lions to Department personnel within 72 hours of harvest so specific data can be recorded. These data will be used to determine the management status, age and sex structure of harvested mountain lions, distribution of mortalities, hunter effort, hunter success, and to account for and set future mortality quotas. Mortality quotas will be established every 3 years to allow sufficient time to reach management objectives and to permit adequate analysis of potential impacts of specific harvest quotas. The process by which these 3-year mortality quotas are set includes annual data analyses and summary by the Trophy Game Section, internal review and recommendations at the regional level, public review of the recommendations, and final approval by the Commission.
- The Department will continue to use a variety of options ranging from no action to lethal removal, which will be assessed on a case-by-case basis, to address mountain lion depredation on domestic livestock and pets and mountain lion/human interactions. All management actions and responses will be documented for future evaluation.
- Adaptive management will be implemented to address short and long-term management needs where appropriate, and additional research efforts will be conducted to address other management priorities as funds become available relative to other Department priorities.
- A previous draft of this management plan was revised based on comments received from 4 peer reviewers and 73 separate public comments. We thank Brad Compton, Idaho Department of Fish and Game, Fred Lindzey, Wyoming Cooperative Fish & Wildlife Research Unit-retired, Ken Logan, Colorado Division of Wildlife, Dale Strickland, Western Ecosystems Technology, Inc, Cheyenne, WY, and members of the public submitting comments for suggestions on improving this management plan. Comments from peer reviewers were evaluated and most have been addressed throughout the revised document. Comments concerning various aspects of the proposed plan (e.g. surveying all mountain lion license holders for hunter effort data, educating hunters about sexing lions in the field, including all human-caused mortality towards quotas, oppose sink management every 3 years, balance source-sink management and reducing the reporting period for harvested lions to 48 hours) were addressed and included in the plan for consideration by the Commission.

- The Department will continue to update and expand, where feasible, information and education efforts across the state including development of a website to educate hunters on sexing mountain lions in the field, and periodically conducting public attitude surveys of Wyoming residents.
- The Department will begin to survey all mountain license holders to enhance the management database.
- All human caused mountain lion mortalities will be counted towards quotas.

MOUNTAIN LION LIFE HISTORY AND ECOLOGY

Distribution

The historic range of the mountain lion was the largest of any terrestrial mammal in the western Hemisphere, with the exception of humans (Logan and Sweanor 2001). The mountain lion continues to range from the southern tip of South America to northern British Columbia (Logan and Sweanor 2001), but were apparently extirpated from the eastern US and Canada, with the exception of southern Florida, by the late 1800s to early 1900s. Between the mid 1960s and the early 1990s, mountain lion populations increased in many western states and they expanded their distribution into some of the mid-western states including Nebraska, South Dakota, and North Dakota likely due to reclassifying mountain lions from unregulated predator status to game animals and the restricted use of pesticides since the early 1970s. Similarly, mountain lions in Wyoming have increased in abundance and distribution and currently occupy most timbered and tall-shrub covered regions statewide. In the early part of the 20th century, efforts to remove mountain lions from many areas of Wyoming caused local extirpations. However, robust populations are currently found in the Black Hills of northeastern Wyoming, the pinyon-juniper country of southwestern Wyoming, and all major mountain ranges throughout the state. This reestablishment of mountain lions throughout Wyoming (and likely throughout much of their former range) is likely due to a shift in management practices and policies that favored increases in numbers and distribution (see Appendix I for mountain lion management history in Wyoming) and habitat conditions favoring increases in some prey abundance (e.g., elk, *Cervus elaphus*, white-tailed deer, *Odocoileus virginianus*).

Dispersal patterns and genetic evidence suggest mountain lion populations throughout most of the western US are well connected (Culver et al. 2000, Sinclair et al. 2001, Anderson et al. 2004). Movements of male mountain lions in excess of 1,000 km have been documented (Thompson and Jenks 2005). These long-range movements provide a very effective means of genetic transfer and population maintenance to mountain lion populations in distant regions. In addition, much of Wyoming's mountain lion habitats are extensions of mountain ranges in other states. This provides excellent connectivity to other habitats, and hence, other mountain lion populations. Overall, gene flow among mountain lion populations in the Central Rocky Mountains suggests this region exists as one large mountain lion population with rapid genetic exchange among suitable habitat patches throughout the region (Anderson et al. 2004).

Habitat Use

The broad geographic distribution of the mountain lion in North America attests to its ability to persist anywhere that provides adequate prey and cover [Cougar Management Guidelines Working Group (CMGWG) 2005]. Previous mountain lion habitat studies in the western US suggest mountain lions select conifer, deciduous timber, riparian, and tall shrub habitat types at mid-high elevations in steep or rugged terrain (Logan and Irwin 1985, Laing 1988, Koehler and Hornocker 1991, Williams et al. 1995, Dickson and Beier 2002). Tall vegetation or rugged terrain sufficient for concealment provides the necessary hiding and stalking cover for securing prey and raising young (CMGWG 2005). Mountain lions may be found in climates ranging from arid regions of desert environments to temperate rainforests of the Pacific Coast. Besides prey

availability, the only biophysical limitations for mountain lions are vast, open areas with little hiding cover and severely cold winter temperatures of northern climates (Pierce and Bleich 2003).

Despite the mountain lions broad distribution and adaptability, human impacts from development and habitat fragmentation can negatively impact mountain lion populations (Beier 1993). Increased construction of roads and homes in mountain lion habitat not only reduces the amount and quality of habitat available to mountain lions and their prey [e.g., deer (*Odocoileus* spp.) and elk (*Cervus* spp.)], but also increases human presence in these areas. Increased human activity ultimately leads to increases in mountain lion/human interactions and mountain lion deaths (CMGWG 2005). Even in sparsely human populated states like Wyoming, where most mountain lion range is still relatively contiguous, subdivisions, new road construction, and oil and gas development may negatively impact mountain lion habitats.

Mountain Lion Social Structure and Reproduction

Social behavior of mountain lions likely evolved to maximize individual survival and reproductive success (Logan and Sweanor 2001). Mountain lions are solitary carnivores exhibiting a polygynous breeding strategy where dominant males typically breed with females that reside within their home range (Murphy 1998). Resident males aggressively defend their territories against male intruders, whereas females allow more overlap, but express mutual avoidance (Lindzey et al. 1989, Ross and Jalkotzy 1992, Logan and Sweanor 2001). Size of female home ranges tend to be large enough to provide sufficient prey for themselves and their young (~50-100 km², 20-40 mi²), while male home ranges tend to be larger (~150-300 km², 60-120 mi²), overlapping several females, apparently to maximize their reproductive success (Murphy 1998). Young females commonly express philopatric behavior (remain in their natal range) upon independence, but males typically disperse from their natal range (Anderson et al. 1992, Ross and Jalkotzy 1992, Lindzey et al. 1994, Logan and Sweanor 2001). Partially due to their solitary and territorial nature and ultimately limited by prey abundance, mountain lion densities are low relative to other large mammals ranging from about 10 independent (>1 year old and self sufficient) mountain lions/1,000 km² (386 mi²) in arid climates (e.g., southern Utah, Lindzey et al. 1989) to about 35 independent mountain lions/1,000 km² in more mesic areas (e.g., the Diablo Range, California, Hopkins 1989, southwest Alberta, Ross and Jalkotzy 1992).

Female mountain lions typically produce their first litter at 2-3 years old (Anderson 1983, Ashman et al. 1983, Logan and Sweanor 2001) and may breed at any time of the year, but exhibit seasonal birth pulses. Data from 7 mountain lion studies in western North America indicate May through October are the peak months for mountain lion parturition (CMGWG 2005). Gestation lasts 82-96 days and mountain lions typically produce 2 to 4 young. The average size of 53 nursing litters documented in New Mexico was 3.0, with 13 (26%) 2-kitten litters, 26 (49%) 3-kitten litters, and 14 (26%) 4-kitten litters (Logan and Sweanor 2001). Other studies reported average litter sizes <6 months old, ranging from 2.2 in Alberta (Ross and Jalkotzy 1992) to 2.9 in Wyoming (Logan et al. 1986). Kittens are usually weaned at 2-3 months and typically remain with the female for 12-18 months before becoming independent (Pierce and Bleich 2003).

Food Habits and Prey Relationships

Mountain lion diets consist primarily of large vertebrate prey species. In much of North America, deer comprise the majority of mountain lion diets (Pierce and Bleich 2003), but other large ungulates such as elk, bighorn sheep (*Ovis canadensis*), moose (*Alces alces*), and pronghorn (*Antilocapra americana*) may also be consumed (Ross and Jalkotzy 1996, Ross et al. 1997, Murphy 1998, Anderson and Lindzey 2003). Although mountain lions primarily subsist on large ungulates, small mammals including porcupines (*Erethizon dorsatum*), lagomorphs (hares and rabbits), ground squirrels (*Spermophilus* spp.), and beavers (*Castor canadensis*) may also supplement mountain lion diets. Mountain lions also occasionally prey on domestic livestock and pets. Sheep and goats are the most commonly killed domestic livestock, but mountain lions also kill cattle, horses, and pets including dogs, and cats (CMGWG 2005).

The mountain lion can be an influential predator on some ungulate populations. Mountain lions were an important source of predation on a bighorn sheep population in Alberta (Ross et al. 1997), and were implicated in the decline of another bighorn population by causing avoidance of high quality forage (Wehausen 1996). Logan and Sweanor (2001) reported that mountain lion predation was the strongest proximate cause limiting a New Mexico mule deer (*O. hemionus*) population by slowing the rate of growth during a population increase phase, and hastening the decline of the population during drought conditions that degraded forage quantity and quality. Mountain lions have annually removed an estimated 15-20% of a mule deer population on the Kaibab Plateau, Arizona (Shaw 1980), 8-12% of a mule deer population on the Uncompahgre Plateau, Colorado (Anderson et al. 1992), and 2-3% of elk and 3-5% of mule deer in the northern Yellowstone Ecosystem (Murphy 1998). Mountain lion predation, however, does not necessarily indicate suppression or regulation of the prey population. Regulation is more likely in systems with multiple prey and multiple predator species. In these situations, predator populations that would normally decrease as their prey populations are reduced, are supported by other, more numerous prey populations (Pierce and Bleich 2003).

The potential impacts of mountain lions on prey populations are largely dependent on the condition of the prey and their habitat. In areas where prey habitat is in good condition, prey body condition will also be greater. Thus, most individuals in the prey population are likely to survive in the absence of predation. In prey populations where individuals are in poor condition due to poor forage quality, however, those individuals are more likely to die regardless of predation. Therefore, mountain lion predation on ungulates in good physical condition is more likely to be *additive* to other causes of mortality. Conversely, mountain lion predation on ungulates in poor physical condition is more likely to be *compensatory* (Logan and Sweanor 2001). In addition, healthy prey populations likely exhibit higher reproductive rates and are more likely to offset predatory regulation by producing more young than are consumed by predators. Ungulate populations exhibiting the characteristics of limitation by predation (Table 1) may benefit from increased mountain lion harvest. Populations limited mainly by habitat conditions will not likely benefit from increases in local mountain lion harvest except during the initial phases of habitat recovery allowing more rapid response of the prey population to improved forage conditions. Additionally, in situations where alternative prey species are lacking, a decline in mountain lion numbers will naturally follow the decrease in the ungulate population regardless of mountain lion harvest levels (CMGWG 2005).

Table 1. Characteristics of ungulate-prey populations regulated by predation and populations regulated by forage conditions (from the Cougar Management Guidelines 2005, page 15).

Life history characteristic	Population size mainly affected by predation ^b	Population size mainly affected by forage
Physical condition of adult females	better	poorer
Pregnancy rate of adult females	higher	lower
Pause in annual production by adult females	less likely	more likely
Yearlings pregnant ^a	usually	seldom
Corpora lutea counts of adult females ^a	higher	lower
Litter size ^a	higher	lower
Age at first reproduction for females	younger	older
Weight of neonates	heavier	lighter
Mortality of young	additive	compensatory
Age at extensive tooth wear	older	younger
Diet quality	higher	lower

^aSome species of ungulates may show limited variability in these characteristics.

^bThese traits will be evident in *any* population far below carrying capacity, even if it experiences *no* predation. The manager should have evidence that predation is a limiting factor before concluding that reducing predation would increase ungulate recruitment.

TRADITIONAL MOUNTAIN LION MANAGEMENT IN WYOMING

Mountain lion management in Wyoming (and throughout its range) has traditionally consisted of more art than science largely due to the secretive nature and naturally low densities typical of this solitary large carnivore and the rugged terrain it typically inhabits. Agencies charged with mountain lion management attempt to address the public's desires, where values vary and sometimes compete between maintaining abundant populations, providing hunting opportunity, and minimizing human conflicts by addressing depredation incidents and potential for mountain lion-human interactions. The goal of mountain lion management in Wyoming is to sustain mountain lion populations throughout suitable mountain lion habitat at varying densities depending on management objectives, and to provide for recreation/hunting opportunity, maintain ungulate populations at established objectives or in line with current habitat conditions, and minimize mountain lion depredation and potential for human injury resulting from mountain lion-human encounters.

Although population estimates have traditionally been lacking, evidence based on professional experience and opinion (i.e., local wildlife biologists, game wardens), increasing mountain lion harvest levels (Appendix II, Fig. II-1), hunter observations, sightings, and nonharvest-human caused mortalities (Appendix II, Fig. II-3) indicate mountain lion populations have increased in Wyoming over the past 30 years. In response to perceived increases in mountain lion numbers, harvest quotas were increased annually during the mid to late 1990s (Appendix II, Fig. II-1). Approaches to how we manage mountain lion populations have changed gradually since 1974 when regulated hunting was first established in Wyoming, including establishment of fall-winter hunting seasons, developing management units and hunt areas to address local management issues, requiring mandatory inspection of harvested mountain lions for annual data collection, and developing total and female harvest quotas to address hunt area management objectives (Appendix I). Traditionally, mountain lion harvest quotas were set based on perceived densities and the history of or potential for human conflicts (e.g., mountain lion-human interactions, depredation incidents, potential impacts to big game species) and adjusted based on perceived mountain population trends relative to annual harvest data, and how quickly quotas were filled each year loosely reflecting hunter effort. Although mountain lion populations in Wyoming increased under this management scheme, this general approach to mountain lion management provided managers with limited ability to determine whether or not management objectives were achieved. The previous Draft Wyoming Mountain Lion Management Plan (1997) identified the lack of data necessary to identify whether or not management objectives have been met and supported research investigating potential methods to adequately monitor mountain lion population responses to varying management prescriptions. Subsequently, mountain lion research was conducted from 1997-2003 (Anderson 2003) to investigate potential approaches for evaluating mountain lion management.

Local and Regional Mountain Lion Management and Annual Data Collection

Wyoming is currently divided into 5 Mountain Lion Management Units (LMU), which are further divided into 29 mountain lion hunt areas (Appendix III). Due to the large size of the West LMU, covering several connected mountain ranges and associated foothill winter mountain lion habitats, the West LMU is divided into 3 separate Data Analysis Units (DAUs) called the Absaroka (hunt areas 19 and 20), Wyoming Range (hunt areas 2, 14, 17, 26, and 29) and Wind River (hunt areas 3, 4, 18 and 28) DAUs (Appendix III). This subdivision provides managers improved capability to monitor the effects of harvest strategies designed to meet potentially different management objectives among these 3 regions.

Mountain lion management units primarily represent connected regions of contiguous mountain lion habitat (i.e., geographic populations), and the smaller hunt areas allow managers to address local management issues while maintaining the overall management objective for the regional population (i.e., within the LMU). The Cougar Management Guidelines Working Group (2005) recently suggested managing mountain lion populations with respect to source-sink dynamics, where source areas would be managed for positive growth and sustain sink areas where management objectives call for reducing mountain lion densities. The current hunt area and management unit structure in Wyoming lends itself well to this concept, where hunt areas within management units can be managed as source and sink subpopulations, depending on local

management issues, and can continue to support desired mountain lion population densities at landscape levels.

Mountain lion management objectives shall be based on ecological data and social conditions to ensure management strategies benefit both the species of concern and the people who are impacted by mountain lion conflicts. Mountain lion mortality data in Wyoming include information obtained annually from harvest or other documented forms of mortality [e.g., natural causes, damage removals, road kills; Appendix II]. Since 1974, hunters have been required to present the pelt and skull of harvested mountain lions to a district game warden, biologist, or a Wyoming Game and Fish Department regional office for registration. Information collected include: harvest date, location (legal description, Universal Transverse Mercator location, and hunt area), sex, lactation history (whether or not females have ever produced young from nipple characteristics; Anderson and Lindzey 2000), estimated age from tooth wear and degree of staining, and collection of teeth for cementum annuli aging, number of days spent hunting, hunting method, and number of mountain lions and mountain lion tracks observed while hunting (Appendix IV). Trainer and Golly (1992) reported 76% agreement ≤ 1 year of annuli ages compared using blind tests of 2 premolars from the same mountain lion ($n = 426$; 92% agreement for lions < 4 years old), and annuli age comparisons of known age mountain lions were 95% accurate (within 1 year; Trainer and Golly 1992:14/15, Anderson 2003:6/6). In addition to mortality data, the Wyoming Game & Fish Department compiles data on mountain lion observations, sign, depredations, human interactions and gauges social concerns through public meetings, hunter surveys, public attitude surveys, and contacts with the public.

Mountain lion mortality data are used to assess: (1) population status, (2) age and sex structure of harvested mountain lions, (3) distribution of mountain lion mortalities, (4) effort expended per mountain lion harvested (Appendix II, Fig. II-2), and (5) to account for and set mortality quotas. Sex and age composition of mountain lion harvests are useful to assess mountain lion population trends (Anderson and Lindzey 2005), and the age of reproductive females can be useful to examine the reproductive potential of mountain lion populations (Stoner 2004, Anderson and Lindzey 2005); populations maintaining older-age females have higher reproductive potential, and thus resiliency, than populations where female survival is reduced. Recording distribution of mountain lion harvest and other human-caused mortalities allows assessment of potential source areas where little or no mountain lion mortality occurs, and sink areas where mountain lion mortalities may be relatively high. Changes in hunter effort may indicate changes in mountain lion densities, assuming the time required to harvest a mountain lion is related to the number of mountain lions in an area. This information is used to establish total and/or female mortality quotas by hunt area every 3 years. Setting mountain lion seasons every 3 years allows sufficient time for management reductions in areas with sufficient hunter access (Anderson and Lindzey 2005) and recovery for previously suppressed populations (Logan and Sweanor 2001, Anderson and Lindzey 2005). The process by which these 3-year mortality quotas are set include (1) annual data analyses and summary by the Trophy Game Section, (2) internal regional review and recommendations provided by each of the 7 Wyoming Game and Fish regions, (3) a public input process, and (4) final hunting season regulations submitted from the regions for action to the Wyoming Game and Fish Commission.

Mountain Lion Hunting Season Structure

Regulation of sport hunting for mountain lions in the western states typically follows 1 of 3 harvest strategies including general seasons, limited entry, and harvest quota systems (CMGWG 2005). General seasons allow unlimited hunting of mountain lions of either sex, and the only restrictions include the number of licenses issued per hunter (typically 1 per season) and timing and length of the hunting season. General seasons provide the highest hunting opportunity, but likely result in uneven hunting pressure (i.e., accessible areas are heavily hunted and inaccessible areas are not) limiting control over harvest level, composition of the harvest, and distribution of the harvest. Limited entry programs limit the number of hunters per hunt area through limited license allocation, using either first come first serve or lottery license sales. This approach is most limiting in terms of hunter opportunity, but can be useful to disperse hunting pressure, control harvest levels, and may increase the opportunity for hunters to be selective (increasing male harvest) in areas where hunting pressure is low. Harvest quota management requires setting a limit on the total harvest and/or number of female mountain lions harvested from an area. The hunting season is closed in an area once the harvest quota has been met. Hunters are required to monitor status of the hunting season by calling a harvest quota hotline. Advantages to the quota management approach are that hunting opportunity remains high and harvest distribution and level can be regulated. Female sub quotas can be used to support a management objective of sustaining harvest levels with reduced impact on the mountain lion population. Potential disadvantages of harvest quota management include the number of hunters per hunt area is unlimited until quotas are filled and harvest quotas may be exceeded if more than 1 mountain lion is harvested the same day the quotas is filled. Harvest quota management has traditionally been used in Wyoming for mountain lion management.

Methods of Mountain Lion Hunting

Mountain lion hunting in Wyoming is accomplished using various hunting methods including opportunistic harvest (spot and stalk) during big game (e.g., elk and deer) seasons, calling mountain lions using predator calls, and tracking and baying mountain lions using trained hunting dogs (i.e., hunting with hounds). The majority of mountain lions harvested annually in Wyoming are taken by hunting with hounds (typically >90%).

Some groups and individuals, both nationally and locally (Gasson and Moody 1995), are concerned about the use of dogs as a hunting method for mountain lions, and some states have recently banned hunting with hounds (e.g., Oregon, Washington). In states where hunting with hounds is not allowed, opportunistic mountain lion hunting (during big game seasons, predator calling) appears comparably successful based on harvest levels observed in Washington and South Dakota. Results from Washington (Martorello and Beausoleil 2003) suggest opportunistic mountain lion hunting is less selective than hunting with hounds and/or female mountain lions are more vulnerable to opportunistic hunting; relative female harvest levels increased from 42% to 59% when hunting with hounds was banned in Washington (mean annual harvest before hound hunting ban = 157 and after hound hunting ban = 199, but harvest rates were not significantly different due to annual harvest variability).

Mountain lion harvest data from Wyoming the past 5 years suggest an average of 32% of successful hound hunters (range = 25-44%; mean total lion harvest from hunting with hounds = 176/year) report being selective while mountain lion hunting and averaged 1.8 days longer in the field than unselective hunters (4.8 days versus 3.0 days). Harvest comparisons indicate on average 49% of unselective and 32% of selective hunters harvest females each year (mean total female harvest = 44%), averaging 9 fewer females and 9 additional males harvested by selective hound hunters in Wyoming annually. Although selectivity reduces female mountain lion harvest, it does not completely explain differences observed between Washington and Wyoming. These differences likely also relate to differences in mountain lion vulnerability between hunting methods.

Anderson (2003) observed that nightly movement distances from Global Positioning System (GPS) data averaged over 3 times longer for male mountain lions than for females (mean end-point distance = 4.6 km versus 1.5 km, 2.9 mi versus 0.9 mi). These longer distance movements expose males more than females to hunting methods where tracking is involved (i.e., hunting with hounds). Opportunistic hunters who do not track mountain lions while hunting are also more likely to harvest the less mobile and more abundant sex (typically females, CMGWG 2005:40) because relative abundance rather than movement patterns drive harvest vulnerability when mountain lions are hunted opportunistically. In addition, hunters with hounds have an increased ability to avoid family groups by detecting young while tracking mountain lions, whereas opportunistic hunters have limited opportunity to determine if young are present.

Potential for Orphaning Young

Because mountain lions can breed and reproduce any time of the year, orphaning of young can result from the harvest of female mountain lions with young. This issue draws emotionally negative responses from some segments of the public and deserves formal appraisal of the potential biological consequences of orphaning young from the harvest of adult female mountain lions. Wyoming law prohibits the harvest of mountain lions accompanied by young, but females may not be accompanied by young while searching for prey (Barnhurst and Lindzey 1989), and therefore may mistakenly be harvested by mountain lion hunters.

Number of mountain lion litters orphaned from hunting can be estimated if data are collected addressing the number of adult females harvested annually. All mountain lions harvested in Wyoming are subjected to mandatory inspection where sex, age, and lactation history data (from nipple characteristics; Anderson and Lindzey 2000) are collected to determine the number of subadult (estimated age <4 years old and have never nursed young) and adult females (nipple characteristics suggest previous lactation and/or estimated age >3 years old) harvested each year. Logan and Sweanor (2001) reported that on average 50% of adult females reproduce and 75% were with dependent young each year. Thus, about 25% of adult females are without young and 25% are with yearlings. Because young may become independent as early as 12 months old or earlier and average dispersal age is about 14-15 months (Anderson et al. 1992, Sweanor et al. 2000), it is unlikely yearling survival is influenced by death of their mother, but survival of young ≤12 months old is likely reduced. Applying these assumptions, timing of female mountain lion harvest, and estimates of monthly birthing rates we can estimate the number of litters orphaned each year due to hunting. Two Wyoming mountain lion studies identified birth

month for 31 litters in north central ($n = 10$, Logan 1983) and southeast Wyoming ($n = 21$, Anderson 2003) and provide estimates of monthly birth rates for Wyoming mountain lions (Table 2). Female harvest of both age classes (non-reproducing subadults, reproductive adults) averaged 88 the past 5 years (fall 2000-spring 2005) and averaged 32 adult females (Table 3). Assuming 50% of reproductive females produce young each year, we estimated about 16 litters ≤ 12 months old may be orphaned in Wyoming annually due to harvest of adult female mountain lions (Table 3).

Table 2. Monthly birth rate from 2 Wyoming mountain lion studies.

Birth month	Number of litters			Monthly birth rate
	North-central, Wyo. ^a	Southeast, Wyo. ^b	Total	
January	0	1	1	0.032
February	0	1	1	0.032
March	0	0	0	0
April	0	1	1	0.032
May	2	1	3	0.097
June	0	4	4	0.129
July	0	3	3	0.097
August	2	5	7	0.226
September	2	1	3	0.097
October	0	1	1	0.032
November	3	2	5	0.161
December	1	1	2	0.065

^aFrom Logan 1983.

^bFrom data collected by Anderson 2003.

This annual estimate of the number of mountain lion litters orphaned in Wyoming may be high (i.e., assumes 50% of adult females are with young when harvested) because our approach ignores the possibility of hunters detecting and passing females with young while hunting, therefore shifting the harvest toward barren females, which likely occurs at some level when mountain lion tracks are followed in the snow while hunting with hounds. To investigate the estimate, we compared the average number of lactating females harvested the past 5 years (mean = 2.6, range 1-3/year) to that expected when compared to data from Tables 2 and 3. Assuming juvenile mountain lions quit nursing at 2-3 months of age (Pierce and Bleich 2003), we would expect annual harvest of lactating females to range somewhere between 2.8 and 4.7. Whether the lower than expected harvest of lactating females is due more to hunter selectivity or reduced

vulnerability resulting from the more sedentary nature of young family groups is unknown but further indicates that some degree of harvest selectivity is occurring.

Based on the estimate of orphaned litters from average adult female mountain lion harvest in Wyoming the past 5 years, 8.7 litters <6 months old and 7.5 litters 6-12 months old (Table 3) would be orphaned in a given year. Survival of orphaned young <6 months old is unlikely, but survival of orphaned young 6-12 months has been documented during at least 3 mountain lion studies (Lindzey et al. 1989, Logan and Sweanor 2001, Anderson 2003) suggesting about 71% survival for this age group; total sample size from the 3 studies was small, resulting in 5 of 7 young orphaned at 6-10 months old surviving. If we assume on average 2 kittens/litter survive to independence (Logan and Sweanor 2001), orphaned young <6 months do not survive, and about 71% of orphaned young 6-12 months old survive, the estimated biological impact to Wyoming mountain lion populations would be an average loss of about 22 juvenile mountain lions annually [$2 \times 8.7 = 17.4$ young <6 months old, $(2 \times 7.5) \times 0.29 = 4.4$ young 6-12 months old]. Based on mountain lion occupancy throughout most timbered and shrub-covered habitats statewide, this level of loss is biologically insignificant, but is still a concern to some segments of the public. If opportunistic hunting increased and hunting with hounds were reduced, we would expect the actual number of young being orphaned to increase because of the apparent increased vulnerability and the higher proportion of females harvested when compared to hunting with hounds (Martorello and Beausoleil 2003).

Table 3. Monthly female mountain lion harvest in Wyoming (recent 5 year average), and estimated number of litters orphaned (<6 months old, 6-12 months old) from adult female harvest.

Month	Mean total female harvest	Mean adult female harvest	Est. mean No. of females w/young ^a	Est. mean No. orphaned litters <6 months old ^b	Est. mean No. orphaned litters 6-12 months old ^c
Sept.	1.4	0.4	0.2	0.12	0.08
Oct.	6.0	2.4	1.2	0.77	0.43
Nov.	17.2	6.0	3.0	1.74	1.26
Dec.	26.4	8.6	4.3	2.64	1.66
Jan.	15.6	6.2	3.1	1.80	1.30
Feb.	15.8	5.8	2.9	1.12	1.78
Mar.	6.0	3.0	1.5	0.48	1.02
Total	88.4	32.4	16.2	8.67	7.53

^aAssumes 50% of adult females reproduce annually (Logan and Sweanor 2001).

^bEstimated number of females w/young \times sum of previous 5-month birth rate from Table 2.

^cEstimated number of females w/young – estimated number of litters <6 months old.

Mountain Lion Habitat Management

Mountain lions are habitat generalists evident in their broad geographic distribution ranging throughout a variety of habitat types in much of the western hemisphere. The primary habitat component necessary for mountain lion survival includes some form of hiding cover for securing large prey (e.g., ungulates) and raising young. Although open vegetative communities are rarely used, mountain lions are found in virtually all other vegetation types including coniferous and deciduous forests, woodlands, swamps, savannahs, chaparral, riparian forests, desert canyons and mountains, and semi-arid shrub lands (Hansen 1992). In Wyoming, Logan and Irwin (1985) reported that mountain lions preferred mixed conifer-curleaf mountain mahogany (*Cercocarpus ledifolius*) habitats in rugged terrain, and Anderson et al. (in review) reported mountain lion use of timbered and tall-shrub covered regions occurring near the base of mountain ranges during winter.

Mountain lions, depend on healthy prey populations (e.g., deer, elk), therefore, habitats supporting abundant prey are also important to mountain lion populations. Habitat protection and improvement projects are currently in place for ungulate populations in Wyoming (Wyoming Game & Fish Department 2001), which will undoubtedly benefit mountain lion populations. In addition, Anderson et al. (in review) recently developed a mountain lion habitat model and efforts are currently in place to delineate core winter mountain lion habitat statewide (Fig. 1). Current habitat projects for mountain lion prey species and application of the mountain lion habitat model allow evaluation of potential impacts of proposed development projects to habitats supporting mountain lions and their prey.

Mountain Lion Population Monitoring

Monitoring Mountain Lion Population Trend: Although mountain lion populations have previously been monitored with intensive capture efforts over relatively small areas, reliable and affordable techniques to monitor mountain lion populations for large-scale management programs are lacking. Mountain lion management has traditionally employed harvest strategies with little understanding of the quantitative effect differing harvest levels have on mountain lion population demographics. Sex and age classes of mountain lions exhibit different and relatively predictable movement patterns, where males move longer distances than females and subadults (1-2.5 years old) generally move longer distances than adults (Barnhurst 1986, Anderson 2003). Conceptually, the likelihood of a specific sex or age class of mountain lion being harvested would reflect its relative abundance in the population and its relative vulnerability based on daily movement patterns. In areas where dogs are used to track mountain lions, those mountain lions that typically move longer distances would most likely be detected first (males/subadults). The least vulnerable individuals (adult females) should become prominent in the harvest only after the population has been reduced in size by removal of more vulnerable/available mountain lions. Anderson and Lindzey (2005) tested these predictions applying varying levels of hunter harvest and found harvest composition to be predominantly subadults for a high-density population with low harvest levels, shift to adult males as harvest levels increased, and then a shift from adult males to adult females with continued high harvest as the population declined. When harvest levels were reduced, composition of the harvest returned to primarily subadults. The male segment of the reduced population recovered within 2 years primarily due to male immigration

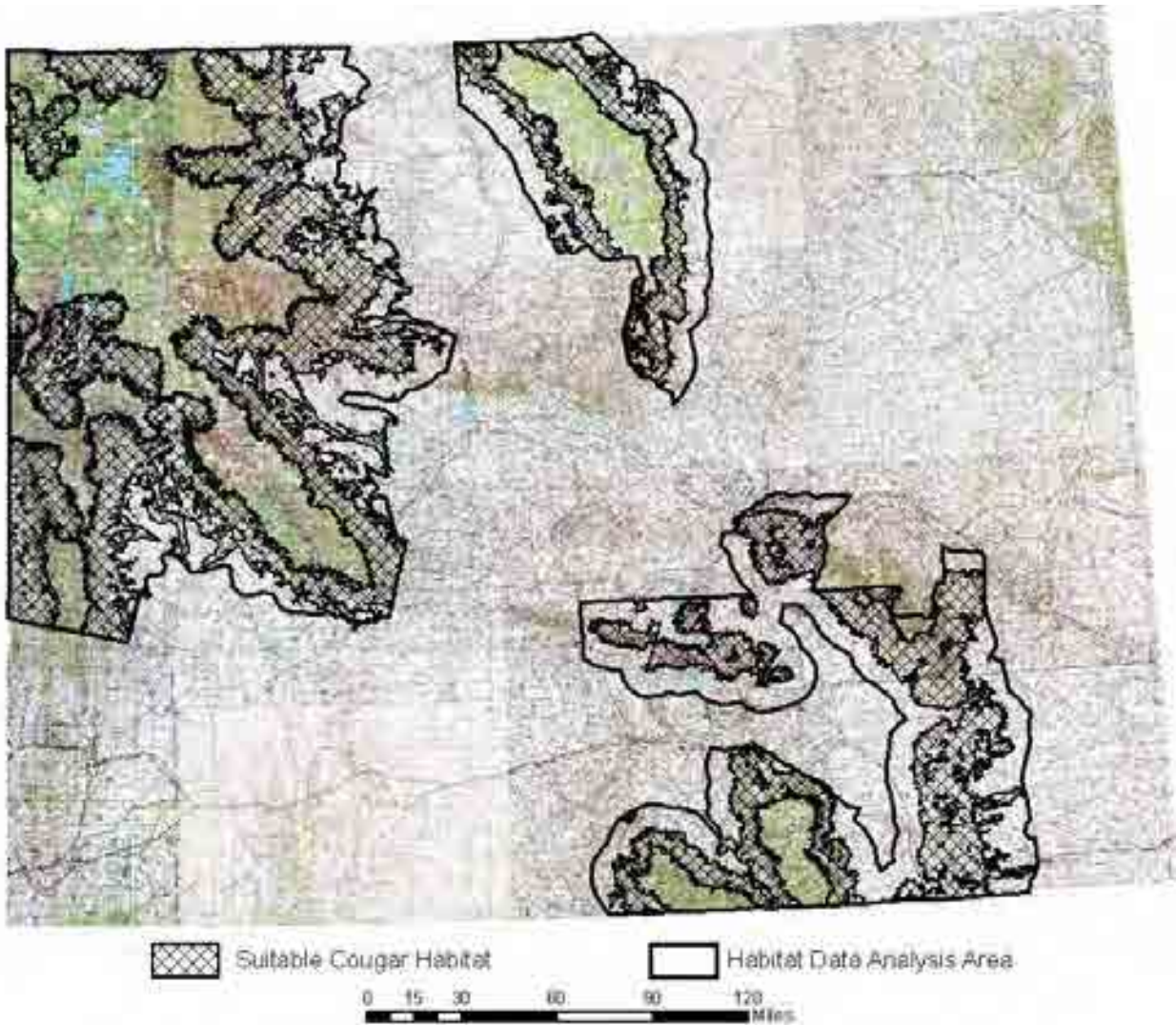
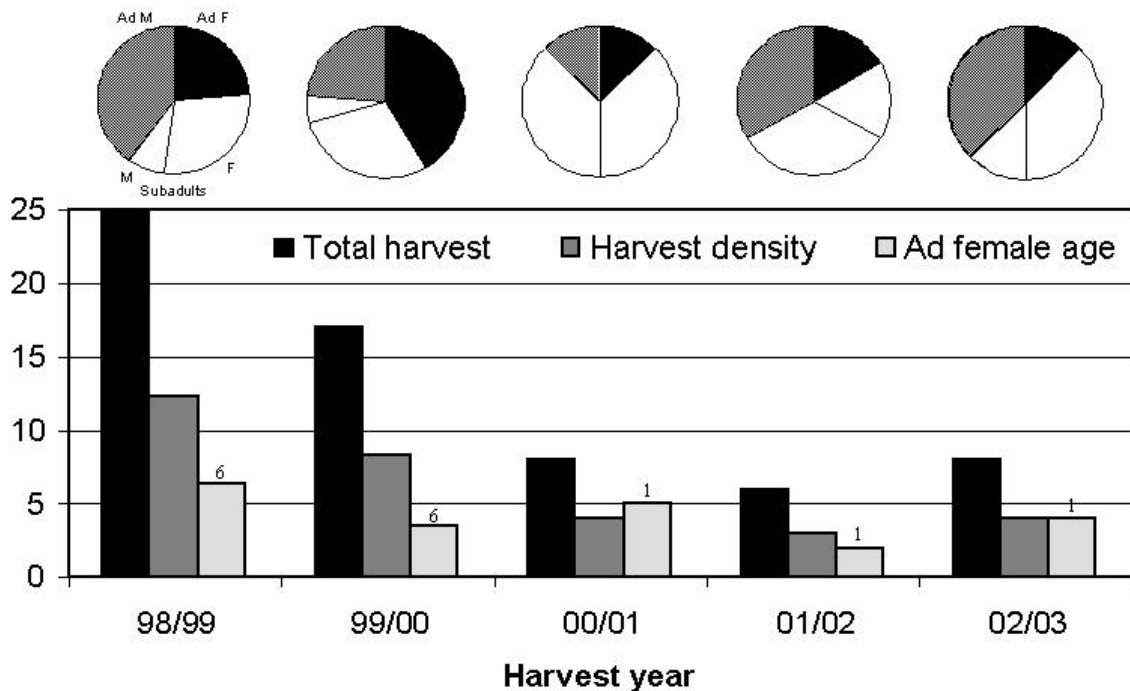


Figure 1. Wyoming mountain lion winter habitat based on model predictions for those portions of Wyoming with suitable vegetation data available for analyses (Anderson et al. in review). Winter mountain lion habitat represents areas suitable for resident adult mountain lions and not necessarily transient subadults (i.e., core mountain lion habitat). Background represents USGS 1:250,000 scale maps. Mountain lion habitat analyses will be completed for areas outside the habitat data analysis area (e.g., northeast and southwest Wyoming) when sufficient vegetation data layers are developed for those regions of the state.

from other populations and the female segment within 3 years from an increased number of females producing young within the population (Anderson and Lindzey 2005).

We compared harvest composition and age of harvested adult females from the Snowy Range (Fig. 2; Anderson and Lindzey 2005) to 2 other areas in Wyoming (Fig. 3; Star Valley and the Laramie Range) where management objectives called for increasing harvest levels to reduce mountain lion populations (i.e., where comparable data were available). We then applied the

Snowy Range harvest composition, total harvest, harvest density, and adult female age



Snowy Range pre & post-hunting season cougar population estimates

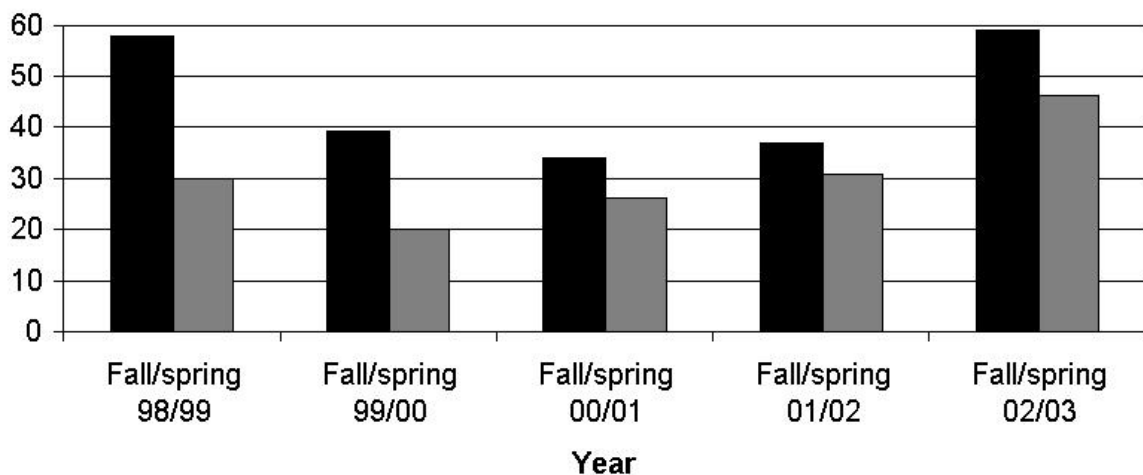


Figure 2. Sex/age composition of mountain lion harvest (pie charts), total harvest, harvest density (mountain lions/1,000 km²), and mean annuli age of adult females (top bar graph) and pre and post-hunting season mountain lion population estimates (bottom bar graph; Anderson and Lindzey 2005) from the Snowy Range, Wyoming, 1998-2003. Numbers above adult female age represent sample size. Note initial high harvest density (>12 mountain lions/1,000 km²), decline in adult male harvest, increase in adult female harvest, and decline in age of harvested adult females as the population decreased in size. Also note low harvest densities (<5 mountain lions/1,000 km²) and low adult female harvest levels during population increase.

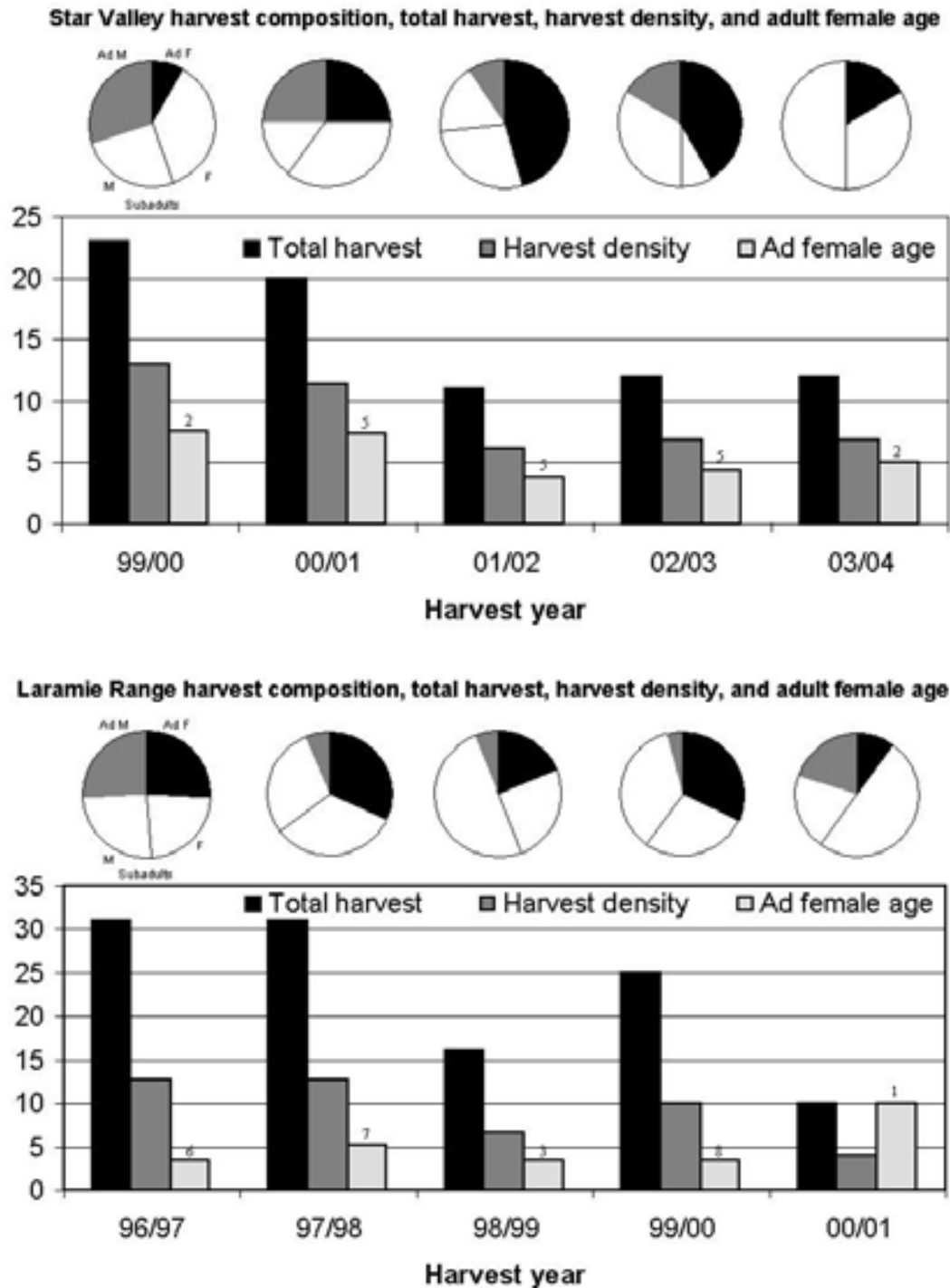


Figure 3. Sex/age composition of mountain lion harvest (pie charts), total harvest, harvest density (mountain lions/1,000 km²), and mean age of adult females harvested from Star Valley (hunt area 26), Wyoming, 1999-2004 (top bar graph) and from the Laramie Range (hunt areas 6 and 27), Wyoming, 1996-2001 (bottom bar graph). Numbers above adult female age represent sample size. Mountain lion harvest was increased >40% during the first harvest year in each area to achieve the management objective of reducing mountain lion populations.

Wyoming mountain lion habitat model (Anderson et al. in review; Fig. 1) to evaluate harvest densities among areas. The Snowy Range mountain lion population declined about 33% (fall population estimates) following a harvest density of 12.3 mountain lions/1,000 km² (386 mi²; 1998/99 harvest year) and continued to decline another 13% following a harvest density of 8.4 mountain lions/1,000 km² (386 mi²; 1999/00 harvest year). Harvest composition shifted from primarily adult males to adult females and mean annuli age of harvested adult females declined from 6.3 to 3.6 years old as the population declined (Fig. 2). The Snowy Range mountain lion population recovered to previous levels following a 3-year period where harvest densities were between 3.0-4.0 mountain lions/1,000 km² (386 mi²) and harvest composition consisted primarily of subadults, buffering the adult female segment of the population during recovery (2000/01-2002/03 harvest years; Fig. 2). We noted similar progressions in harvest density, harvest composition, and mean age of harvested adult females for Star Valley and the Laramie Range (Fig. 3), except that harvest composition shifting from adult males to adult females was more gradual in Star Valley. Harvest densities remained moderate (typically between 6-7 mountain lions/1,000 km²) following initial high harvest densities (>10/1,000 km²) in both areas, and older age females (>5 years old) were not evident in the harvest until the second year of high harvest density in the Laramie Range. The more gradual increase in adult female harvest for Star Valley is likely due to this area being more connected to adjacent mountain lion habitat than the Snowy or Laramie ranges (i.e., more resilient to mountain lion harvest allowing animals from adjacent areas to replace harvested animals). Based on relatively high adult female harvest and intermediate harvest densities (Fig. 3), Star Valley and Laramie Range mountain lion populations were likely maintained at low-moderate densities during the periods examined.

Population Estimation Methods: Obtaining accurate and precise estimates of mountain lion population size for each managed population can be logistically and financially challenging, limiting application of estimation methods to relatively small areas every several years. Methods that have been evaluated or hold promise for estimating mountain lion populations for large-scale management programs include ground-based track surveys, sampling mountain lion tracks during helicopter surveys (i.e., helicopter probability sampling; Van Sickle and Lindzey 1991), and DNA or camera-based mark-recapture efforts. Application of DNA or camera-based mark-recapture methods to estimate mountain lion populations is currently limited because there does not appear to be a reliable attractant for luring mountain lions into hair collection or photo detection sites and individual identification of mountain lions from photos appears unreliable for the camera approach. Until these methods are further developed for mountain lions, track surveys and helicopter probability sampling mountain lion tracks appear most promising in estimating mountain lion populations for management application.

Track surveys have been used to monitor mountain lion populations in California (Smallwood 1994, Smallwood and Fitzhugh 1995) and Arizona (Cunningham et al. 1995). This method requires transect sampling areas where mountain lion tracks are detectable and provides presence-absence data with confidence interval estimates. Beier and Cunningham (1996) reported that sampling 140 and 110 8-km-long transects would be required to detect 30% and 50% population declines, respectively (80% power, $\alpha = 0.05$). The difficulty in implementing track surveys is ensuring transects are well distributed throughout the population in areas where access may be limited and the unpredictability of favorable tracking conditions. The level of

effort required to detect useful population changes likely limits application of this method to once every few to several years.

Becker (1991) and Becker et al. (1998) addressed helicopter probability sampling of snow tracks to estimate lynx and wolf population size in Alaska. This method requires sampling animal tracks during helicopter surveys and then following tracks from beginning to end to estimate the probability of detection for each track observed during surveys, and therefore requires consistent snow conditions for the duration of the survey. Helicopter probability sampling provides population and confidence interval estimates derived from the inverse of the detection probabilities for tracks in the sample. Van Sickle and Lindzey (1991) applied this method to a low-density Utah mountain lion population of known size and obtained an accurate but imprecise (high variance) population estimate. Anderson et al. (2003) investigated this method further using computer simulations of mountain lion GPS data (≤ 6 locations/night) to simulate mountain lion tracks and reported that mountain lion population changes of 15-30% could be detected (90% probability) for medium-high density mountain lion populations (23-35 independent mountain lions/1,000 km² or 386 mi²) depending on sampling effort (transects spaced 2 to 3 km apart). Both Becker (1991) and Anderson et al. (2003) noted the logistical difficulty and added expense of completely following tracks during surveys and suggested using telemetry data from radiocollared animals in the population or GPS movement data from similar habitat types during similar seasons to estimate track lengths. Anderson et al. (2003) noted that an area of about 2,000 km² (771 mi²) could be surveyed in 2 helicopter days for about \$8,000-\$10,000. Thus, helicopter probability sampling mountain lion populations would be limited to relatively small areas and likely only affordable to management agencies every few to several years.

ADAPTIVE MOUNTAIN LION MANAGEMENT APPROACH FOR WYOMING

Mountain Lion Hunting Season Structure, Hunting Methods, and Hunter Effort Indices: Since 1980, mountain lion harvest in Wyoming has been controlled using harvest quota management. Harvest quota management maximizes management flexibility by maintaining high hunting opportunity and controlling harvest by assigning total and sometimes female subquotas by hunt area depending on local management objectives. Rarely are harvest quotas exceeded in Wyoming, but heavily roaded areas are more prone to multiple hunters harvesting mountain lions at the end of the season thereby exceeding harvest quotas. If exceeding harvest quotas becomes a recurring problem, limited entry seasons could be established in those areas or quotas could be adjusted anticipating additional harvest similar to past seasons.

Mountain lion hunting seasons in Wyoming typically occur from September 1 through March 31 lasting 212 days. Year round seasons are established in 2 areas with high depredation incidents to provide opportunity for licensed hunters to take depredating mountain lions as a substitute for removal by agency personnel. Most mountain lion harvest (>90% annually) occurs during the winter months (November-March) when snow cover provides optimal tracking conditions. Although few mountain lions are harvested during September and October, this period provides hunting opportunity for hunters opportunistically during big game seasons or using predator calls.

Although some individuals and groups criticize the use of hounds for hunting mountain lions, this hunting method is an efficient management tool, which allows optimal dispersal of hunting pressure and minimizes harvest of adult females primarily due to vulnerability differences between hunting methods. Tracking mountain lions while hunting with hounds also increases the opportunity for hunters to detect and avoid family groups.

Currently, hunting information is only recorded from successful hunters when registering harvested mountain lions during the mandatory inspection process. Catch-per-unit-effort indices can be useful to monitor impacts to hunted populations assuming there is an identifiable relationship between hunter effort and the number of animals in the area hunted. Hunter effort data from only successful hunters has changed little the past 20 years has not proved useful in assessing mountain lion population trends (Appendix II, Fig. II-2). Additional information from unsuccessful hunters may prove more useful in evaluating these indices and knowledge about the number of unsuccessful and successful hunters hunting an area may explain changes in harvest level in cases where other information does not (i.e., due to changes in the number of hunters hunting an area). Regardless, data from unsuccessful hunters will enhance the management database and likely contribute to other harvest data currently collected.

Mountain Lion Habitat Management: Anderson et al. (in review) developed a winter mountain lion habitat model from GPS data collected in the Snowy Range, Wyoming, and validated model predictions using historic harvest locations 1996-2005 from the Bighorn, Sierra Madre, and Snowy Mountain Ranges. Habitat modeling efforts by Anderson et al. (in review) focused on the winter period (November-May) because this is the period when mountain lion activity is most limited due to deep snow at higher elevations resulting in ungulate concentrations on low elevation winter ranges, human development projects are vastly more common on low elevation winter ranges than on higher elevation summer ranges, and the vast majority of human-caused mountain lion mortality occurs during this period (>90% annually). The winter mountain lion habitat model is currently being used to delineate core winter mountain lion habitat statewide (Figs. 1 and 5). Thus far, most contiguous core mountain lion habitat in Wyoming has been delineated with the exception of the Southwest LMU, Northeast LMU, and hunt areas 14, 22, 25 and the Converse County portion of hunt area 6 (refer to Appendix III). Habitat maps for the other areas will be completed when detailed vegetation data layers are mapped and ground verified (e.g., Landsat Enhanced Thematic Mapper data at 30 m resolution); efforts are currently in place to complete vegetation data layers statewide.

Our intent for the mountain lion habitat model is to delineate suitable winter mountain lion habitat for resident adults (i.e., core mountain lion habitat) and exclude marginal habitats used as transition areas by transient subadults. Delineating core mountain lion habitat allows assessment of potential impacts from proposed development projects and application of mountain lion mortality densities to be used in development and assessment of management objectives (see next section below). Based on evaluations using historic harvest distribution (Fig. 4), the model appears to work well in most regions of Wyoming. Final acceptance of mountain lion habitat model predictions is pending regional review based on local knowledge of mountain lion habitat use during winter.

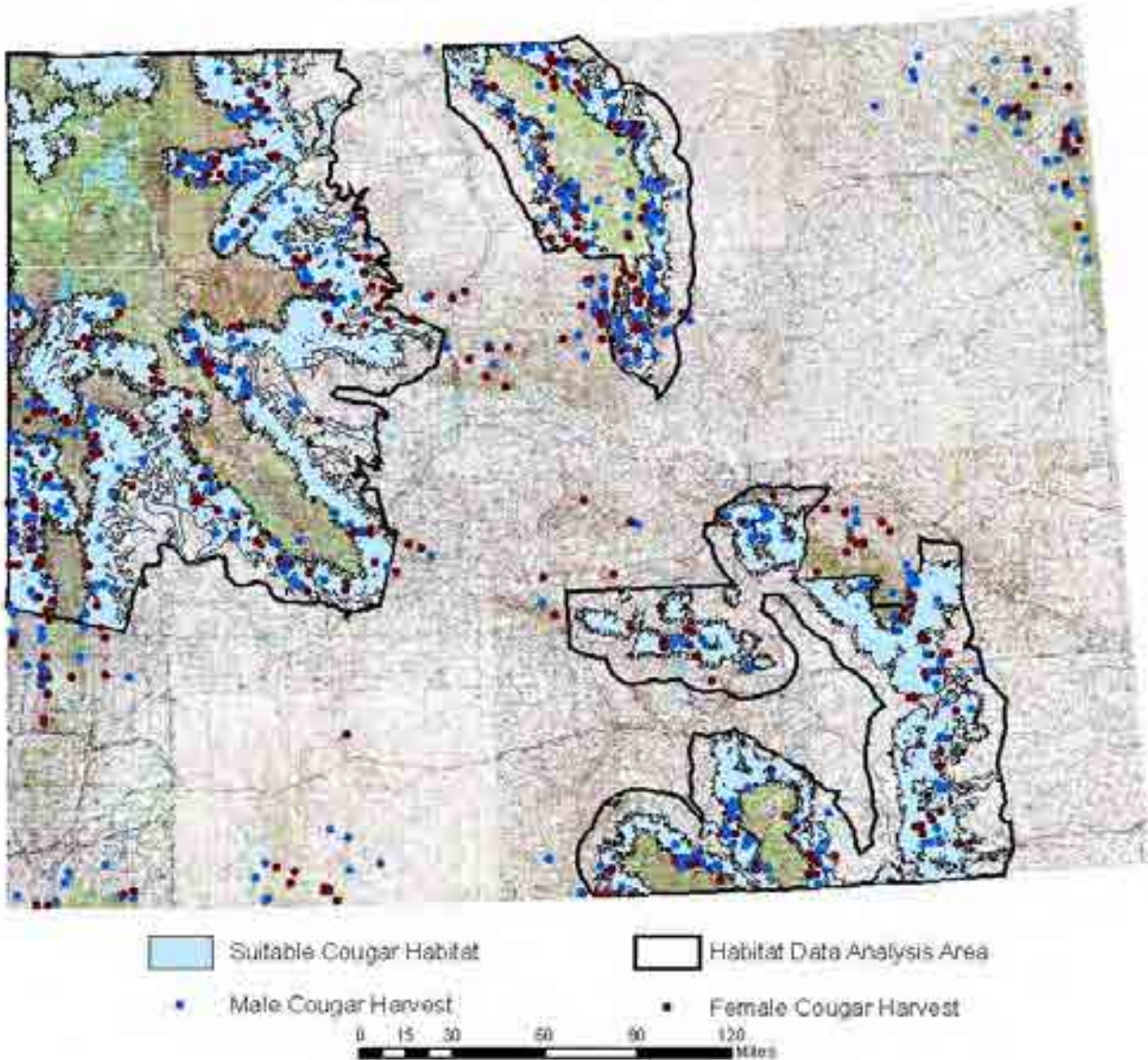


Figure 4. Winter mountain lion habitat model predictions relative to mountain lion harvest locations by sex, fall 2000-spring 2005. Winter mountain lion habitat represents core habitat of resident adult mountain lions and excludes marginal habitats occasionally used as transition areas by transient subadult mountain lions.

Habitat management efforts should include conserving large tracts of connected habitats that have the characteristics preferred by mountain lions and their prey. The Department's efforts to maintain high quality ungulate habitat should benefit mountain lion populations, and application of the mountain lion habitat model will provide opportunity to evaluate potential impacts from proposed development projects.

Management Criteria for Establishing Mountain Lion Management Objectives: The Cougar Management Guidelines Working Group (2005) suggested managing mountain lion populations

by managing source and sink subpopulations. As stated previously, the hunt area and management unit approach currently used in Wyoming lends itself well to this concept and has likely, by default, maintained source-sink mountain lion population dynamics since the early 1970s by maintaining relatively high lion densities in some portions of the state (i.e., source areas) which support recruitment of young lions into other areas managed at low population densities (i.e., sink areas); maintaining source mountain lion habitats allow persistence of mountain lions in other habitats experiencing high mortality rates. The CMGWG did not provide specific guidelines on how to delineate source and sink mountain lion habitats other than to establish large-unhunted refuge areas to offset population sinks that experience high human-caused mortality. However, refining this approach by applying sex-age composition of harvest and annuli age of harvested adult females addressed by Anderson and Lindzey (2005) and applying the Wyoming mountain lion habitat model (Anderson et al. in review) to evaluate density of human-caused mortality provides criteria to establish source and sink mountain lion management. Based on Anderson and Lindzey (2005) and evaluation of harvest densities presented here for mountain lion population decline (Figs. 2 and 3) and increase (Fig. 2), the following criteria appear appropriate for establishing source-stable-sink mountain lion management:

Hunt area management objectives:

1. Sink management: reduce mountain lion densities
 - a) Maintain density of human-caused mortality >8 mountain lions/1,000 km² (386 mi²).
 - b) Achieve adult female harvest $>25\%$ of total harvest for 2 of 3 seasons.
 - c) Progression in mean age of harvested adult females should decline to <5 years old.
2. Source management: maintain human-caused mortality levels that allow mountain lion population growth or maintenance of relatively high mountain lion densities.
 - a) Maintain density of human-caused mortality <5 mountain lions/1,000 km² (386 mi²)
 - b) Maintain adult female harvest $<20\%$ of total harvest.
 - c) Maintain older-age adult females in the population (>5 years old). This will be difficult to identify without additional sampling due to low sample size from harvest, but would be expected for lightly hunted populations.
3. Manage for stable mountain lion populations: maximize long-term hunting opportunity.
 - a) Maintain human-caused mortality density between 5-8 mountain lions/1,000 km² (386 mi²)
 - b) Adult female harvest should not exceed 20% of total harvest for more than 1 season.

- c) Maintain intermediate aged adult females (mean \cong 4-6 years old) in the harvest. Adequate age evaluation may require averaging age data over time to achieve meaningful sample sizes.

LMU management objectives:

- The LMU management objective should attempt to achieve the criteria above for source, stable, or sink mountain lion management at the LMU level. The objectives chosen by managers will be based on the adjacent management priorities, size of the LMU, maintaining recreational opportunity, maintaining source mountain lion populations, as well as depredations and other factors to achieve the overall management goal of sustaining mountain lion populations throughout core habitat at varying densities depending on management objectives.
- Coordinating management efforts with adjacent states would be most desirable for the smaller LMUs (i.e., Northeast and Southwest LMUs) where the majority of connected mountain lion habitat extends beyond Wyoming. Source or stable management could be maintained without interagency coordination, but sink management could also be implemented when sufficient source habitat has been identified in adjacent areas.

Acknowledging managers rarely, if ever, have precise information to measure success of management objectives, that mountain lion densities vary regionally, and the criteria proposed here are general guidelines, these guidelines should be compared to one another and applied adaptively to assess success of management prescriptions. For example, an area managed with the objective of stability and receiving a mountain lion removal density of 7 mountain lions/1,000 km² (386 mi²), but relative adult female harvest exceeds 25% and harvested adult female annuli ages have declined below 5 years old likely suggests mountain lion population decline rather than stability. Conversely, an area managed with the objective of sink and receiving harvest densities of 10 mountain lions/1,000 km² (386 mi²), but relative adult female harvest remains below 20% and older-age females (>5 years old) are consistently harvested suggests population stability (e.g., hunt area 23 in Table 4). Applying management objectives in an adaptive management framework, where density of human-caused mortality, harvest composition, and age of harvested adult females are monitored relative to expectations (criteria above) allows assessment of whether or not management objectives are being achieved and if management strategies should be modified to produce the desired outcome. Based on mountain lion management criteria averaged over the past 5 years for single or combined hunt areas of at least 1,000 km² of core mountain lion habitat (Table 4), 9 regions (1 to 3 hunt areas each) currently qualify as source areas, 7 as stable areas, and 1 as a sink area; 2 regions appear intermediate between source and stable and 2 regions intermediate between stable and sink (Fig. 5).

In implementing and evaluating mountain lion management objectives based on human-caused mortality density, proportion of total harvest comprised of adult females, and mean age of harvested adult females, it may be necessary to maintain consistent harvest objectives and combine data spatially or temporally to obtain meaningful information. Examples include hunt

Table 4. Annual 5-year average (fall 2001-spring 2006) of human-caused mountain lion mortality density (mountain lions/1,000 km²), proportion of adult females in the total harvest, adult female annuli age (*n* = sample size), management status (source, stable, or sink), and area of core winter mountain lion habitat for Wyoming mountain lion hunt areas^a and management units (LMU).

LMU Hunt area	Density of human caused mortalities	Proportion of total harvest including adult females	<i>n</i> /Annuli age ^b	Management status ^c	Core habitat (km ²)
Northeast 1 & 24 ^d	a	0.13	5/4.4	source/stable ^e	Undetermined
Southeast 5 & 25 ^d	1.9	0.26	3/7.0	Source/stable ^e	2,889 ^f
7	6.2	0.20	8/4.1	Stable to stable/sink ^e	2,185
8 & 16 ^d	2.9	0.08	3/5.3	Source	1,475 ^f
9 & 10 ^d	6.3	0.12	3/5.0	Stable	1,138
6 & 27 ^d	5.6	0.13	6/4.2	Stable	2,480 ^f
Southwest 11, 12 & 13 ^d	a	0.06	2/4.0	Source	Undetermined
North central 15	15.4	0.11	8/4.4	Sink	1,221
21	9.6	0.14	6/4.8	Sink to stable ^e	1,295
22	a	0.19	8/3.4	stable to stable/sink	Undetermined
23	11.2	0.12	7/6.6	Stable	1,377
West Absoraka DAU					
19	4.6	0.13	8/6.8	Source	3,905
20	2.8	0.15	4/6.3	Stable to source ^e	3,045
Wind River DAU					
18	6.8	0.16	5/6.4	Stable	1,235
28	0.5	0.00	0/-	Source	1,720
4	4.5	0.16	3/4.3	Source	1,023
3	3.4	0.14	3/7.0	Source	2,151

Continued

Table 4. Continued.

LMU Hunt area	Density of human caused mortalities	Proportion of total harvest including adult females	<i>n</i> /Annuli age ^b	Management status ^c	Core habitat (km ²)
West (cont.)					
Wyoming					
Range DAU					
2 & 29 ^d	3.2	0.23	12/6.4	Source	3,372
26	6.2	0.27	13/4.3	Sink to stable ^e	1,762
17	2.0	0.09	1/2.0	Source	1,838
14	a	0.22	10/5.5	Stable	Undetermined

^aInsufficient vegetative data for hunt areas 1, 11-14, 16, 22, and 24-25 to calculate core mountain lion habitat and mortality density.

^bAnnuli age estimated from the number of rings evident after cross sectioning of the first premolar. Mean annuli ages from small sample sizes ($n < 5$) should be interpreted with caution.

^cStatus assigned based on the majority of the 3 criteria examined. Status criteria: source = mortality density <5 mountain lions/1,000 km², <20% of total harvest includes adult females, mean adult female annuli age >5 years old; stable = mortality density of 5-8 mountain lions/1,000 km², proportion of harvested adult females should not exceed 25% of total harvest for more than 1 year, mean annuli age of adult females should be intermediate to source and sink areas (e.g., 4-6 years old); sink = mortality density >8 mountain lions/1,000 km², >25% of total harvest includes adult females for 2 years, mean adult female annuli age declines to <5 years old.

^dHunt areas with <1,000 km² of core mountain lion habitat were combined with adjacent hunt areas within the same mountain range.

^eCriteria separated with “ / ” indicate intermediate management status. Management criteria separated with “to” indicate a transition in management status over the 5-year period based on trends in annual data.

^fAmount of core mountain lion habitat subject to change in hunt areas 5 and 6 following completion of improved habitat data layers and Regional review. Lack of vegetative data for hunt areas 16 and 25 precludes core habitat delineation and mortality density calculations for these hunt areas.

areas receiving low harvest levels or hunt areas of small geographic size. Small hunt areas can be combined with adjacent hunt areas and information from lightly hunted areas can be averaged over time to improve sample sizes (e.g., Table 4). Evaluating annual changes in management criteria are also important to determine if the population may be changing due to annual shifts in mortality density, harvest sex/age composition, and/or age of adult females, especially in areas experiencing moderate to high harvest levels; averaging management criteria over time may mask shifts in management status that are otherwise evident from annual changes in management criteria (e.g., hunt areas 7, 21, 22, 20, 2 & 29, and 26; Table 4). For example, mountain lion population reduction can be achieved in a short time period (>50% reduction; Logan and Sweanor 2001, Anderson and Lindzey 2005) in areas that are accessible to hunters where high harvest densities, increase in adult female harvest, and decline in age of adult females occurs within 2-3 years and subsequent management criteria suggest stability following the initial reduction (Fig. 3).

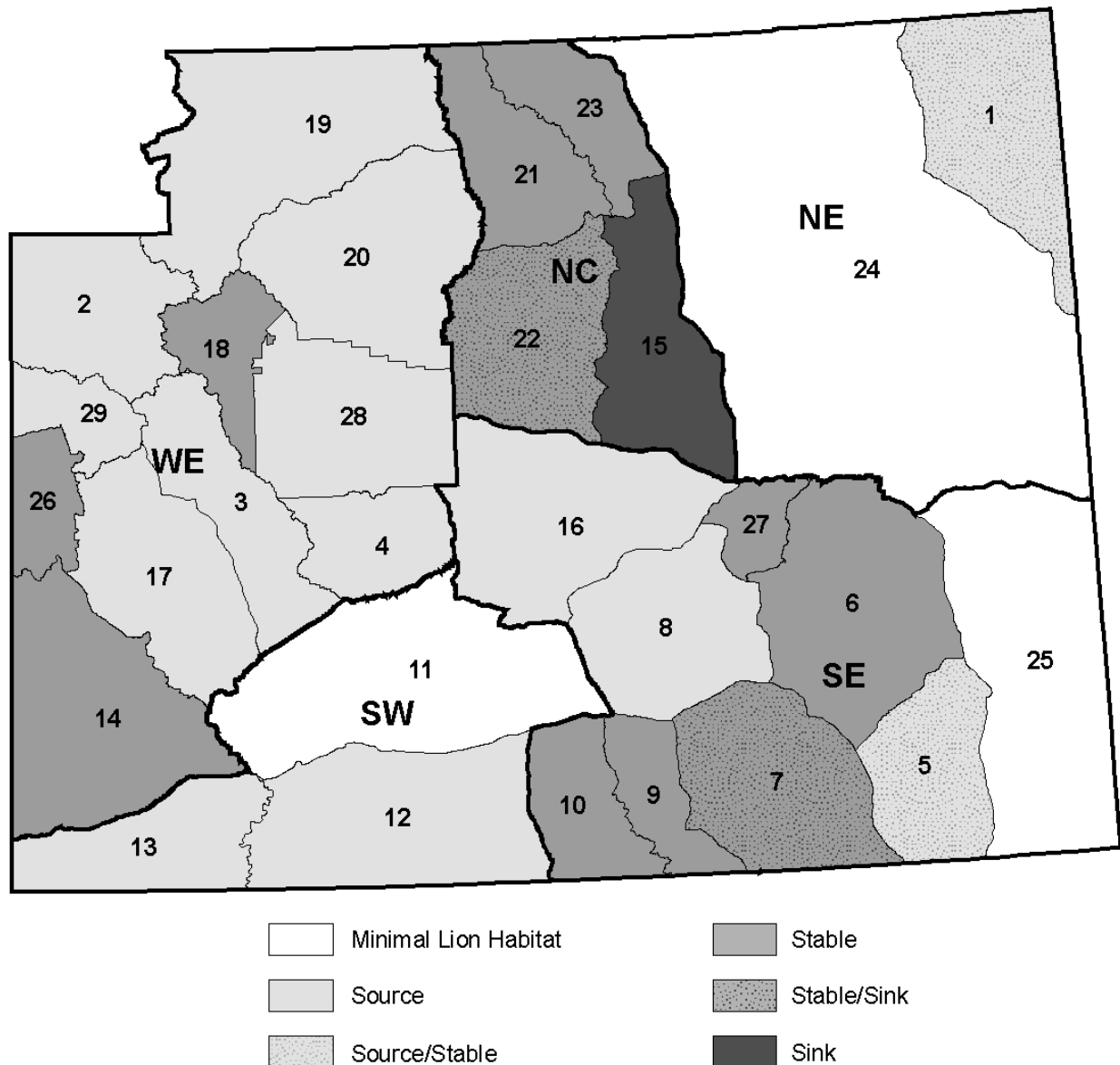


Figure 5. Current Wyoming mountain lion management status by hunt areas (numbered) within mountain lion management units (WE = west, NC = north central, NE = northeast, SE = southeast, SW = southwest). Status assigned based on the majority of the 3 criteria examined: source = human caused mortality density <5 mountain lions/1,000 km², $<20\%$ of total harvest includes adult females, mean adult female annuli age >5 years old; stable = human caused mortality density of 5-8 mountain lions/1,000 km², proportion of harvested adult females should not exceed 25% of total harvest for more than 1 year, mean annuli age of adult females should be intermediate to source and sink areas (e.g., 4-6 years old); sink = human caused mortality density >8 mountain lions/1,000 km², $>25\%$ of total harvest includes adult females for 2 years, mean adult female annuli age declines to <5 years old (Table 4). Unable to calculate mortality density for hunt areas 1, 12, 13, 14, 16, and 22 due to incomplete habitat data. White areas represent primarily open vegetative types and contain low-density mountain lion habitats.

Other factors to consider are the similarity in harvest composition for high and low-density populations and the duration for establishing source management areas. Anderson and Lindzey (2005) observed that harvest composition progressed from primarily subadults, to adult males, and finally to adult females with mountain lion population decline, but observed similar harvest composition to a high-density population, composed primarily of subadults, when the population was at low density. Harvest composition composed primarily of subadults may suggest a high density population where the less vulnerable adults have not yet been greatly exposed to harvest or conversely that the population is actually at low density where the majority of the adult segment of the population has previously been removed (via disease, past harvest levels, etc.) and most of the individuals in the population are immigrants from other populations. Approaches to determining whether high subadult harvest/low adult harvest suggests high or low mountain lion densities include comparing other harvest criteria, evaluating changes in harvest data over time (e.g., Table 4), and evaluating relative harvest of subadult females. Based on the current season setting structure in Wyoming where management objectives are established every 3 years, we suggest monitoring management criteria for the previous 2 management cycles (6 years) to adequately determine whether populations may be increasing, decreasing, or remaining stable. Low density of human-caused mortalities ($<5/1,000 \text{ km}^2$) for a 6-year period would indicate a high-density population, as would a majority of females in the subadult harvest suggesting numerous adult females producing young within the population. Ideally, source management areas should be maintained over time. If changes in social or biological conditions warrant shifting from source to sink management, 3 years should be sufficient to reduce mountain lion densities assuming sufficient access, but returning to source status will likely take longer. Numerical recovery can occur within 3 years (Logan and Sweanor 2001, Anderson and Lindzey 2005), but returning to the older age structure consistent with a functioning source population will benefit from source management for 2 management cycles (i.e., 6 years).

Another issue relative to source-stable-sink mountain lion management that should be addressed is the size at which an area may serve as a source subpopulation and the relative area and juxtaposition of source-sink mountain lion habitat necessary to sustain mountain lion populations at landscape levels. This issue has not been well addressed at this time, but work by Beier (1993) may offer some guidance. Beier (1993) suggested areas as small as $600\text{--}1,600 \text{ km}^2$ ($231\text{--}617 \text{ mi}^2$) would likely sustain viable mountain lion populations assuming 4 immigrants every 10 years, and higher levels of immigration would allow even smaller areas to support mountain lions. Genetic evidence suggests Wyoming mountain lion populations are well connected, with the estimated number of migrants per generation ranging from 6-30 among geographically distinct regions (i.e., LMUs; Anderson et al. 2004). Thus, areas of at least $1,000 \text{ km}^2$ (386 mi^2) would appear sufficient to serve as source areas in Wyoming. The amount and juxtaposition of source mountain lion habitat relative to sink habitat necessary to sustain mountain lion populations at landscape levels, however, is still unresolved. Past mountain lion management and recent management status (Table 4, Fig. 5) suggests the current amount of source mountain lion habitat has been sufficient to sustain mountain lion populations statewide. In addition, maintaining source or stable management objectives at the LMU level should support large-scale mountain lion population persistence and this approach may preclude the need to specifically delineate the ratio of source:sink mountain lion habitat relative to hunt area management objectives.

In addition to assessing mountain lion population trends for stable or sink management areas, periodic mountain lion population monitoring will also be useful to confirm the status of source populations. Harvest data may be sufficient to reasonably evaluate trends for areas managed as stable or sink populations, but likely insufficient to adequately evaluate status of source populations. Confirming the status of areas intended to support mountain lions at landscape scales will be a useful component in source-stable-sink management of mountain lion populations in Wyoming. Population estimation methods (e.g., track surveys, helicopter probability sampling, mark-recapture methods if they become applicable for estimating mountain lion populations) should be applied every 3-5 years (e.g., 1 hunt area/LMU) to confirm mountain lion densities are consistent with populations that are at or near carrying capacity. Ability to formally survey source areas, however, will be dependent on Department budget constraints. If budget constraints do not allow formal surveys of source areas, other approaches should be investigated to confirm the status of source populations (e.g., less intensive track surveys, hunter interviews, etc.).

Mountain lion management objectives should be based on local and regional biological and social considerations. Management objectives to reduce mountain lion densities should be proposed when the expected outcome will result in (1) reduced human conflicts (e.g., human-mountain lion encounters, mountain lion incidents near human development), (2) reduced depredation incidents, or (3) to alleviate predation pressures on ungulate populations that are below the ungulate population management objective primarily due to mountain lion predation rather than habitat conditions. Success of management actions should be monitored to determine if reducing mountain lion densities achieve the desired outcome by recording changes in human conflict levels, depredation incidents, or ungulate population parameters (e.g., changes in female:young ratios). In the case of predation impacts to ungulate populations, additional data collection may be necessary to determine if reducing mountain lion numbers has resulted in increased ungulate numbers, and will depend on the availability of additional funding to monitor the ungulate population response. Changing management strategies over time, while monitoring the effects will provide an adaptive management approach to evaluate the success of mountain lion management prescriptions.

In areas where human conflicts and depredation incidents are not an issue and ungulate populations do not appear to be strongly influenced by predation, stable or source management objectives should be implemented. Managing areas for stable mountain lion populations should maximize long-term hunting opportunity, and source population management should offset reduction in other areas managed as sink populations. In areas of Wyoming where hunter access is limited (National Parks, refuges, ungulate winter range closures, private lands), sink (e.g., hunt area 2) or even stable management at lower densities (e.g., hunt area 28) may not be possible. These areas have served and will continue to serve as source mountain lion populations as long as access remains limited.

NUISANCE MOUNTAIN LION MANAGEMENT

Livestock Depredations

Mountain lions will kill most species of domestic livestock, although sheep and cattle tend to dominate depredation records (Lindzey 1987). In Arizona, Shaw (1983) reported that 93% of mountain lion-killed cattle examined were calves (typically <300 lbs.), and although all age classes of sheep were killed, lambs were preferred. Cattle losses to mountain lions are rare in Wyoming (Fig. 6) primarily due to calves being born away from mountain lion habitat compared to other areas of the southwestern U.S. where calves are born in mountain lion habitat (e.g., the desert southwest; Shaw 1977, Cunningham et al. 1995). Mountain lion depredations of horses, llamas, goats, poultry, pigs, and other types of livestock have also been documented (Tully 1991). Data from Wyoming, 2000-2005, indicate approximately 97% of the damage claims submitted for reimbursement were for sheep, primarily lambs and ewes (Fig. 6; Wyoming Game & Fish Department 2005). Other livestock occasionally killed include horses, cattle, goats, and pigs. The loss of domestic pets near residential areas is also on the increase in urban areas, primarily due to human development into occupied mountain lion habitat (Davies 1991).

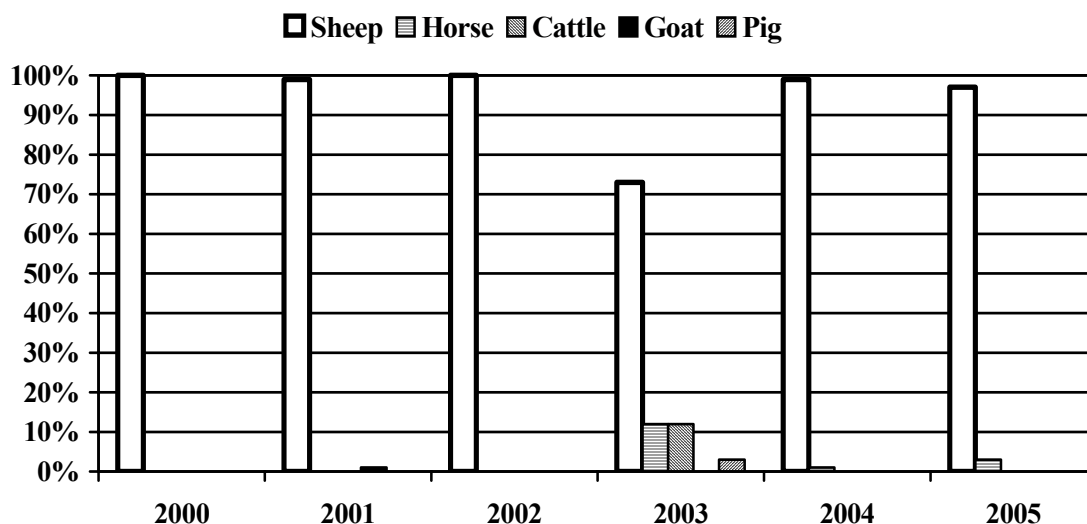


Figure 6. Percentage of mountain lion damage compensation in Wyoming by type, fiscal year 2000-2005.

Wyoming Statute §23-1-901 provides for monetary compensation of damage to livestock caused by mountain lions, and W.S. §§23-3-115 allows property owners or their employees and lessees to kill mountain lions damaging private property, given they immediately notify the nearest game warden of the incident. They may keep the pelt and skull if they purchase a Wyoming game tag. Because of this statute, Wyoming obtains annual information on the number of reported conflicts between mountain lions and domestic livestock and provides compensation for those losses. The number of damage claims submitted to the Department has varied between 1980 and 2005, ranging from under 5 to over 40 (Fig. 7). During that same time period, compensation paid to

livestock producers ranged from just over \$7,400 to just under \$110,000 (Fig. 8). Compensation does not correspond to the number of claims submitted in all years. For example, in fiscal year 2003, 21 damage claims were submitted for payment and only \$10,131 was paid to producers compared to 2005 when only 10 claims were submitted that resulted in \$39,000 in compensation. This is due primarily to the loss of expensive livestock, primarily horses, in some years.

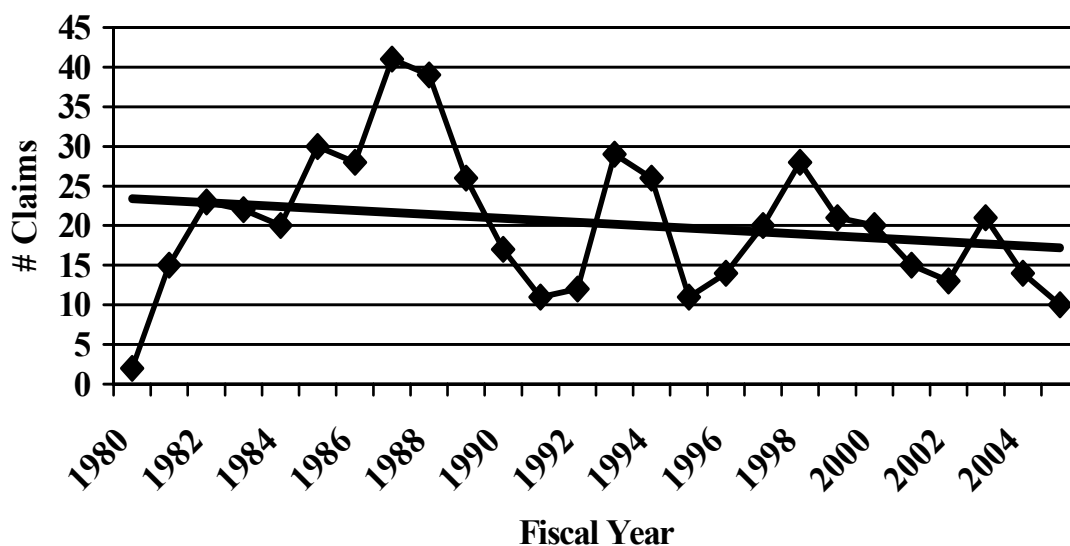


Figure 7. Trend in the number of damage claims submitted for Wyoming mountain lion depredations, fiscal year 1980-2005.

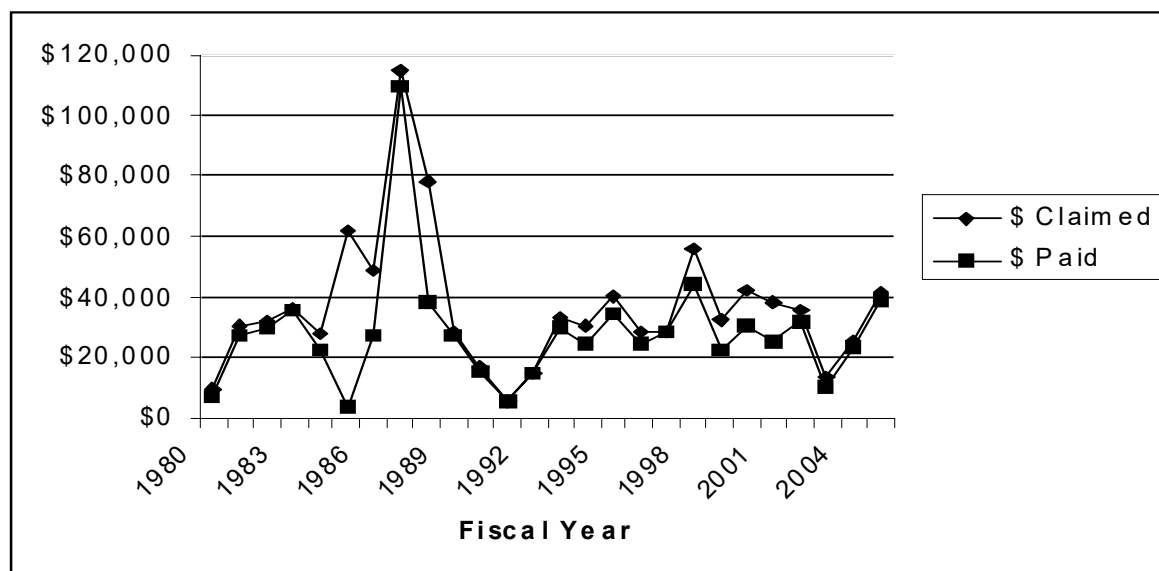


Figure 8. Mountain lion damage claims versus payments to livestock producers in Wyoming, fiscal year 1980-2005.

Although Wyoming Statute allows for the take of mountain lions depredating livestock, mountain lions also have aesthetic value, trophy value, and removal costs that should be considered when making removal decisions (Lindzey 1987). In Wyoming, there are currently 2 approaches to reduce mountain lion damage including (1) remove the offending mountain lion and (2) increase take through sport hunting. Removal of individuals appears to be more accepted by the public than overall population reductions (Gasson and Moody 1995). Killing the offending mountain lion has been successful as a short-term solution, but livestock losses may eventually continue in the future where livestock remain in mountain lion habitat. Conversely, attempting to reduce mountain lion populations also does not appear to entirely resolve the depredation issue because it is usually very difficult to maintain a reduction program that is sufficient to reduce a population to the level required to reduce depredations. Public acceptance of such a program may or may not be maintained over a sustained period of time. We currently do not know the harvest level or length of time required to reduce lion populations to the point that livestock reductions would be reduced, but the adaptive management approach outlined in this plan will allow evaluation of this issue in the future. Therefore the Department will continue to consider all issues, including livestock depredation, to establish harvest quotas. Mountain lion populations have the ability to rebound from this level of reduction fairly quickly. Lindzey et al. (1992) documented that a population of mountain lions in Utah recovered from a reduction of approximately 42% in only 9 months. Similarly, mountain lion populations recovered from comparable reductions in New Mexico and Wyoming in 31 and 36 months, respectively (Logan and Sweanor 2001, Anderson and Lindzey 2005). Licensed hunters are occasionally directed to areas with damage in hopes of removing problem individuals, but agency personnel, either the Department of Agriculture's APHIS-Wildlife Services or the Wyoming Game & Fish Department, do most individual removals.

Management actions that target mountain lions that are a potential threat to human safety or cause livestock damage normally result in the lethal removal of the offending mountain lion. Current protocols provide agency personnel with a variety of options to address conflicts ranging from no action to relocation of the offending animal to lethal removal. Agency personnel respond and resolve incidents based on site-specific conditions. The Department will continue to document incident circumstances and outcomes.

Reducing non-harvest mortality should allow for increased hunter opportunity through season/quota regulations. Nevertheless, in most instances agency removal of specific individuals will be necessary to resolve specific depredation incidents. Striving for removal of only responsible individuals should help minimize losses, increase public acceptance, and maintain hunter opportunity.

Mountain Lion - Human Interactions

Interactions between humans and mountain lions have increased during the last 2 decades throughout most of the western United States and Canada (Beier 1991). Although mountain lion attacks are extremely rare, there were 9 fatal and at least 44 non-fatal attacks reported in North America between 1890 and 1990 (Beier 1991). The majority (66%) of the humans attacked were either unsupervised children or lone adults. Approximately 30% of the attacks occurred within sight of some type of developed area. Fitzhugh et. al. (2003) updated this information through

2003, and determined an additional 7 fatal and 38 non-fatal attacks had occurred since Beier (1991) published his data. The first recorded physical injury resulting from a human-mountain lion encounter in Wyoming occurred in 2006 near Laramie; fortunately, the injuries were minor. It appears younger-aged males, primarily yearlings, accounted for 42% of the attacks on humans (Beier 1991). Increased mountain lion numbers along with increased recreational use and urbanization of mountain lion habitat has created greater opportunity for mountain lion-human encounters. For example, new homes have been built on traditional mule deer winter range in Boulder County, Colorado, resulting in increased mountain lion sightings along with a dramatic increase in mountain lion predation on domestic pets (Sanders and Halfpenny 1991). Typically, when a mountain lion interacts with another animal, including a human, it determines whether the other animal is either prey or non-prey. If the animal is determined to be non-prey, it might become the target of aggressive behavior as the mountain lion may think the animal is a threat. Humans should attempt to maintain eye contact with an aggressive mountain lion and attempt to increase one's potential size by standing erect. It appears that attacks can be reduced if the mountain lion is aware that you are not a typical prey species. If an attack does occur, humans should fight back as aggressively as possible. Several attacks have been broken off due to this type of response (Fitzhugh et al. 2003). If humans have the ability to observe a mountain lion prior to an attack, they can interpret specific mountain lion behavior to assess the level of threat from the mountain lion (Appendix IV).

Not all mountain lion-human interactions can be avoided and, in some cases, humans do have the opportunity to modify their behavior to reduce the chance of an attack. It is much more effective for humans to modify their behavior than it is for people to modify mountain lion behavior. Guidelines that can reduce the chance of an attack are presented in Appendix V.

The Wyoming Game and Fish Department strives to minimize human conflicts with mountain lions while maintaining sustainable mountain lion populations for ecological, recreational, scientific, and aesthetic purposes. Coordination with county planning boards to minimize conflicts in suitable mountain lion habitats (Anderson et al. in review) should help reduce conflicts.

A "Protocol for Managing Aggressive Wildlife/Human Interactions", which includes mountain lions, was completed in 1999 (Moody et al. 1999). Major components of this protocol include procedures for reporting, documenting, and investigating incidents. This document is designed to aid Wyoming Game and Fish Department personnel in conducting investigations and assure appropriate coordination with other State and/or Federal agencies. Accurate reporting and periodic analysis of this information will improve our understanding of the factors that promote conflicts and how to better address them.

PUBLIC INFORMATION AND EDUCATION EFFORTS

As with all large predators, some aspects of mountain lion management are increasingly controversial. The public is much more cognizant of issues associated with mountain lion management compared to the early 1990s. The Department traditionally relied on public contacts, open houses, and public meetings held in conjunction with season setting meetings to gauge constituent attitudes and values about managed species. This process does not appear to

provide a forum that all interest groups are comfortable participating in. The Department will consider alternative methods to engage these segments of the public, such as increased involvement in establishing population management objectives.

The Wyoming Game & Fish Department completed an attitude survey of Wyoming residents to assess public values and attitudes that might influence mountain lion management (Gasson and Moody 1995). No attempt was made to calculate confidence intervals around the survey results. As a result, these data are qualitative indicators of public attitudes. The distribution of the sample by county roughly approximated the distribution of Wyoming's population. Approximately 67% of the respondents reported they hunted at some point in their lives, and over 54% presently engaged in some form of hunting. Less than 9% of the respondents hunted mountain lions, and 65% of mountain lion hunters used dogs to pursue mountain lions. Over 71% of the respondents felt that mountain lions were a benefit to Wyoming. Only 11% felt that mountain lions were not a benefit to the state. Approximately 50% agreed or strongly agreed that mountain lion hunting should continue, while 29% of respondents believed mountain lion hunting should be discontinued, and 57% felt hunting with dogs should be eliminated. However, only 51% of the people surveyed were aware mountain lion hunting was legal in Wyoming, suggesting the Wyoming public may be uninformed about the issues surrounding mountain lion management in the state. Sixty percent of the respondents indicated they would benefit from additional information and education about this species.

Based on the results of this survey it was apparent the Wyoming Game and Fish Department should expand its efforts to educate the public on mountain lion management and provide those interested with the information necessary to aid the Wyoming Game and Fish Commission/Department in future management strategies. The Wyoming Game and Fish Commission/Department recognize the importance of keeping the public informed.

To address these concerns, the Department provided additional information to the public about mountain lion biology, management, and how to avoid conflicts with lions beginning in 1996. One specific publication entitled "Living in Lion Country" was developed and distributed to WGFD Regional offices throughout the state. The Department has worked closely with The Center for Wildlife Information to integrate this material into existing programs that have traditionally focused on grizzly bears. Mountain lion information has been included in the Department's "Living in Lion and Bear Country" workshops that are presented every spring around the state. These workshops include information on grizzly bear, black bear, and mountain lion biology and how to reduce conflicts. An updated public attitude survey would be useful to assess the success of additional information and education efforts implemented since the previous survey in 1995.

Although a species management plan provides direction for the responsible agency, it also provides a concise, complete overview of important issues surrounding the species, which can easily be circulated to the public. Thus, wide circulation of this plan will help inform and educate the public about current mountain lion management topics. Issues can change, as well as attitudes, so periodically surveying public opinion will be necessary, along with education updates following completion of surveys. Collectively, adequate ongoing education and

information efforts coupled with periodic public surveys will help the Commission optimally manage mountain lions to address the public trust.

The Department will institute new programs. Additional information will be put on the Game and Fish web site to assist hunters in being able to differentiate sex of individuals. Additional and continued training of Department employees will be implemented to assure personnel who field check harvested lions are adequately trained to determine sex and age.

FUTURE RESEARCH AND MANAGEMENT NEEDS

The adaptive management approach outlined in this plan will provide opportunity to evaluate many of the management needs listed below, while other management needs will likely require additional research efforts. Addressing mountain lion management needs that require additional research efforts will be implemented when and if additional funding becomes available with respect to other management priorities for the Wyoming Game & Fish Department.

Short Term Needs:

- Develop or cooperate with other agencies in the development of vegetation data layers sufficient for application of the mountain lion habitat model in regions of the state where data are currently lacking.
- Further evaluation and refinement of population monitoring techniques.
 - Explore the potential for new approaches that are cost effective and logistically feasible for management application.
 - Evaluate track surveys and helicopter probability sampling for periodically monitoring mountain lion subpopulations the size of hunt areas.
 - Investigate the utility of DNA and camera based mark-recapture methods for estimating mountain lion populations. Explore reliability of different attractants for enticing mountain lions into hair collection or photo detection sites, and evaluate ability of photographic technology to differentiate individual mountain lions from digital photographs.
 - Include hunter effort data from unsuccessful hunters to that collected from successful hunters to better evaluate catch-per-unit-effort indices in evaluating mountain lion population trends.
- Test mountain lion habitat model predictions using independent data sets (e.g., GPS locations) as they become available.
- Monitor success of sink management objectives in reducing human conflicts and depredation incidents.
- Conduct placental analyses from harvested females to confirm accuracy of female age class determination.

Long-Term Needs:

- Identify juxtaposition and amount of source mountain lion habitat necessary to sustain mountain lion populations at landscape scales.

- Evaluate the level at which sink management successfully reduces human conflicts, depredation incidents, and predation impacts to prey populations.
- Develop and evaluate application of simulation models to examine vital rates relative to source-sink mountain lion management.
- Improve knowledge of mountain lion-prey relationships.
- Investigate population dynamics of multi predator-prey systems.
- Investigate potential influences of exploitation on mountain lion population dynamics.

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APPENDIX I. History of mountain lion management regulations in Wyoming.

As in other western states, management in Wyoming became increasingly conservative during the mid 1970s through the early 1990s, primarily to control the number and sex of lions harvested. Emphasis was placed on controlling the take of females until sufficient information was available to warrant increased harvest. Harvest quotas have been increased since that time in an effort to limit population increase in specific portions of the state.

From territorial days to 1973, mountain lions received no legal protection. The earliest statutory reference to mountain lions was in 1882 when the Council and House of Representatives of the Territory of Wyoming enacted Chapter 108, Section 1. This legislation authorized county commissioners to encourage the destruction of wolves (*Canis lupus*), wild cats (i.e., bobcats; *Lynx rufus*), lynx (*Lynx canadensis*), bears (*Ursus* spp.), and mountain lions by offering bounty payments. Although property owners, employees, and lessees are still allowed to kill any mountain lion causing damage to private property, bounty payments are no longer authorized. In 1973, the mountain lion was reclassified from a predator to a trophy game animal. Since then, regulations governing the take of mountain lions have become more restrictive with the establishment of shorter seasons, total mortality quotas, and female sub-quotas.

CHRONOLOGICAL SUMMARY OF MOUNTAIN LION MANAGEMENT REGULATIONS IN WYOMING

- 1882 The Wyoming Territorial Legislature passed a law authorizing County Commissioners to encourage the destruction of wolves, bobcats, lynx, bears, and mountain lions. The County Fund paid \$2.50 for each mountain lion killed. This was the first law authorizing bounty payments for mountain lions.
- 1884 The bounty payment for mountain lions was raised to \$5.00.
- 1890 The bounty payment was raised to \$6.00. The Territorial Legislature passed a law prohibiting the killing of mountain lions outside of the Wyoming Territory. Violation of the law resulted in a penalty ranging from \$25.00 to \$50.00.
- 1907 Applications for bounty payments had to be accompanied by an affidavit stating that the person presenting the skin, in said county, and within Wyoming, killed the animal. The animal had to be taken after March 1st. Persons could take predators (mountain lions) within State Game Preserves with the permission of the State Game Warden.
- 1910-1911 It was unlawful to enter the forest reserves of Wyoming for the purpose of chasing or coursing predators with dogs, unless the dogs were licensed. The license was \$1.00 per dog, per calendar year. It was permissible to take mountain lions during closed big game seasons on State Game Preserves with a permit from the State Game Warden.
- 1913-1914 It was lawful to use dogs on predatory species and on State Game Preserves with permit from State Game Warden.

- 1915-1916 Game animals could not be used as bait for the purpose of trapping predatory animals within Wyoming.
- 1917-1972 No changes in mountain lion regulations.
- 1973 The mountain lion was reclassified from a predator to a trophy game animal.
- 1974 The first mountain lion hunting season established. The hunt area was considered the entire state. The season ran for the entire calendar year, with a bag limit of 1 mountain lion per season. A license and fee was required, and hunters had to present the pelt and skull to the nearest Wyoming Game and Fish District Office within 10 days of harvest. Hunting with dogs was allowed and females with kittens at side and kittens were protected from harvest. The owner, employees, or lessee of said property could take mountain lions damaging private property.
- 1978 Mountain lion season ran from September 1—December 31 and January 1—March 31.
- 1980 Wyoming was divided into 22 hunt areas and 5 LMUs. Mortality quotas (total mountain lions) by hunt area were established. The season ran from September 1 - March 31.
- 1983 Hunt area 15 was divided into hunt areas 15 and 23.
- 1985 Hunters must report mountain lion kills within 72 hours to nearest Wyoming Game and Fish District Office or game warden.
- 1993 The pelt and skull were required to be presented in an unfrozen condition to allow extraction of two premolar teeth for aging, and to allow examination of the pelt to determine sex. Female mortality quotas established in some hunt areas.
- 1994 Hunt area boundaries revised to more closely correspond with known distribution. A total of 27 hunt areas existed.
- 1999 Hunt area 26 was eliminated from the Southeast LMU. Hunt area 6 was expanded in its place. Regulations revised to allow for the take of 2 mountain lions per person per year in hunt areas 7 and 21 to assist the Snowy Range mountain lion study. Hunters must purchase an additional license (\$15 for resident and \$75 for non-resident). Hunt Area 25 added to the southeast LMU.
- 2000 Hunt area 17 split with hunt area 26 being created in the West LMU to separate the Wyoming Range from the Salt River Range in the Jackson Region. Hunt area 27 added to the areas where two mountain lions can be taken in a calendar year. Biological year for analysis of harvest information changed to September 1—August 31. Hunt area 28 created to address potential harvest and damage on fee title lands within the Wind River Reservation. Hunt area 7 was eliminated from those where 2 mountain lions can be harvested annually.

- 2001 Hunt area 21 eliminated from those where 2 mountain lions can be harvested annually.
- 2003 Hunt area 2 in the Jackson region split to address hunter pressure issues. Hunt area 29 established in the southern portion of hunt area 2. Quotas set for three-year cycle to address data assessment issues.

Appendix II. Wyoming mountain lion harvest and harvest quotas, hunter effort for successful mountain lion hunters, and nonharvest-human caused mountain lion mortalities.

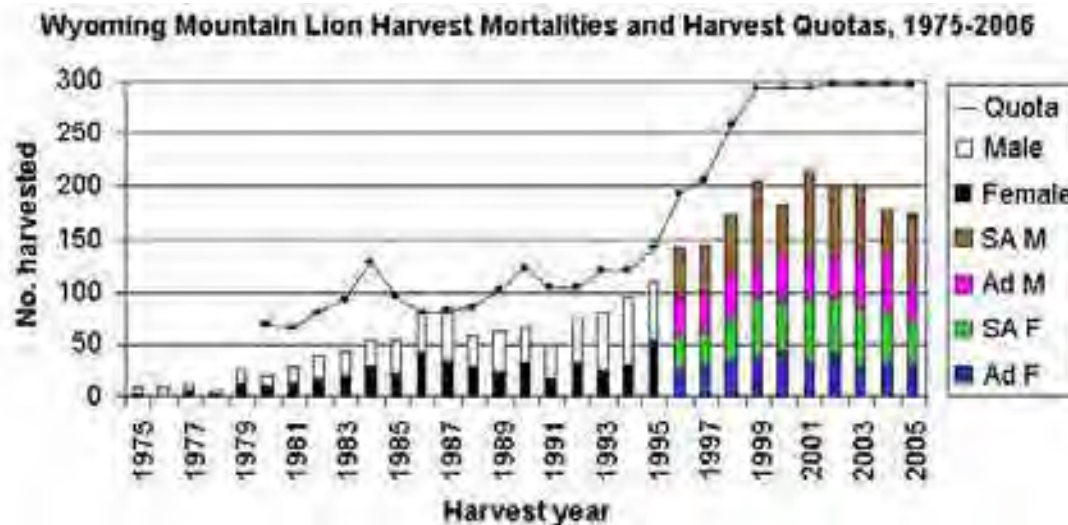


Figure II-1. Wyoming mountain lion harvest mortalities by sex (1975-1995) and age class (subadult = SA, adult = Ad; 1996-2006) and annual harvest quotas (1980-2006). Harvest year represents September of the given year through March of the following year; quotas reported from 1980-1984 were based on calendar year (Jan.-Mar. and Sept.-Dec. of the year reported). No harvest quotas were in place 1975-1979 and for hunt areas 15 and 22 (i.e., the southern Bighorn Mtns.) from 1986-1989.

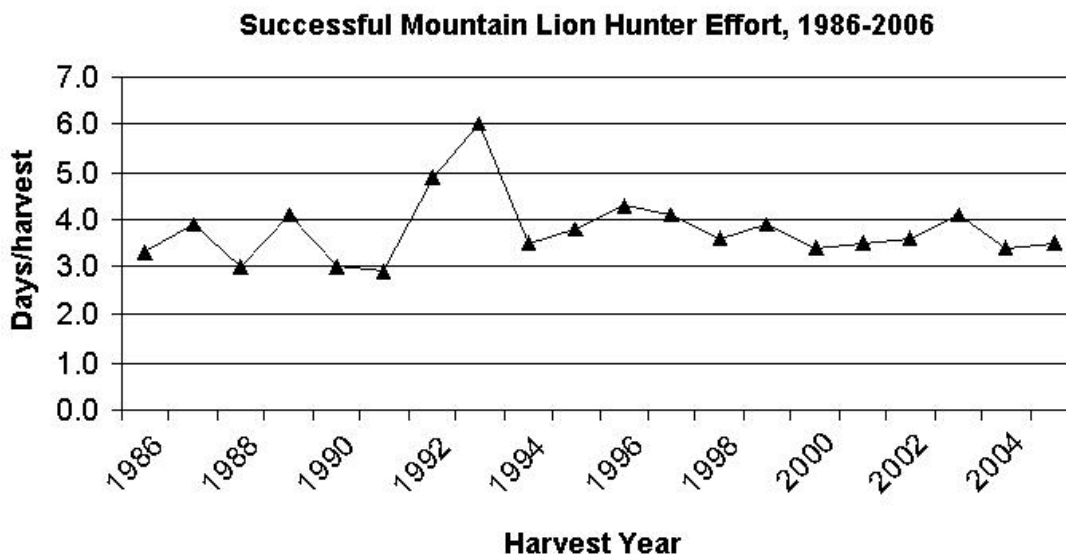


Figure II-2. Hunter effort (average days hunted per harvest) for hunters successfully harvesting a mountain lion, 1986-2006. Harvest year represents September of the given year through March of the following year. Harvest years exceeding 4 days per harvest were primarily due to a single hunter hunting for unusually long periods during the hunting season (e.g., a hunter reported hunting for 90 days in 1993).

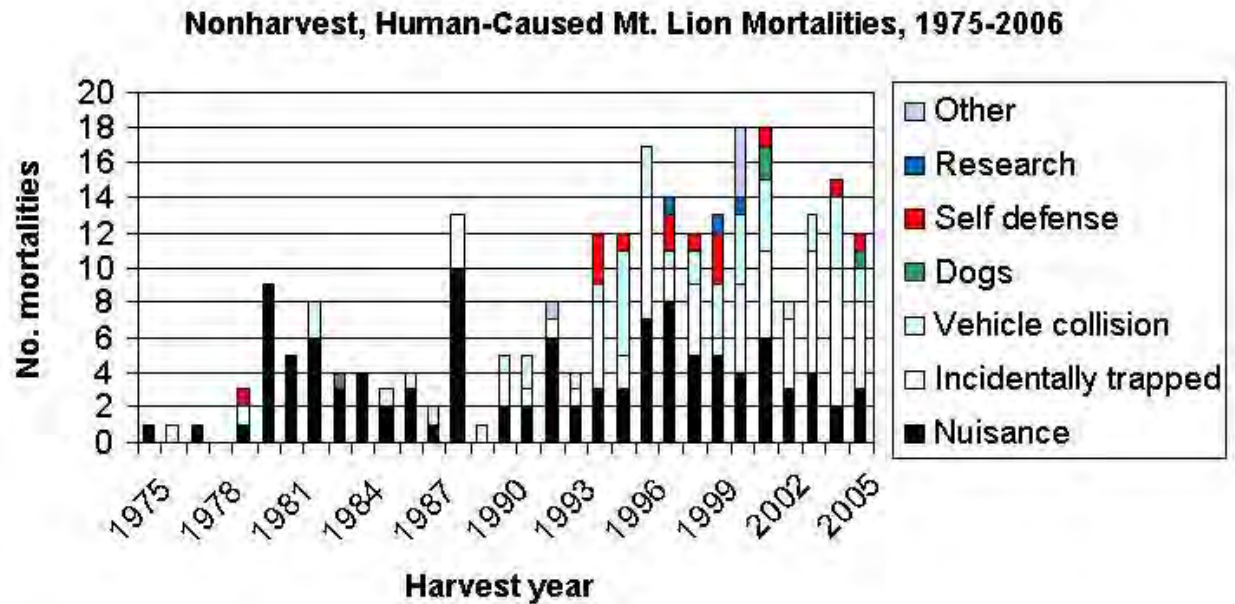
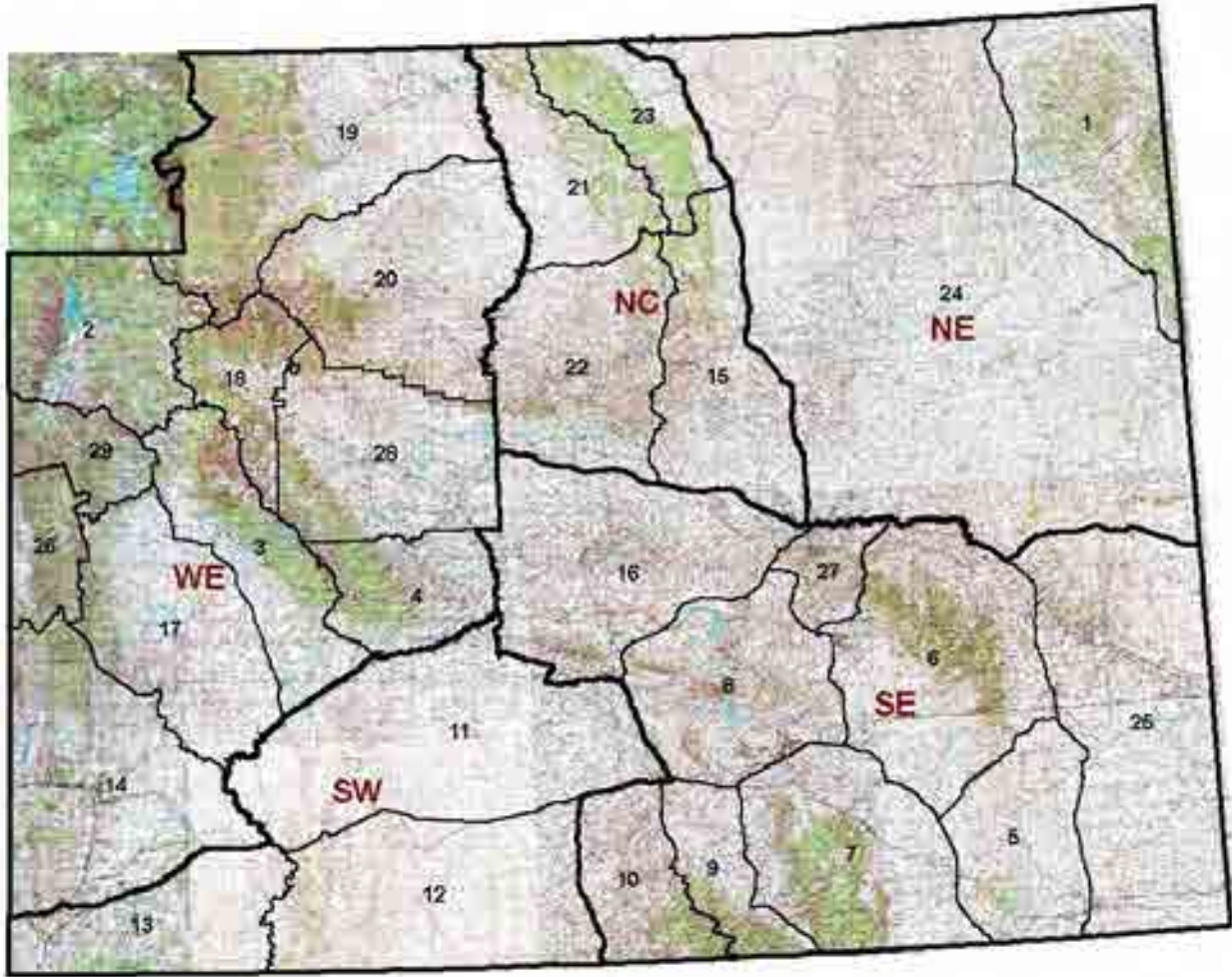


Figure II-3. Nonharvest, human caused mountain lion mortalities by cause reported in Wyoming, 1975-2006. Harvest year represents September of the given year through March of the following year. Other represents an electrocution in 1992 and a family group (1 female with 3 young) illegally poisoned in 2000. Nuisance mortalities include mountain lions depredating livestock or coming into close contact with human residence.



APPENDIX III. Wyoming mountain lion management units and hunt areas (numbered). Mountain lion management units: WE = West, SW = Southwest, SE = Southeast, NE = Northeast, and NC = North central.

APPENDIX IV. Wyoming mountain lion mortality form.

MOUNTAIN LION MORTALITY FORM

Hunt Area: _____ Region: _____

Date of kill: _____ TYPE: Legal _____ Illegal _____ Estrange Control _____ Other _____ Unknown _____
 If "Other" or "Unknown", probable cause of mortality: _____

PERSON WHO HARVESTED LION: Name: _____
 Address: _____ City: _____
 State: _____ Zip: _____ Phone: _____ Resident: _____ Nonresident: _____

METHODS/EFFORT: Days hunted: _____ Were dogs used? (Y/N) _____ If not, how was lion harvested? _____
 Was a guide/outline used? (Y/N) _____ Name: _____ Dog owner: _____
 Number of lions hunted: _____ Were you selective while hunting? (Y/N) _____ Number of lions trapped and released: _____
 Number of lions that were marked: _____ (Ear tag / tattoo / collar / other frequency) _____
 Number of fresh tracks not pursued: _____ (How many were single adults? _____ How many were adults with kittens? _____)

LOCATION/DRAINAGE: Where was lion harvested? _____
 Sec: _____ Township: _____ Range: _____ ITM Zone: _____ UTM Easting: _____ UTM Northing: _____

SEX AND AGE: Sex: _____ Est. Age: _____
 If female, presently lactating? (Y/N) _____
 Appear to have lactated in past? (Y/N) _____
 Canine ridges below gumline? (Y[2-3] / N) _____
 Any visible spotting on rear legs? (Y[2-3] / N) _____
 Visible bars on inside of front legs? (Y[2-3] / N) _____

REQUIRED SAMPLES

Number of teeth collected: 0 / 1 / 2 Pictures of teeth (Y/N) _____

Hair/skin sample (1/2" X 1/2") taken (Y/N) _____

sample paw print

Remarks: _____

Data record was WQF# _____ (Date Biological Services Called) _____

I, _____ of _____
 being duly sworn, depose and say that I am the holder of Wyoming Mountain Lion license # _____
 and lawfully took the above lion on _____ 20____ at Hunt Area # _____

Imperforated by _____ Date _____ Hunter's Signature _____

Any person who makes a false statement on the registration form regarding the date the mountain lion was taken or the hunt area in which it was taken shall be in violation of this regulation and, such violation shall be punishable as provided by Title 23, Wyoming Statutes for violation of Commission regulations.

Note: The person that checked the lion should forward the completed form and all teeth & hair samples to the Regional Office of registration and all Biological Services to update the harvest database. The Regional Office of registration will keep a copy of the completed form and send the original, along with the teeth and hair samples to the Trophy Game Section. Revised 04/04

Appendix V. Interpretation of mountain lion behaviors arranged in order of increasing risk to a human interacting with the mountain lion. Do not rely solely on these behaviors to assess risk, because mountain lions are ambush predators whose behavior usually is not observed before an attack on a human (from the Cougar Management Guidelines 2005, page 89).

Observation	Interpretation	Human Risk
Opportunistically viewed at distance	Secretive	Low
Flight, hiding	Avoidance	Low
Lack of attention, various movements not directed toward person	Indifference, or actively avoiding inducing aggression	Low
Various body positions, ears up, may be shifting positions, intent attention, following behavior.	Curiosity	Low-provided human response is appropriate
Intense staring, following and hiding behavior	Assessing success of attack	Moderate
Hissing, snarling, vocalization	Defensive behaviors, attack may be imminent	Moderate, depending on distance to animal
Crouching, tail twitching, intense staring, ears flattened like wings, body low to ground, head may be up	Pre-attack	High
Ears flat, fur out, tail twitching, body and head low to ground, rear legs “pumping”	Imminent attack	Very high and immediate

Appendix VI. Some measures, with supporting information, that humans can take during an encounter to prevent injury (from the Cougar Management Guidelines 2005, page 93).

Recommendations	Supporting Information
Keep children under close control, and in view. Pick up small children immediately if you Encounter a mountain lion. Do not hike alone.	60% of victims have been unsupervised children or lone adults.
Do not run.	Running and quick movements may Stimulate chasing and catching response.
Stand. Wave your arms. Raise jacket over your Head. Appear as large as possible. Move to higher ground if nearby. Throw sticks, rocks, or other objects if within reach and accessible without bending to low.	Prey size vulnerability, and “positioning” influences mountain lion response.
Avoid dead animals and never approach kittens. Talk calmly. Back away.	Non-prey may be attacked if viewed as a threat.
Maintain eye contact. Do not look away. But if mountain lion appears agitated use peripheral vision to keep track if its location.	Eye-to-eye contact often restrains large cats. Direct eye contact from prey may inhibit predatory action.
Be alert to your surroundings.	Cats exploit all vantage points/cover when investigating prey.
If attacked, fight back. Humans have successfully deterred attacks by becoming aggressive.	A cat grasps with its teeth only if it meets with no resistance. Violently struggling Prey may be released.
Secure pets and hobby animals in predator proof enclosures between dusk and dawn. Keep pets on leashes and off trails in the backcountry.	Domestic prey animals may sustain mountain lion populations at unnaturally high levels.
Keep garbage under control to avoid attracting raccoons, skunks, etc. Do not feed pets outside and remove extra feed from domestic animal pens. Do not feed wildlife.	Mountain lions may be attracted to concentrations of potential prey.
A mountain lion that treats humans as prey is a public safety threat.	Once a learned behavior develops it may not be possible to modify this behavior.
Mountain lions that enter yards or campsites to kill pets may be candidates for removal. Keep pets under control.	Once a learned behavior develops it may not be modifiable.

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL]
Date: Monday, August 14, 2023 4:00:41 PM

Please add to rule repository. Thanks

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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From: Rusty Rodriguez <rustyrodriguez505@gmail.com>
Sent: Monday, August 14, 2023 3:59 PM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL]

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support and hunt bear and cougar hunting in New Mexico. We can't let this state follow the same path as California.

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] Bear and Cougar proposal
Date: Saturday, August 19, 2023 1:15:05 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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From: ethanshoop78 <ethanshoop78@gmail.com>
Sent: Saturday, August 19, 2023 12:10 PM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>; Lopez, Tirzio, DGF <Tirzio.Lopez@dgf.nm.gov>; Fulfer, Gregg, DGF <Gregg.Fulfer@dgf.nm.gov>; Hickey, Sharon, DGF <Sharon.Hickey@dgf.nm.gov>; Garcia, Edward, DGF <edward.garcia@dgf.nm.gov>; Clemente, Fernando, DGF <fernando.clemente@state.nm.us>
Subject: [EXTERNAL] Bear and Cougar proposal

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

L

Dear New Mexico State Game Commission et al.,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

We as hunters fully recognize the impacts of not adhering to science based management and fully dismiss views based solely on emotion.

Respectfully,
Ethan Shoop (New Mexico resident hunter)

Sent via the Samsung Galaxy S21+ 5G, an AT&T 5G smartphone

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] Bear and cougar hunting
Date: Monday, August 14, 2023 4:56:04 PM

Please place in rule depository

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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From: Dave Garrett <dave.audra@hotmail.com>
Sent: Monday, August 14, 2023 4:54 PM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Bear and cougar hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the hunting of bear and cougar

Dave Garrett
Trophy Hunting Adventures, LLC
719-680-2527
1522 S. Oak St.
Trinidad, CO 81082

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] Bear and cougar rule
Date: Thursday, August 17, 2023 4:40:26 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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From: Trevor Whitmire <tqwhitmire@gmail.com>
Sent: Thursday, August 17, 2023 9:26 AM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Bear and cougar rule

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This email is regarding the Bear and Cougar rule!

I have been hunting all my life and use it as a way to escape reality. Especially bear hunting. My uncle and I plan a trip every year to head out to bear camp and look forward to opening day all year long. We are actually heading up this weekend to get out and into the woods.

I ask that you leave predator management in the hands of the department of game and fish (NMDGF) As we support bear and cougar hunting here in New Mexico!

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] Lion and bear hunting
Date: Tuesday, August 15, 2023 9:06:15 AM

Please include in rule making repository. Thanks

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](tel:5054768148)
Fax: [505/476-8123](tel:5054768123)

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From: Clint Moeller <cmguidedhunts@gmail.com>
Sent: Tuesday, August 15, 2023 7:28 AM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Lion and bear hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support Lion and bear hunting in NM.

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] NM Bear and Lion Rule
Date: Wednesday, August 23, 2023 2:35:26 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
Santa Fe, NM 87507

Ph.: 505/476-8148
Fax: 505/476-8123

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-----Original Message-----

From: GT Nunn <gtnunn@aol.com>
Sent: Tuesday, August 22, 2023 9:06 AM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] NM Bear and Lion Rule

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is GT Nunn a life time resident of New Mexico and I support the hunting of bear and lion within the management standards of New Mexico Game And Fish in New Mexico.

GT Nunn
Sent from my iPhone

Sent from my iPhone

From: [Liley, Stewart, DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] New Mexico Hunters/Conservationists in Support of Bear and Cougar Management, New Rule
Date: Thursday, August 24, 2023 1:47:49 PM
Attachments: [Bear Cougar Sporting Coalition Letter.pdf](#)

Stewart Liley, Chief
Wildlife Management Division
New Mexico Game and Fish
One Wildlife Way
Santa Fe, NM 87507
Ph: 505-476-8038

New Email
stewart.liley@dgf.nm.gov

CONSERVING NEW MEXICO'S WILDLIFE FOR FUTURE GENERATIONS

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From: Adrian Angulo <adrian@nmwildlife.org>
Sent: Thursday, August 24, 2023 1:26 PM
To: ISPA, DGF <ispa@dgf.nm.gov>; DGF-BearCougar-Rules@state.nm.us; Lopez, Tirzio, DGF <Tirzio.Lopez@dgf.nm.gov>; Fulfer, Gregg, DGF <Gregg.Fulfer@dgf.nm.gov>; Hickey, Sharon, DGF <Sharon.Hickey@dgf.nm.gov>; Garcia, Edward, DGF <edward.garcia@dgf.nm.gov>; Clemente, Fernando, DGF <fernando.clemente@state.nm.us>
Cc: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>; Liley, Stewart, DGF <Stewart.Liley@dgf.nm.gov>
Subject: [EXTERNAL] New Mexico Hunters/Conservationists in Support of Bear and Cougar Management, New Rule

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commissioners, Director Sloane, and Chief Liley,

Please see the attached letter from a diverse coalition of hunting and conservation groups. Thank you in advance for standing up for scientific management of game and for stewardship of our state's proud hunting traditions.

In Service,

Adrian Angulo
Deputy Director
New Mexico Wildlife Federation

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] Re: Lion and bear hunting
Date: Thursday, August 17, 2023 4:31:47 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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From: jack mulholland <jack_mulholland@yahoo.com>
Sent: Thursday, August 17, 2023 12:53 PM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Re: Lion and bear hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon,

I wanted to voice my support of keeping the bear and lion hunting quotas in the hands of the biologists. I see a bunch of positives of hunting with hounds. The hunter can ensure they are not taking a female with young. It also teaches the bear/Lion to stay away from residence because of the barking. This leads to less depredation kills.

Thanks,

Jack Mulholland.

[Sent from Yahoo Mail for iPhone](#)

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] Support the hunting of Bear and Cougar
Date: Thursday, August 17, 2023 4:39:35 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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From: Kay Brown <cay142@yahoo.com>
Sent: Thursday, August 17, 2023 9:41 AM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Support the hunting of Bear and Cougar

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the hunting of Bear and Cougar

Thank You for your consideration.
Jan Brown

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] bear and cougar rules
Date: Wednesday, August 16, 2023 2:52:27 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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From: Marty Greenwood <crossbareenterprises@yahoo.com>
Sent: Wednesday, August 16, 2023 10:37 AM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] bear and cougar rules

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the hunting of cougar and bear with hounds to aid in the management of our predator population.

I have been involved with this for 50 plus years and our NMDGF have brought our numbers up to a healthy population with the current system.

Any changes would be detrimental.

Please support the hunting of bear and cougar rule update.

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: FW: [EXTERNAL] support of bear and cougar rule
Date: Tuesday, August 15, 2023 2:19:39 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](tel:5054768148)
Fax: [505/476-8123](tel:5054768123)

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From: Lee Weiss <leeweiss@fishtailranch.com>
Sent: Tuesday, August 15, 2023 11:34 AM
To: Sloane, Michael B., DGF <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] support of bear and cougar rule

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of the bear and cougar rule. This is important for proper game management.

Thanks
Lee Weiss
Chama New Mexico

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] Bear & Cougar Rule
Date: Friday, August 18, 2023 6:16:51 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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Begin forwarded message:

From: Dennis Kauffman <denkauffman@yahoo.com>
Date: August 18, 2023 at 4:09:12 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Bear & Cougar Rule

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Michael,

Starting in the 1970s I was involved in hunter safety in NM for over 20 years. I've been involved in guiding (mostly Persian Ibex) for 39 years. Below is what I sent to the commission today.

Please, please support the continued hunting of bears and cougars in the upcoming four year cycle of hunting rules. The Game and Fish proposal is based on a great deal of research and historic data. Please be supportive of their recommendations.

Beyond that, on a nearly unrelated subject, I have personally found fresh evidence (typically by seeing tracks and blood in snow or mud) that show beyond any doubt that coyotes kill far more deer than the quantity they are commonly accused of killing.

Thank you for your consideration!

Dennis

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 23, 2023 7:31:37 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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Begin forwarded message:

From: Debbie Armstrong <armstrongdl66@gmail.com>
Date: August 23, 2023 at 6:08:04 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Bear and cougar hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of bear and cougar hunting.

Sincerely

Debbie Armstrong

--

Sincerely,

Debbie

Debbie Armstrong
BIG Consulting, Inc
Founder/CEO
Phone [575-707-1670](#)
Email : bigconsulting66@gmail.com

“Bringing Intentional Growth”

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] Bear and lion
Date: Wednesday, August 16, 2023 6:45:09 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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Begin forwarded message:

From: BRETT KELLY <bowhunter_1978@hotmail.com>
Date: August 16, 2023 at 6:00:50 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Bear and lion

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Regulations having to do with any hunting should be handled with science. Not emotion.

Bears and lions need to be managed. The best way we manage them is by hunting.

Thank you for your time.

Keep Hunting

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] For hunting
Date: Saturday, August 19, 2023 8:26:43 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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Begin forwarded message:

From: Bob Daugherty <bigrimoutfitters@gmail.com>
Date: August 19, 2023 at 7:51:39 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] For hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I and my husband own a ranch and have a cattle allotment near Winston, NM. On the nearly 17,000 acres we have the largest population of bear compared to other ranches. I was told that it was "prime" bear habitat. Actually, it is prime cattle country and the bear happen to enjoy young calves they find laying in the canyons while their mothers feed. I have found way too many pieces and parts of what is left after the bear is done feeding. It is disheartening when you count on that calf growing to sale weight and providing a living for my husband and I and my daughter, her husband and their 2 year old child. The only way we can survive is to have a season when bear can be hunted. It would be even better if we could go back to a spring and fall bear season. There are more than enough bear to do that. Lion have also not only killed our calves but they kill mature bucks...not fawns, not does...mature bucks. We find dead heads all the time when we are searching for our cattle. What does this do to the deer herd? Well, one less buck to breed the does, no fawns and slowly the deer population diminishes and a huntable population will not be there for the public. A lion also hunted my husband when

he was out for a hike. Thank goodness he escaped harm. Without hunting you will be seeing the same results as California...lions WILL hunt humans and they will kill.

Our choice is for hunting both species. You don't manage predators...you don't try and selectively pick and choose. You control them thru hunting. Period.

Jennafer

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] Fwd: Delivery Status Notification (Failure)
Date: Friday, August 18, 2023 8:49:49 AM
Attachments: [icon.png](#)

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

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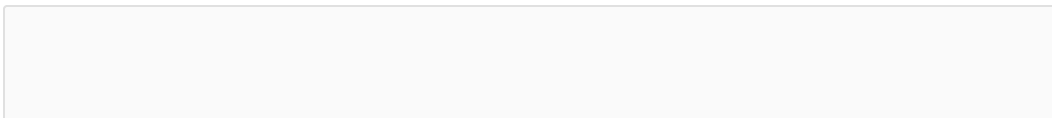
Begin forwarded message:

From: Tom Klumker <sfroutfitters@gmail.com>
Date: August 18, 2023 at 7:35:56 AM MST
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Fwd: Delivery Status Notification (Failure)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

----- Forwarded message -----

From: **Mail Delivery Subsystem** <mailer-daemon@googlemail.com>
Date: Fri, Aug 18, 2023 at 8:33 AM
Subject: Delivery Status Notification (Failure)
To: <sfroutfitters@gmail.com>





Address not found

Your message wasn't delivered to **michael.sloan@dgf.nm.us** because the domain [dgf.nm.us](mailto:michael.sloan@dgf.nm.us) couldn't be found. Check for typos or unnecessary spaces and try again.

[LEARN MORE](#)

The response was:

DNS Error: DNS type 'mx' lookup of [dgf.nm.us](mailto:michael.sloan@dgf.nm.us) responded with code NXDOMAIN Domain name not found: [dgf.nm.us](mailto:michael.sloan@dgf.nm.us) Learn more at <https://support.google.com/mail/?p=BadRcptDomain>

----- Forwarded message -----

From: Tom Klumker <sfroutfitters@gmail.com>
To: Sharon.Hickey@dgf.nm.gov, Edward.Garcia@dgf.nm.gov,
Fernando.Clements@dgf.nm.gov, michael.sloan@dgf.nm.us
Cc:
Bcc:
Date: Wed, 16 Aug 2023 12:22:01 -0600
Subject: Fwd: Bear and Cougar Rule

----- Forwarded message -----

From: **Tom Klumker** <sfroutfitters@gmail.com>
Date: Wed, Aug 16, 2023 at 12:16 PM
Subject: Bear and Cougar Rule
To: <Gregg.Fulfer@dgf.nm.gov>

Dear Commissioner,

I fully support the NMDGF on their management proposals for bear and cougar

hunting and their professional wildlife management.

Bear and Cougar numbers are at an all time high especially here in SW NM. The Game Dept. is doing a good job of managing these predators that take a huge toll on our elk calves and deer, and thereby keep our ungulate wildlife numbers healthy.

Thank you,

Tom Klumker

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] Keep predator management in nm
Date: Wednesday, August 16, 2023 6:44:53 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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Begin forwarded message:

From: KC <hendricksk2@hotmail.com>
Date: August 16, 2023 at 6:31:19 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Keep predator management in nm

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is crucial to maintain the predator numbers in our state. I am very much in favor of maintaining the opportunity to hunt bet and cougars.

Sent from my iPhone

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] SUPPORT of bear and cougar hunting
Date: Monday, August 21, 2023 7:59:54 AM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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Begin forwarded message:

From: Charlsie Savage <scsavage@windstream.net>
Date: August 21, 2023 at 7:35:51 AM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] SUPPORT of bear and cougar hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

I would like to take this opportunity to state that I STRONGLY support the hunting of bear and cougar. They are in fact a predator and I have personally seen where they have killed a full grown bull elk, cow elk, and grown deer. I was a rancher in the Little Hachet Mountains near Hachita, NM and I personally experienced mountain lion (cougar) kills of full grown desert big horn rans on more than one occasion. For these reasons, again, I am in support of hunting bear and cougar.

Respectfully,
Sid Savage
Caballo, NM 87931

Sent from [Mail](#) for Windows

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] Support of Bear and Cougar rule change
Date: Wednesday, August 16, 2023 6:46:11 PM

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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Begin forwarded message:

From: Bobby Duran <nmbowhunter@yahoo.com>
Date: August 16, 2023 at 4:16:01 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] Support of Bear and Cougar rule change

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Director,

My name is Bobby Duran. I am a lifetime resident of New Mexico. I have been a hunting guide in New Mexico since 2010 and a Wildlife and Fisheries Biologist since 2008. First, I would like to applaud the New Mexico Department of Game and Fish for their large predator management of bear and cougar in the state of NM. I am in full support of the actions Biologists and Managers have taken over the years concerning managing bear and cougar and think they are doing a fantastic job. I want to express my full support of the current proposed rule changes. Using sound science and modeling to adjust harvest quotas and manage each region according to each population within that unit is key to adaptive management of the species. I would urge each commissioner to allow the expert biologists and big game managers to make the best decisions possible for large predator management and that includes hunting. Hunting has been a great tool in keeping predator populations in check. We all know what happens when bears

become problems as rural and mountain towns continue to see a rise in problem bear encounters. I live in Angel Fire, NM and it has become a bad problem lately. No hunting or negative management actions would only make this issue worse and in the long run would result in detrimental impacts to bears by increased depredation kills by the Department. I urge each commissioner to not allow emotions and the mass outcry of the anti-hunting community to affect their decision when voting for the proposed rule changes for bear and cougar. Let science speak the truth and allow biologists to do their job and manage their species. I fully support hunting bear and cougar, including with dogs, and I fully support the proposed rule changes.

Thank you for your time in reading this.

Bobby Duran

From: [Darr, Ryan, DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] VOTE NO on Extending Current Hunting Limits on Mountain Lions!
Date: Monday, October 16, 2023 2:56:48 PM

Forwarding to add to public comment

Sent from my iPhone

Begin forwarded message:

From: "ISPA, DGF" <ispa@dgf.nm.gov>
Date: October 16, 2023 at 8:14:34 AM MDT
To: "Darr, Ryan, DGF" <Ryan.Darr@dgf.nm.gov>
Cc: "Pitman, James, DGF" <James.Pitman@dgf.nm.gov>
Subject: Fw: [EXTERNAL] VOTE NO on Extending Current Hunting Limits on Mountain Lions!

Good morning ,
Forwarding as I imagine there may be a request for lion /bear harvest emails .
Thank you

Public Relations Coordinator Team
New Mexico Game and Fish
1 Wildlife Way
Santa Fe, NM 87507
Phone: 888-248-6866 or 505-476-8000
Email: ispa@state.nm.us

CONSERVING NEW MEXICO'S WILDLIFE FOR FUTURE GENERATIONS

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From: David T <magjav@swcp.com>
Sent: Sunday, October 15, 2023 12:31 PM
To: DGF-Bear-Cougar-Rules@state.nm <DGF-Bear-Cougar-Rules@state.nm>; ISPA, DGF <ispa@dgf.nm.gov>
Subject: [EXTERNAL] VOTE NO on Extending Current Hunting Limits on Mountain Lions!

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

Here's the main point: PLEASE, **DO NOT ACT TO EXTEND THE**

CURRENT HUNTING LIMITS ON MOUNTAIN LIONS (COUGARS).

The state of NM is quite complex. We tend to be lauded for our natural beauty and artistic community and jeered for our bottom of the list standing when it comes to public education, etc. We just finished up a successful 51st Balloon Fiesta which continues to make us a "bucket list state destination." We personally have met some of the best human beings on the planet in this very state.

Meanwhile, students at local public high schools continue to have ridiculous access to guns that wind up shooting their peers. Across the world, Israel and Palestine are going at it among other world conflicts like say, Ukraine... Global warming is contributing to wild weather swings resulting in loss of life and property. And, Covid19 still looms. There is plenty to cry over and lament.

Can we at least agree on NOT decimating slowly and surely the mountain lions of our state by **NOT granting the extension of current hunting limits on these majestic animals? Can we do something peaceful for once?**

Keeping the faith...

Martha Glenn, David Tichnell and Conor Tichnell

From: [Darr, Ryan, DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] proposed rule concerning mountain lion hunting limits
Date: Monday, October 16, 2023 2:57:18 PM

Also forwarding to add to the comments

Sent from my iPhone

Begin forwarded message:

From: "ISPA, DGF" <ispa@dgf.nm.gov>
Date: October 16, 2023 at 8:28:00 AM MDT
To: "Darr, Ryan, DGF" <Ryan.Darr@dgf.nm.gov>
Subject: Fw: [EXTERNAL] proposed rule concerning mountain lion hunting limits

Forwarding .
Thank you

Public Relations Coordinator Team
New Mexico Game and Fish
1 Wildlife Way
Santa Fe, NM 87507
Phone: 888-248-6866 or 505-476-8000
Email: ispa@state.nm.us

CONSERVING NEW MEXICO'S WILDLIFE FOR FUTURE GENERATIONS

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From: Lorraine Almo <lorralmo@hotmail.com>
Sent: Sunday, October 15, 2023 5:16 PM
To: ISPA, DGF <ispa@dgf.nm.gov>
Subject: [EXTERNAL] proposed rule concerning mountain lion hunting limits

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To New Mexico Game & Fish Dept:

I am opposed to the proposal to increase the number of mountain lions to be hunted and killed. These lions face an increase in challenges within their environment. Climate change causing draught, flooding, and other events

threaten them and other wildlife. We should not be killing more of them!

Sincerely yours,

Lorraine Almo

From: [Sloane, Michael B., DGF](#)
To: [Forman, Nicholas, DGF](#)
Subject: Fwd: [EXTERNAL] support bear and cougar hunting
Date: Monday, August 14, 2023 4:48:18 PM

Please add to repository

Michael B. Sloane
Director
New Mexico Department of Game and Fish
1 Wildlife Way
[Santa Fe, NM](#) 87507

Ph.: [505/476-8148](#)
Fax: [505/476-8123](#)

Conserving New Mexico's Wildlife for Future Generations.

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Begin forwarded message:

From: gtaulman@huntuso.com
Date: August 14, 2023 at 4:29:02 PM MDT
To: "Sloane, Michael B., DGF" <michael.sloane@dgf.nm.gov>
Subject: [EXTERNAL] support bear and cougar hunting

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My family and I support bear and cougar hunting in NM

Taulman Family

George, Jean, Sierra, Gina, Carson

From: [Liley, Stewart, DGF](#)
To: [ISPA, DGF](#)
Cc: [Forman, Nicholas, DGF](#)
Subject: RE: [EXTERNAL] Bear and Cougar Rule topic of public meetings
Date: Monday, July 10, 2023 5:54:13 PM

This would go to the bear and cougar rule development email. I have copied Nic Forman and he can take care of it thanks.

Stewart

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: "ISPA, DGF" <ispa@dgf.nm.gov>
Date: 7/10/23 10:02 AM (GMT-07:00)
To: "Liley, Stewart, DGF" <Stewart.Liley@dgf.nm.gov>
Subject: FW: [EXTERNAL] Bear and Cougar Rule topic of public meetings

Steward
Where would this email go?
Please see below.
Thanks

-----Original Message-----

From: Gabriel Gomez <gabrielgomez.iphone@yahoo.com>
Sent: Friday, July 7, 2023 6:01 PM
To: ISPA, DGF <ispa@dgf.nm.gov>
Subject: [EXTERNAL] Bear and Cougar Rule topic of public meetings

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings,

Will out of state hunters be included in the proposed rule?

I would pay hundreds of dollars for an out of state hunter license designation so that I may purchase an over the counter permit to hunt turkey, cougar, bear, etc. I only have the ability to apply for draw hunts, and even those are restricted to 6%.

Out of State hunters pay more for the privileges that residents enjoy. If you offered a hunting/fishing license instead of simply a limited permit we could have more opportunities to join in on family hunts with In State relatives and friends.

Many relatives and close friends are now seniors and ca. no longer hunt solo, they need younger hunters and hunting buddies (hunting groups) to safely hunt dangerous game.

Please keep us in mind.

Sent from my iPhone

From: [George Harrell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Monday, October 16, 2023 12:39:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mountain lions are an important species for any ecosystem they are inhabitants in. They do not need to be hunted for any reason. The hunting of mountain lions is cruel and needs to be outlawed.

From: [Dustin Martin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, August 20, 2023 7:13:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Once again here's the email address to paste in your email:

dgf-bear-cougar-rules@state.nm.us

From: [Alan Bennett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Friday, August 18, 2023 12:19:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Thank you,
Alan Bennett
304.667.7138

From: [Amy Bennett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Friday, August 18, 2023 12:18:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Thank you,
Amy Bennett
970.426.2205

From: [Justin Bixler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 6:32:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sent from my iPhone

From: [Robert Sandoval](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 5:28:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Marcus Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 12:56:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning, I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Michelle Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 10:16:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Eric Reid](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 8:20:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Ronald Mang](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 4:44:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Joe S](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, October 15, 2023 1:22:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I think it's good to get rid of as many of them as possible! Just keep a few!

From: [Johnny Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, October 15, 2023 11:38:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NMDGF IS SUPPOSED TO PROTECT OUR WILDLIFE! NOT BE THE MAIN SOURCE OF THEIR EXTINCTION

My name is Shyenne Martinez, Environmental Science major at NNMC in Espanola NM. studying to pursue Wildlife rehabilitation. So with that i was told to email your department in regards to the NM Mountain Lion endangerment. Just your department ALONE is Killing 10% of our cougars Just for a trophie?! You would rather have people walk into your house to see this beautiful creature dead, instead of going to the mountains to see one in their natural habitat?? Thats wrong on so many levels, so i would like you to put this into consideration.

From: [Al Deeds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, August 27, 2023 9:48:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't allow your wildlife to be managed by well meaning but ignorant emotional people. New Mexico can never allow it's valuable wildlife to be managed by emotions and ignore the 100+ years of wildlife success initiated by educated people like Aldo Leupold and Valerius Geist. These "concerned wildlife lovers" claim to use the "best science available" only to influence the uneducated emotional portion of the public because they want to ban all hunting, trapping, fishing and anything associated with the death of an animal. Please, Please allow your state wildlife biologists to do their job. You cannot manage wildlife with emotions and warm and fuzzy feelings. AL & Bonnie Deeds

From: [John Alexander](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, August 20, 2023 11:27:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and Cougar hunting should be increased in some zones to help the elk and deer. Bears are hurting the calf crop in elk in the 16A,16B,16C,16D and 16E areas. Cougar are over running the 23 area and hurting the deer herds can't reproduce fast enough. The anti hunters have no idea what they are talking about. The coyotes have doubled in population expands with the loss of trapping and contest help keep their numbers in check. Thank you John S. Alexander email plt305576@gmail.com

From: [Daxton Guerra](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, August 20, 2023 11:21:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi my name is Dax Guerra, I support hunting with hounds, and hunting lions and bears in New Mexico. I also support needing to take the meat for both lions and bears we harvest. We should be able to go to the female sub-limit and I also support eliminating bear zone seven.

From: [Darrell Ash](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Saturday, August 19, 2023 1:20:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To all concerned,

As a life-long outdoorsman in New Mexico, and avid proponent of science based wildlife management, I encourage the game commission to continue management of predators to maintain healthy prey/predator ratios and livestock depredation within available habitat. Wildlife management should not be based on emotion but long-term sustainable fact.

Sincerely,
Darrell Ash

From: [Tranquilino Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 5:29:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support continuing bear and cougar hunts in New Mexico

From: [Brandon Mckinney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 4:09:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hunting bears and lions with dogs. I do not support the thought of pulling deer/elk tags and exchanging them for predator tags

From: [Cody Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 12:22:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game and Fish,

I support the current regulations regarding bear and cougar hunting. In fact I believe that cougar hunting could be increased. I have a cabin near Cimarron, and when I was a boy we would see large herds of mule deer throughout the Canyon. There are very few mule deer left in the area, and the ones that are there are much more cautious and alert. In the past few years a neighbor watched a cougar come out from under his deck and kill and eat his dog. Last year another neighbor watched two yearly cougars kill a fawn and eat it right in front of his cabin! I hike all the time in the Colin Neblitt and Barker WMA's, and every year I find several elk and mule deer fawn killed by cougars.

The harvest limits now set for cougars are to conservative, I believe they should be increased. The limits for bears seem to be adequate.

Please add my comments to the public comment you are soliciting as you set new rules for hunting these predators.

Cody B. Walker
NM native and lifelong sportsman

From: [Scott B](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 7:27:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hound hunting is the only way to ethical harvest bear and mtn lion and keep these predators in check , without hound hunting your gunna be over populated in a few yrs , so plz keep hound hunting .

From: [Bryant Tafoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 6:24:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to run hounds to manage the population of lions and bears here in New Mexico without hounds lions are almost impossible to hunt, and if they are not hunted, the population will get out of control and they will wipe out the deer and elk population in the state. This is also a livelihood and a way of life for a lot of people. keep lion and bear hunting with hounds in New Mexico.

From: [Norma Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 8:41:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

People that don't hunt need to keep out of hunters business.

We go by the law's.

Not everyone hunt's with dogs or trap with inhumane traps.

Most hunters along with myself and family hunt to feed our families.

Some people can't eat processed meat!

From: [paul.galindo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Saturday, October 14, 2023 11:36:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It's sickening that NM Game & Fish would even consider such an outrageous proposal. It's so much like ALL other NM Agencies, someone in charge that's not a real NEW MEXICAN, does not fully understand, that habitat of NM. Like throughout the US man has encroached on there natural territory. Sick idea NM Game & Fish.

From: [Robert Mathews](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 6:52:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

From: [Miguel Baeza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 5:47:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I believe, hunting programs for bear and cougar are vital to the safety and well being of all New Mexicans. They should therefore continue.

From: [Rono Mang](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 4:38:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a new big game houndsman as of 2021 when I adopted a English walker pup not really knowing what the sport was all about. I grew up just knowing bird dogs as the only working class of dogs and had this very uninformed view of how dogs are used for hunting big game. Now having done research and getting into the sport it is clear that hunting bear with mans best friend (yes mans best friend since the dawn man helping and working together to provide food for the "pack.") That even entertaining a ban predator hunting would be not only devastating for agriculture communities (And the Metro area already having to trap and tranquilizer these large predators coming to the Intercity.) But also it would be a complete tragedy for the hunter making a living or like me making a way of life for me and may hounds. Ending hunting for our k9 friends will be ending them all together. The departments proposed increase in harvest limits is good idea and will directly affect the deer and elk populations for the better and other commenters on this need to learn something about carrying capacity. A topic the department teaches in hunter Ed.

[Sent from Yahoo Mail on Android](#)

From: [Rose Day](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 3:50:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that hunts are well thought out by professionals who track animal populations and herds, especially noting with drought issues and now rains, what is best for that population. I am not a hunter, but many college of my students were or were from families who hunted or supported hunting.

Anti-hunting groups do not acknowledge the professionalism of Game and Fish, outfitters who feed and house their children based on this income, ranches and a way of life kept alive by income from hunting. These anti-hunting groups, in a naive "save the little animals" perspective don't see how many young animals, deer, antelope, elk, calves, and others are destroyed by animals if not kept in check by hunting.

Please trust the trained professionals who are true do-gooders driven by research and knowledge, rather than well-meaning but ill-informed do-gooders who inadvertently cause damage to our wildlife population.

Thank you.

From: [Leonard Gallegos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 2:44:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. Without management of wildlife disease will be out of control.

From: [Doug Foshee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 2:40:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Even though I hunt neither bear nor cougar I full support regulated lawful licensed hunting for both species

Allowing the antihunting tree hugging bunny kissers to stop these hunts would only empower them to attempt to stop ALL hunting

Thank you for your diligence in preserving our right to hunt

Doug Foshee
[Sent from Yahoo Mail on Android](#)

From: [Glenn Selby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 1:29:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

From: [Kenneth Carter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 1:22:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please keep the hunting of bear and cougar like it is don't let the anti hunting group win

From: [Carl Kumrow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 1:21:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The state needs bear and mountain lion hunting as part of flexible balanced approach to managing wildlife vs human encroachment on our wildlife resource. Carl Kumrow

From: [Jacob Buettner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 12:44:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

My name is Jacob and I am an avid outdoorsman. I enjoy hiking camping, fishing, hunting, and viewing wildlife. I believe in management of our wildlife, that includes predator management. I believe managing predators on a science based management system is key to allowing the healthy populations of other species such as deer and elk.

Please continue to allow bear and cougar hunting/harvests for the management of all NM wildlife and to provide additional hunting opportunities and meat for NM families.

I support predator management by hunters and feel it should continue.

Thank you for your time and effort.

Jacob

From: [Terry MacNaughton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Saturday, October 14, 2023 11:13:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

stop killing mountain lions. There is no reason for this.

From: [Mark Hogland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 12:27:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Living in a rural area I can attest that there is no shortage of lions, and i also see more bear activity in recent times. The hunting of bears and lions with hounds needs to continue, it's vital that management of both would only be possible with hounds.

Sent from my iPhone

From: [Raymond Rios](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 12:24:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings,

I come from a long line of hunting and fishing heritage. My father used to hunt and trap to help out food on the table for us kids. He would sell pelts as often as he could and when hunting season would come around everyone of us boys would purchase a deer license.

We would fill our freezer with game meat because we didn't have a lot of money to buy meat. We are slowly losing our rights as honest hunters to these Animal Activists and there has to be a Happy Medium between Humans and Wildlife.

The Coyotes and other Varmints are already wreaking havoc on livestock and young deer as well as Quail.

We need to stand up and defend our rights to do the activities we do much love doing for sport as well as for survival. I support the fight against the Lion and Bear bans.

Thank you, Reymundo.

[Sent from Yahoo Mail for iPhone](#)

From: [Brian Flores](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 12:20:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to hunt cougars and bears !!!!! Leave our way of life alone

From: [Nichole Bouvet](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 12:16:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of predator hunts and management.

Nichole Bouvet

From: patotheguack@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 11:42:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We have finally reduced the cougar levels a little so we are seeing more mule deer and antelope it would be sad if we reduce the hunts on them now and lose the ground we have just gained thanks Pat Baca

From: [james cathey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 11:35:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting bear and cougar is an essential part of maintaining the balance of the eco system and should remain allowed. Hunting with dogs has been around for generations and should also be unchanged.

From: [Curt Richter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 11:31:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and Cougar hunting has been managed through New Mexico Game and Fish very thoroughly through by posting updated harvest results by unit which allows for excellent game population management in New Mexico, which keeps the population of these species at a level that are healthy and not a nuisance in populated areas. I wonder how these anti-hunting people would feel if cougar and bear populations were left out of control and they had their dog eaten by a cougar or their family member attacked by a bear??

Sent from [Mail](#) for Windows

From: [Stian Aaflo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 11:26:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

From: [edward sustaita](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 11:20:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Leave out hunting tradition and way of providing food on the table alone, thank you.

From: [colter.muldoon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 7:44:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi I know there is a lot of anti dog hunters trying to ban hounds hunting. I would like to show my full support of bear and cougar hunting or any kind of dog hunting. New Mexico needs to keep its traditions alive this is what we do, we hunt. Please do not take this away from us. This is all my family knows is running dogs, this is our life, this is what gets us up in the morning. So please protect our rights to hunt.

Sincerely, Colter Muldoon

From: otto888@juno.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Saturday, August 19, 2023 7:38:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Ladies and Gentlemen

All cougar and bear hunting needs to be banned! It is one more disgusting act of idiocy.

Respectfully
Chris Ottemiller
PO BOX 6502
Navajo Dam NM
87419

From: [Josh Chavez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Tuesday, August 15, 2023 7:45:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a concerned citizen and avid hunter that hopes the game and fish dept has enough sense to avoid listening to the complaints they are receiving about bear and cougar hunting. As we all know this helps to keep our predator population under control and can be helpful to landowners and their livestock.

Thank you.
Josh Chavez

From: [Garrett Kirby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Tuesday, August 15, 2023 7:19:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is Garrett, Kirby and I 110% agree with the legal harvesting of bears and mountain lions with the use of hound dogs

It has been a way of harvesting animals for hundreds of years. Making hound dogs illegal for hunting use would increase the death rate in deer and elk populations and not forget even farmers livestock the predators in New Mexico still need to be regulated and the most efficient and humane way to regulate them is with hound dogs.

From: [Jesus Reed](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Tuesday, August 15, 2023 7:14:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with hunting bear and lion with dogs in New Mexico. This hunting style is the closest to our ancestral roots that we can get. Don't take this away from our people.

From: [Donald Butts](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, August 20, 2023 3:55:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear hunting and cougar hunting with dogs should continue to be allowed in New Mexico.
Don Butts

Get [Outlook for Android](#)

From: [Margaret Mendoza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, October 18, 2023 8:18:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

1

Sent from Samsung Galaxy smartphone.
Get [Outlook for Android](#)

From: southwestgamecalls@yahoo.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Monday, October 16, 2023 12:50:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose this. thanks for your time. Colt Smith 575-993-3144

[Sent from Yahoo Mail on Android](#)

From: [Tpm Valdez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Saturday, October 14, 2023 4:36:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Typical fame and gish.

Just like the out of staters getting the most hunting permits you want to do the same with the big cats.

Who over there on caja del rio, actually comes up with these ideas.

From: [Otis Lewellen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Saturday, August 26, 2023 7:22:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is hard for me to understand with so many lion studies going on that indicate that in many areas coyotes are the larger portion of a lions diet! While GF makes war on lions. A camera set up on a coyote den showed over 20 fawns carried to den by parents to feed pups before they were old enough to leave den!

From: [Lura Brookins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Friday, August 25, 2023 5:01:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please protect our wildlife!!! The danger of drought and wildfires are perilous enough now, without fearing armed humans!

Lura Brookins
Santa Fe

From: dale.peterson@mail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, August 20, 2023 4:46:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Tell the anti bear and cougar hunter advocates that they and their pets should start carrying guns if us hunters don't keep these predators thinned down.

Tell them to go back to California.

Tell them to leave the hunters alone!

Sent using the mobile mail app

From: [dawn.driskill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 11:52:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

You are barking up the wrong tree. Pardon the pun. I have no support for predator hunting. Deer, elk, moose, buffalo/bison and other edible prey species are what should be hunted & not just for their headgear. We've moved too far away from spending effort to prove what great hunter's we are & instead we spend money. I remember when it wasn't a big rack that we went after but a big deer. Antlers won't feed anyone, yes I know that they can be sold to people in China for medicine, but really?

Anyway, I would never go into an environment & take out the controls, by that I mean the top predators. It would be irresponsible & ignorant of me. Soon New Mexico will be like Colorado, a bunch of folks who have lost the ability to live with predators and are terrified of coyotes, every wild animal is rabid & the wolves are coming, the wolves are coming, the wolves are coming!

Thank you for your time Dawna Lee Driskill

From: [Kyle Galyean](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 9:05:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

maybe this group should go to california where they belong and leave us the hell alone

From: [kevin williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Thursday, August 17, 2023 7:18:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Just another attemp by the liberal democrats to take yet another freedom away. I am with the good conservatives of New Mexico to stand up to these communists against this attempt to have us abide by what they think we should do

From: [FRANCESCA HENTSCH](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 12:47:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am excited that you are getting the public involved.

Franchesca Hentsch

From: [quicksilver67](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 5:42:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I completely appose the new bear a cougar rule. Please don't change the rule!

From: [Andres Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 5:41:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We completely appose the new cougar and bear rule. Please do not change the rule!

From: [Andres Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 5:41:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I completely appose the new cougar and bear rule. Do not change the rule!

[Sent from Yahoo Mail on Android](#)

From: [Ruben Mendez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Tuesday, August 15, 2023 5:20:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [George Lopez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 2, 2023 6:32:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [Otis Lewellen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Tuesday, August 15, 2023 4:08:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am adamantly opposed to this bill as not being in line with good game management planning!

From: [SALVADOR REYES](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Sunday, July 30, 2023 5:48:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We do not support the hunting of bears and cougars.

Sent from my iPhone

From: [Michael Parker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Wednesday, August 16, 2023 5:17:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to oppose hunting lions and bear with dogs. I don't believe lions or bear should be hunted just for their fur. No one eats these animals. If they were harvested for their meat that would be a different story but they are not. The only game that should allow retrieval with dogs are game birds. Thank you

From: corky92@q.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] (no subject)
Date: Thursday, August 17, 2023 4:26:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

As a hunter one thing I am sure of if predators aren't managed there will be more limited hunt opportunities for my kids.

Thank you,
Robert Hughes

From: [Lucia Lopez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL]
Date: Monday, October 16, 2023 3:18:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not allow mountain lions to be hunted. There are very view left in the state and they should be left alone. They are a beautiful animal that should be allowed to live in peace.

From: [Bob](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] 100% support the management programs in New Mexico
Date: Wednesday, August 16, 2023 3:21:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Bob Ortega

R.B. Ortega Construction
R.B. Ortega Realty LLC
GB-98 & Realtor

Mobile: 505-670-5449
Office: 505-983-7932

Sent from my iPhone

Please excuse inadvertent typos & auto-corrects

From: dsheft82@pvt.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] 2023 proposed bear rule
Date: Tuesday, May 30, 2023 4:56:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to comment on the current proposal for the bear rule as summarized on the NMGF website.

I am adamantly opposed to changing the opening date of the bear season in BMZ 12 (GMU 34) to August 16th or any time in the month of August. I have hunted bears in this zone/unit since the late 1970s. The bear population today is a fraction of what it was 30-40 years ago. The late summer time frame is a critical time for the bear population here to put on the necessary weight for successful hibernation. The massive road system in this zone (both legal and illegal) makes it virtually impossible for a bear to travel anywhere without being vulnerable to harvest particularly with the use of dogs. As a full time resident of the zone/unit and property owner with property bordering National Forest lands including riparian habitats the sightings and sign from bear activity are noticeably absent even though our property is within the "suitable habitat" used to estimate bear populations here. In the last 5 years I have observed only 1 bear and even with multiple game cameras operated 365 days a year have only recorded 1 bear. Forty years ago it was common to see several bears a week simply driving forest roads in this unit. I maintained up to 18 bear hounds and hunted both during the fall and then spring seasons. Huge expanses of country with healthy bear populations then are literally devoid of bears today. The 2014 study used to estimate bear populations here has some obvious weaknesses in its' population estimates and is now almost a decade old. The Department has also given no consideration to the cumulative impacts of its hunting seasons on the rural community and residents here. Recent expansions of turkey, (resulting in the turkey season from hell this spring) elk, and barbary sheep seasons in this unit have had and will have negative impacts to the local community. There is no biological justification for adding additional days to the bear season. This unit is heavily hunted by not only resident hunters but is significantly hunted by non-residents during the bear and other seasons. It is time to put the welfare of the resource first rather than the recreational wants of a small segment of the public.

David L. Heft CWB
PO Box 13
Mayhill, NM 88339
575-687-4207

From: dsheft82@pvt.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] 2023 proposed cougar rule
Date: Tuesday, May 30, 2023 5:12:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to comment on the proposed changes to the cougar rule as currently summarized on the NMGF website.

The current one size fits all blanket statewide management strategy needs to be completely revised to meet regional differences in integrated management objectives and effectiveness of harvest techniques.

There is currently no need to maintain a statewide year round hunt season on public lands. The year round season originally applied only to private lands in order to try to attempt to minimize depredation interventions by NMGF personnel as licensed hunters could remove offending animals. The only zones where year round hunting on both public and private lands should be allowed are those with ungulate management issues related to cougar depredations or chronic livestock depredation issues. This would serve to focus hunting activities by licensed hunters in areas where they could potentially serve as management tools to achieve related harvest objectives and potentially minimize depredation complaints. I would recommend a September 1-March 31 general season in most zones to allow overlap with other primary hunting seasons to allow opportunistic harvest by licensed hunters in the field pursuing other species. A more liberal quota should also be applied in those zones with chronic big game ungulate or livestock depredation issues.

The harvest by licensed trappers on private lands also needs to be allowed under previous guidelines in those zones where the Department is currently paying contractors to remove cougars including by trapping. It makes no sense for license funds to be used to contract for removal of cougars while denying license holders the opportunity to engage in harvest. Over the last 2 decades the NMGF has very likely spent approximately 2 million dollars to remove 100s of lions from desert bighorn sheep areas alone. It defies all common sense to pay for removal of cougars that could be accomplished by license buyers at no cost to the Department.

David L. Heft CWB
PO Box 13
Mayhill, NM 88339
575-687-4207

From: [Terry Rensberger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Thursday, August 24, 2023 1:42:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Terry Rensberger

From: [Lakhan Clark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 7:13:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Lakhan Clark

From: [Colton Padilla](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 10:22:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Predator management has been a core of wildlife management since the beginning. Managing predators allows for both healthy predator populations and individuals. Removal of predator management systems could cause an overpopulation of predators which could lead to lions or bears searching for food in urban areas. This could lead to more human wildlife conflict which may in turn be taken care of by contracted hunters. Similar to other systems seen for whitetail deer and cougars in other states, removal of hunting opportunities that fund wildlife conservation could be replaced with contract hunters who cost tax payers money. Additionally, the use of hounds for hunting bears and lions allows for selective harvest of certain individuals to keep the populations at adequate sex ratios. The tradition of hound hunting is a long-standing practice in New Mexico and is very effective in managing predator populations. Please keep wildlife management in the hands of hunters that fund wildlife conservation rather than making the public pay for contract hunters and trappers to do the same job. Thank you for your time. I appreciate the ability to have feed back.

Colton Padilla
Tome, NM

Sincerely,
Colton Padilla

From: [Mark Ross](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Tuesday, August 22, 2023 7:38:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Mark Ross

From: [jelindo.tiberti](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Monday, August 21, 2023 7:47:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
jelindo tiberti

From: [Ashton Dorris](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 3:55:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please keep the bear and cougar hunts. Short-sighted decisions in wildlife management can lead to unintended consequences. By using the scientific expertise of trained biologists and relying on historical data, we ensure that our actions today won't harm our wildlife tomorrow. I urge the commission to continue prioritizing a long-term vision for New Mexico's wildlife.

Sincerely,
Ashton Dorris

From: [Dirk Barnes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 2:17:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Continuous review and adjustment are essential for effective wildlife management. The proposed changes to the bear and cougar rule seem well thought out, reflecting lessons learned over time. Such adaptations are necessary to ensure the well-being of our wildlife populations. Please support bear/cougar hunting.

Sincerely,
Dirk Barnes

From: [Mike Quesenberry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 11:53:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Mike Quesenberry

From: [EVAN BURCH](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 10:39:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
EVAN BURCH

From: [Richard Petropulos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 9:57:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Richard Petropulos

From: [James Atkins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Sunday, August 20, 2023 8:09:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
James Atkins

From: [Isaac Beck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Call to Defend Hound Hunting Traditions
Date: Friday, August 25, 2023 5:56:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
Isaac Beck

From: [Keigan Cisneros](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Monday, August 21, 2023 1:44:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Keigan Cisneros

From: [Chase Williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Monday, August 21, 2023 1:37:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's stance on wildlife management provides a compelling blueprint for balancing conservation with sustainable usage. Embracing scientifically-backed strategies, including regulated hunting, fortifies New Mexico's position as a forerunner in wildlife conservation. With that in mind, keep the bear and cougar hunts!

Sincerely,
Chase Williams

From: [Artin Marootian](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Saturday, August 19, 2023 11:19:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Artin Marootian

From: [TALON POWERS](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Wednesday, August 23, 2023 8:50:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
TALON POWERS

From: [Jim Piotter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Monday, August 21, 2023 2:28:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Jim Piotter

From: [Glenn Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Sunday, August 20, 2023 7:49:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Glenn Miller

From: [Jacob Franklin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Common-Sense Plea: Don't Waste Our Game
Date: Tuesday, August 22, 2023 9:08:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Jacob Franklin

From: [Gage Smolko](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Monday, August 21, 2023 6:12:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Gage Smolko

From: [Darrell Chalupa](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 2:49:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Darrell Chalupa

From: [Logan Rosenlund](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 2:40:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Logan Rosenlund

From: [Ryan Jenson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 2:36:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Ryan Jenson

From: [Dane Jacobi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 2:34:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Dane Jacobi

From: [Trevor Probandt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 2:04:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Trevor Probandt

From: [Joshua Storey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 12:05:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Joshua Storey

From: [Tim Haws](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 11:54:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Tim Haws

From: [Zac LaPierre](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 7:57:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Zac LaPierre

From: [DAVID ENRIQUEZ](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 6:50:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
DAVID ENRIQUEZ

From: [Blaine Page](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 6:22:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Blaine Page

From: [Todd Bumgardner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Monday, August 21, 2023 4:32:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Todd Bumgardner

From: [Travis Adams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Monday, August 21, 2023 10:17:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Travis Adams

From: [Tyler Knouff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Monday, August 21, 2023 4:46:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Continuous review and adjustment are essential for effective wildlife management. The proposed changes to the bear and cougar rule seem well thought out, reflecting lessons learned over time. Such adaptations are necessary to ensure the well-being of our wildlife populations. Please support bear/cougar hunting.

Sincerely,
Tyler Knouff

From: [Michael Adamo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 8:52:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Michael Adamo

From: [Vincent Schaff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 8:35:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Vincent Schaff

From: [Mitchell Spierings](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 8:33:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Mitchell Spierings

From: [jim.solberg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 8:11:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
jim solberg

From: [Joe Nobles](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Sunday, August 20, 2023 2:51:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Joe Nobles

From: [Davis Edmondson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Reminder of How Hunting Traditions Benefit All
Date: Tuesday, August 22, 2023 6:26:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife management policy emphasizes a well-balanced approach. The state's commitment to ensuring an adequate game supply while conserving our natural habitats is commendable. Incorporating scientific strategies in predator management is not just a best practice, it's mandated by law. Let the bear and cougar hunts continue!

Sincerely,
Davis Edmondson

From: [Kyle Snape](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Unified Front Against Anti-Hunting Agendas
Date: Sunday, August 20, 2023 1:31:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Kyle Snape

From: [Charley Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Unified Front Against Anti-Hunting Agendas
Date: Sunday, August 20, 2023 11:15:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives.

Sincerely,
Charley Brown

From: [Robert Poor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Unified Front Against Anti-Hunting Agendas
Date: Sunday, August 20, 2023 7:12:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the constantly shifting landscape of wildlife management, one thing remains constant: the importance of informed, science-based decisions. This ensures that traditions are respected, ecosystems are preserved, and future challenges are anticipated. The proposed adjustments to the bear and cougar rule, rooted in both science and historical context, embody this approach.

Sincerely,
Robert Poor

From: [Adam Troyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] A Unified Front Against Anti-Hunting Agendas
Date: Thursday, August 24, 2023 2:15:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Adam Troyer

From: [jai lakshman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] ATTN: NM Dept. of Game and Fish - PUBLIC COMMENTS for 8/25/23 Meeting
Date: Thursday, August 24, 2023 9:39:36 AM
Attachments: [NM Game Commission - Public Comment 8-25-23 Meeting- Lakshman.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

****ATTN: NM Dept. of Game and Fish - PUBLIC COMMENTS for 8/25/23 Meeting (also, by PDF letter attached)**

Dear Friends and Respected Colleagues at NM Game and Fish,

As a 40+ year resident of NM living on +45acs of lands along SFNF, precious watershed and wilderness areas, I ask that you please enter into the public record and respectfully consider my comments below (and attached) re. the hunting of bears and cougars important agenda item scheduled at your upcoming meeting on 8/25/23 in Raton.

With greatest respect for the balancing of wildlife, ecosystems, outdoors, recreation and hunting interests during times of increasing climate, drought, catastrophic wildfire(s), and challenged forest (i.e., species) conditions, I request that you please pause, utmost consider and take into account the following key issues in your deliberations for making final recommendations, practice and policy decisions:

1. Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. As given current climate, forest and catastrophic wildfire conditions there is increasing evidence to be made that 'kill quotas' for both species have been unjustifiably high in recent years.
2. Bears and cougars are now scientifically known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
3. Killing bears and cougars for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

3. Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected.

Current proposals to raise the kill quotas don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying.

4. The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is lacking and the public currently has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years.

There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal

treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation.

As such, we respectfully request NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Thank-you for your consideration today and for your ongoing deliberations about these most vital issues for the proper respect and management of New Mexico's precious wildlife and lands into the future. Please feel free to contact me if there is any further information or discussion you would like to have re. my comments expressed herein.

Yours Respectfully,

Jai Lakshman

Jai Lakshman, President
Native Development Associates
223 N. Guadalupe St., Suite 269
Santa Fe, NM 87501
505-920-2870 (c)
e-mail: jlaksnm@yahoo.com

From: [Mickey v. Brussel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] About the hunting of bears and cougars for the next four years in NM
Date: Sunday, July 16, 2023 4:47:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sir:

I want to convey my comments to you.

The current draft of the proposed rule recommends raising the kill quotas for bears, extending the bear hunting season, and “adjusting” kill quotas for cougars. But Game and Fish has NOT provided sufficient or coherent information about bear or cougar populations that allows the public or even wildlife biologists to judge whether their recommendations are sound!

---This lack of correct estimates means that quotas for both should be reduced, not raised, the kill quotas for cougars and bears have been unjustifiably high for too many years already!

We now know that both species are very important in regulating our ecosystems.

And both species can self-regulate their own numbers. Killing bears and cougars randomly, for "recreation and trophies" does not help address conflicts with people, in the contrary, it might cause more conflicts as trophy hunters typically go for larger, established individuals for their kills, disrupting important bear and cougar social structures.

Current proposals to raise the kill quotas are reckless, they do not use the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific evidence. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. The people of New Mexico, most of them against killing cougars and bears, deserve honest numbers when it comes to wildlife "management", and these numbers are absent in the hunting rules now proposed for bears and cougars.

Besides, there is no indication that NM Game and Fish has accounted for the growing drought problems and the consequences of that for wildlife. Another reason to lower the kill quotas. Even segments of the hunting community find the practice of using dogs to chase cougars up the trees to be killed contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for trophies and "recreation". So I take this opportunity as well to ask NM Game and Fish to consider broad public opinion and at least adopt hunting rules that ban the use of dogs during cougar and bear hunting.

Sincerely:

Anna Brewer, Albuquerque, NM

From: [Kevin Williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Thursday, August 24, 2023 2:49:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives.

Sincerely,
Kevin Williams

From: [Cory Pfeifer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 10:20:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Cory Pfeifer

From: [Brian Park](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 9:23:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Brian Park

From: [Daniel Unzicker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 9:13:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Daniel Unzicker

From: [Mike Metzler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 9:04:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Mike Metzler

From: [Robert Crook](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 7:14:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Robert Crook

From: [Tom Radandt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 6:32:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts!

Sincerely,
Tom Radandt

From: [Nick Kufalk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Thursday, August 24, 2023 12:30:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Nick Kufalk

From: [David Bartley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Wednesday, August 23, 2023 9:17:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
David Bartley

From: [Josh Brann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Monday, August 21, 2023 4:09:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Josh Brann

From: [Justin Christensen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Monday, August 21, 2023 1:42:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Justin Christensen

From: [Gavin Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Monday, August 21, 2023 7:38:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Please keep the hunts!

Sincerely,
Gavin Miller

From: [James Kauffman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Monday, August 21, 2023 7:29:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
James Kauffman

From: [Please keep our lion and bear hunting in New Mexico so that we may use it as the conservation tool that it is Warner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 9:50:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,

Please keep our lion and bear hunting in New Mexico so that we may use it as the conservation tool that it is Warner

From: [Justin Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Sunday, August 20, 2023 9:38:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Justin Moore

From: [Ron Pesek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adding Voice to the Support of Game Biologists
Date: Thursday, August 24, 2023 3:57:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
Ron Pesek

From: [MARYJANE BEISEL](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Addition Killing of Bear and Cougar in NM
Date: Sunday, October 22, 2023 5:12:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dept. of Game and Fish, Your department was had bad direction in the recent past that I disagree with: the killing of Feral Cattle in the Gila Wilderness by shooting them from helicopters and leaving their carcass to rot in the National Forest! There were much better (humane) proposals put forth that were turned down by you (Game and Fish) to get rid of these cattle, but you decided to not heed the communities and the Cattle Ranchers, etc.. It sure turned alot of people off. Now you're proposing to kill many additional wild, big game large animals that my family is against. Its a mismanaged directive. It is another example of the Gov't making poor decisions as were made with the "controlled burns" by the Nat'l Forest that led to the 345,000+ acer destruction of the Calf Canyon/ Hermits peak fires, the largest fire in N.M. ever posted. Then, the rains and floods came with more destruction. Those poor people in Las Vegas and Mora County are still suffering, and it will affect generations to come. These decisions have lasting effect. I voice my opinion again the killing of additional large game wildlife as a long time resident in New Mexico. This is just another Gov't agency making a poor decision that needs to be reconsidered!

Thanks, MaryJane Beisel Cook, 505- 237-0959.

From: [Daniel Hunsaker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Thursday, August 24, 2023 12:36:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Daniel Hunsaker

From: [Ryan Little](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:19:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Ryan Little

From: [Robert Kulik](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:08:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Robert Kulik

From: [Eva Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 8:03:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Eva Johnson

From: [Terry Rensberger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 7:56:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Terry Rensberger

From: [ERIC SMITH](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 7:37:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
ERIC SMITH

From: [Joshua Didier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 6:59:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Joshua Didier

From: [Jason Quimby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 5:00:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Jason Quimby

From: ["Clayton St. John"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Saturday, August 19, 2023 10:26:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Clayton St. John

From: [John Frost](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Thursday, August 24, 2023 1:08:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

I am a non-resident of New Mexico who has traveled to New Mexico many times to participate in the excellent hunting there. I always appreciate the opportunity to add a cougar tag to my other species tags so that I might take an incidental cougar (when in season). This brings extra dollars into new Mexico for support of wildlife management. Please do NOT allow anti-hunting activists to dictate New Mexico hunting regulations.

Sincerely,

Sincerely,
John Frost

From: [Robert Kroger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 7:01:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Dear Commision,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect New Mexico's state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Appreciate the opportunity to share my thoughts.

Sincerely,
Robert Kroger

From: [Myron Gabbert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Wednesday, August 23, 2023 5:41:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The law is clear in its directive: New Mexico's wildlife must be managed scientifically to ensure both recreation and sustenance for its people. The proposed changes to bear and cougar management are in line with this directive. It's not merely a matter of tradition but of legal and ethical responsibility. Cat and bear hunts must continue!

Sincerely,
Myron Gabbert

From: [Ron Blackford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 12:34:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife management policy emphasizes a well-balanced approach. The state's commitment to ensuring an adequate game supply while conserving our natural habitats is commendable. Incorporating scientific strategies in predator management is not just a best practice, it's mandated by law. Let the bear and cougar hunts continue!

Sincerely,
Ron Blackford

From: [Aaron Landin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:59:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Aaron Landin

From: [Russel Rogers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:49:44 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Russel Rogers

From: [Ryan Aranda](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:41:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Ryan Aranda

From: [john.koleszar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:28:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
john.koleszar

From: [Keith Kubista](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:26:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Keith Kubista

From: [Richard Mattis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Sunday, August 20, 2023 9:20:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Richard Mattis

From: [joe keathley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adherence to New Mexico's Statutory Directives
Date: Thursday, August 24, 2023 1:01:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
joe keathley

From: [Nick Dodds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adhering to NM's Vision of Wildlife Management
Date: Monday, August 21, 2023 9:29:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Nick Dodds

From: [Jacob Pickett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adhering to NM's Vision of Wildlife Management
Date: Sunday, August 20, 2023 6:37:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Jacob Pickett

From: [John Loyko](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adhering to NM's Vision of Wildlife Management
Date: Sunday, August 20, 2023 8:55:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
John Loyko

From: [Brian Houck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adhering to NM's Vision of Wildlife Management
Date: Sunday, August 20, 2023 8:38:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Brian Houck

From: [Brandon Wilson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adhering to NM's Vision of Wildlife Management
Date: Sunday, August 20, 2023 7:08:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Brandon Wilson

From: [Keith Derr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Adhering to NM's Vision of Wildlife Management
Date: Sunday, August 27, 2023 5:55:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Keith Derr

From: [John Killian](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Science-Based Approach
Date: Sunday, August 20, 2023 11:04:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
John Killian

From: [Dustin Luedtke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Monday, August 21, 2023 9:00:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Dustin Luedtke

From: [Jerry Pressly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 11:21:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Jerry Pressly

From: [Kevin Harvancik](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 10:58:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Kevin Harvancik

From: [Paul Meacham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 10:58:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Paul Meacham

From: [James Kowalski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 10:34:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
James Kowalski

From: [Ken Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 10:18:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Ken Brown

From: [Joe Chandler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 8:50:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Joe Chandler

From: [Paul Miles](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 7:43:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Paul Miles

From: [Chip Martin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 7:08:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Chip Martin

From: [Joshua Weir](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 8:00:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Joshua Weir

From: [Ryan Byrd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 7:59:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Ryan Byrd

From: [Scott Kese](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 7:35:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Scott Kese

From: [Scott Kese](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 7:33:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Scott Kese

From: [Shay Downs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 4:04:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Shay Downs

From: [Mitch Neve](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 3:39:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Mitch Neve

From: [Brice Crowther](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 2:54:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives.

Sincerely,
Brice Crowther

From: [Blane Markham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Sunday, August 20, 2023 2:29:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives.

Sincerely,
Blane Markham

From: [Jeremy Zelko](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Advocacy for a Thoughtful, Science-Based Approach
Date: Monday, August 21, 2023 11:44:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Jeremy Zelko

From: [Teresa Manlowe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Against proposal
Date: Monday, July 31, 2023 3:57:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I was surprised at the new proposal to allow killing of additional bears and cougars. This is a reckless and destructive proposal lacking scientific rigor and ethical competence. The game department's continuing focus on expanding the recreational killing of our wildlife is another clear example of why state wildlife management must be reformed and modernized.

Bears and cougars are both native to New Mexico and belong on this landscape in ecologically significant numbers. These species manage their own populations based on the availability of food and habitat. There is no credible evidence that either species needs to be lethally "managed."

Please reconsider for the future health of our unique environment.

Thank you,

Teresa Manlowe

From: [EDWARD GUINN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Allow Bear and Cougar hunting
Date: Wednesday, August 16, 2023 3:41:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent Edward Guinn

From: [patrick.chavez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Allow hunts
Date: Thursday, August 17, 2023 1:50:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Allow hunts with dogs for all dog friendly hunts

Get [Outlook for iOS](#)

From: [claudette selph](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Animal protection
Date: Saturday, October 14, 2023 7:12:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I hope every decision made is with scientific evidence and that we keep in mind animals deserve protection and not continually have to deal with human encroachment. Please do not make decisions based on what seems ok! Be sure we are issuing changes based on scientific information on the impact on the species and the environment. Animals deserve no less. And human deserve no less as it impacts our world. Claudette Selph, Rio Rancho
Sent from my iPhone

From: [Mason Anthony](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Anti hunters
Date: Thursday, August 17, 2023 5:15:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I think we need to let the biologists with fish and game manage the hunting and conservation of all game animals.

We do not need anti-hunters telling the game commission how to manage our wildlife. If that happens, we will eventually be overrun with animals that are inbreeding and are destined to diseases and have all kinds of deformities. This is an injustice not only for the bear and cougars, but all wild game.

Respectful,

George Mason
ganthonymason@gmail.com
575-574-4892

From: [kristi.magnuson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Anti-Hunters are whiners!
Date: Wednesday, August 16, 2023 12:05:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Do not allow these commie Liberal anti-hunters/animal rights turds take away our ability to hunt what we want on our NM lands. Stop letting them run the narrative!

Sent from my Verizon, Samsung Galaxy smartphone

From: [Bonnye Reed Fry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Apex animals in New Mexico
Date: Thursday, August 24, 2023 11:18:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We have to stop killing our apex critters - wolves, bears and cougars! They play an essential role in our environment!

From: [Jeanne Warren](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appalled At Killing Bears And Cougars!
Date: Sunday, July 30, 2023 4:55:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The article I read regarding killing more bears and cougars should be a felony. What is wrong with the human race today! PLEASE PUT A STOP TO THIS!!! Jeanne Warren 505-980-1709

From: [cp1d5](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appose
Date: Wednesday, August 16, 2023 11:59:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I appose any new rules or regulations that interfere or infringe on My God given right to hunt. I do agree with Maintaining habitat and populations of all huntable species to allow for future generations to hunt as we do.

Chris Padilla
Las Cruces NM 88005
5756422075

Sent from my Galaxy

From: [Clayton Hoy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 20, 2023 11:50:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the constantly shifting landscape of wildlife management, one thing remains constant: the importance of informed, science-based decisions. This ensures that traditions are respected, ecosystems are preserved, and future challenges are anticipated. The proposed adjustments to the bear and cougar rule, rooted in both science and historical context, embody this approach.

Sincerely,
Clayton Hoy

From: [Frank Rivera](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 20, 2023 2:13:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Frank Rivera

From: [Matt Klooster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 20, 2023 2:13:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Matt Klooster

From: [Lance Mathews](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 20, 2023 1:24:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Lance Mathews

From: [Colin Shepherd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 20, 2023 9:21:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Colin Shepherd

From: [Jon Giles](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 20, 2023 7:04:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Jon Giles

From: [George bassolino](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Appreciating NM's Hunting Traditions and Their Impact
Date: Sunday, August 27, 2023 8:09:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
George bassolino

From: blackbearguardian@everyactioncustom.com on behalf of [Capt. Craig McClure](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] As a former biologist for the U.S. Fish and Wildlife Service, I Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:48:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Capt. Craig McClure
Albuquerque, NM 87176
blackbearguardian@gmail.com

From: [fordtruckingal21](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] As a woman who has grown up around hunting my entire life, I know the values it teaches. The respect for our beautiful state it brings. Predators are not harvested without thought or consideration. I agree with the NM Game and Fish Biolog...
Date: Thursday, August 17, 2023 4:47:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sincerely, Krystal Kaiser

Sent from my Verizon, Samsung Galaxy smartphone

From: [John Piano](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] As long as they are not on the endanger list yes. We can't let them over populate will hurt other animals and they will come in contact with humans which is always a bad thing usually costing them there lives.
Date: Wednesday, August 16, 2023 4:31:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my Verizon, Samsung Galaxy smartphone

From: [Amos Grado](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Attack on Bear and Cougar hunting privileges.
Date: Wednesday, August 16, 2023 11:35:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a hunter who lives here in SENM. Please fight for us hunters to keep our hunting privileges with beat and cougar. If anti-hunters are successful they will keep going.

Thank you
Amos Grado

From: [joseph islas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Aug 16th bear 34,36
Date: Tuesday, August 15, 2023 2:28:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern.

I am an Outfitter and hunter in the state of NM. I live in Ruidoso, I hunt and guide here every year and strongly believe that we should open bear hunting in units 34 and 36 on Aug. 16th. I believe that the pressure it has put on units 37,38 during the August hunt from them being closed is not worth it. I do not think that units 34,36 being open for bear in August will harm any other hunts and it will give hunters the opportunity to spread out more in Southern NM. Even if we just open it for spot and stock hunting without the use of dogs.

Thank you for your time.

Joe Islas
Antler Mountain Outfitters LLC

From: [Jodi Islas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August 16 Unit 34,36 Bear
Date: Tuesday, August 15, 2023 2:39:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello. My name is Jodi Islas. I am a hunter in the state of New Mexico. I would like to see us open units 34 and 36 for bear hunting on August 16. I feel that the other units open in the southern portion of the state during that time are crowded with hounds men and bear hunters. I think it would give them more room to spread out. Thank you in advance,

Jodi Islas

Sent from my Verizon, Samsung Galaxy smartphone
Get [Outlook for Android](#)

From: [Nick White](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August Bear Season
Date: Wednesday, August 16, 2023 4:59:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like the August bear season reinstated.

Sent from Samsung Galaxy smartphone.

Get [Outlook for Android](#)

From: [Sky Sgovio](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August Bear Season
Date: Tuesday, August 15, 2023 6:53:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMDGF,

Please reinstate august bear season in the southern zone. Hunting should be available and accessible to all who wish to enjoy.

Regards,
Sky Sgovio

From: [RJA 12](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August Bear Season
Date: Wednesday, August 16, 2023 6:52:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the august bear seasons in the southern zones. Seasons should be based on sound game management practices not political activism.

Thank you,
Ronald Adams

From: [Ryan Foster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August Bear Seasons
Date: Tuesday, August 15, 2023 7:07:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This is to request that the August bear season be reinstated in the southern zones.

Sent from my iPhone

From: [Tommy Taylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August Bear season
Date: Thursday, August 17, 2023 7:15:52 AM
Attachments: [image001.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the August Bear hunt in the southern zones. Pretty please!

Thank y'all for your service!

Tommy Taylor | Principal Recruiter

(866) 221-5405 x4503 | (214) 442-4503 (direct)

(888) 575-9252 (fax) | (214) 563-8623 (cell)

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From: [Chad Casson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August Season in units 34 and 36
Date: Friday, August 18, 2023 1:08:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This email is in reference to resetting the season start dates in GMU 34 and 36 to August to coincide with GMU 37. This would spread sport hunters out instead of having the majority of hunters in one unit between hound hunting and spot and stalk hunters.

Also I would like the commission to consider a spring season, the reason for this I believe would be to reduce summer encounters in urban areas.

Thank you for your consideration.

Chad Casson

Sent from [Mail](#) for Windows

From: [Ty Goar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear
Date: Wednesday, August 16, 2023 11:15:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I vote for the august bear hunts to be reinstated.

From: [Valerie LaRosk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear 34 and 36
Date: Tuesday, August 15, 2023 2:52:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please open August bear hunting in Units 34 and 36.

Thank you.

[Sent from Yahoo Mail on Android](#)

From: [Ty Goar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear hunts
Date: Wednesday, August 16, 2023 11:14:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to see the august bear hunts in GMU 34 and 36 to open back up. Thank you for your time.

Thanks, Ty Goar
Owner of TG's Trophy Hunts
575-937-8016

From: [Justin Houston](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Tuesday, August 15, 2023 2:35:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the august bear season.

From: dakotasgtc@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Tuesday, August 15, 2023 2:37:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi

My name is Dakota Swagerty and I am sending this email to say I'm wanting the august bear season back.

Thanks

Sent from my iPhone

From: [Shelly Troyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Thursday, August 17, 2023 6:04:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

My husband and I own outfitting business in southern NM and just learned about the state opting to cancel the August bear season. This affects our business negatively and we would like to voice our opinion about it in attempt to reinstate the season. Please take into consideration that local business owners income and livelihood is affected by these new changes and the economy of NM will be negatively impacted. Most of our hunters come from out of state and support our economy. The bear seasons have quotas set to protect bear populations and this system has worked well for many years.

Thank you for your time,
Shelly Troyer
575-707-0882

Sent from my iPhone

From: [Mattfriend1 Crappie1](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Wednesday, August 16, 2023 6:39:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the August bear season...

From: [GREG HOLTZ](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Tuesday, August 15, 2023 8:22:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dgf-bear-cougar- please reinstate the august bear seasons in the southern zones.

Greg Holtz

From: [Stuart Berry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Tuesday, August 15, 2023 3:46:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I am FOR reinstating the August bear season. As a bear hunter, houndsmen, and NM registered guide I would like to see our season reinstated for August bear season. I am against shortening our season, period. As a bear hunter who spends close to 300 days a year in the bear woods, the population is very healthy!

Thank you

Sent from my iPhone

From: [Barbara Berry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear season
Date: Monday, August 21, 2023 4:27:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi I'm a former resident of New Mexico and have recently learned that the august bear season is in danger of being closed!

I am asking that it be reinstated for many reasons but the main one is population and health reasons for the bears! If hunting isn't allowed any longer they will become nuisances and ill because of over population of said animals and the food sources they enjoy will be scarce! This would cause endangerment to humans and livestock! So please do NOT allow them to angel bear hunting or predatory control in this beautiful state!

Sincerely,
Barbara Berry

Sent from BB

From: [John Ebner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August bear
Date: Wednesday, September 27, 2023 7:36:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sending an email to request August bear season with hounds back!

From: [Matthew Skebeck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] August season
Date: Tuesday, August 15, 2023 6:45:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

August bear seasons need to be reinstated. As a nonresident this is one of my annual trips with my sons. The dates are just before back to school and is the only time that works for a trip.

Sent from my iPhone

From: [Chris E. Mayton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Authorizing Killing
Date: Sunday, July 30, 2023 10:53:08 AM

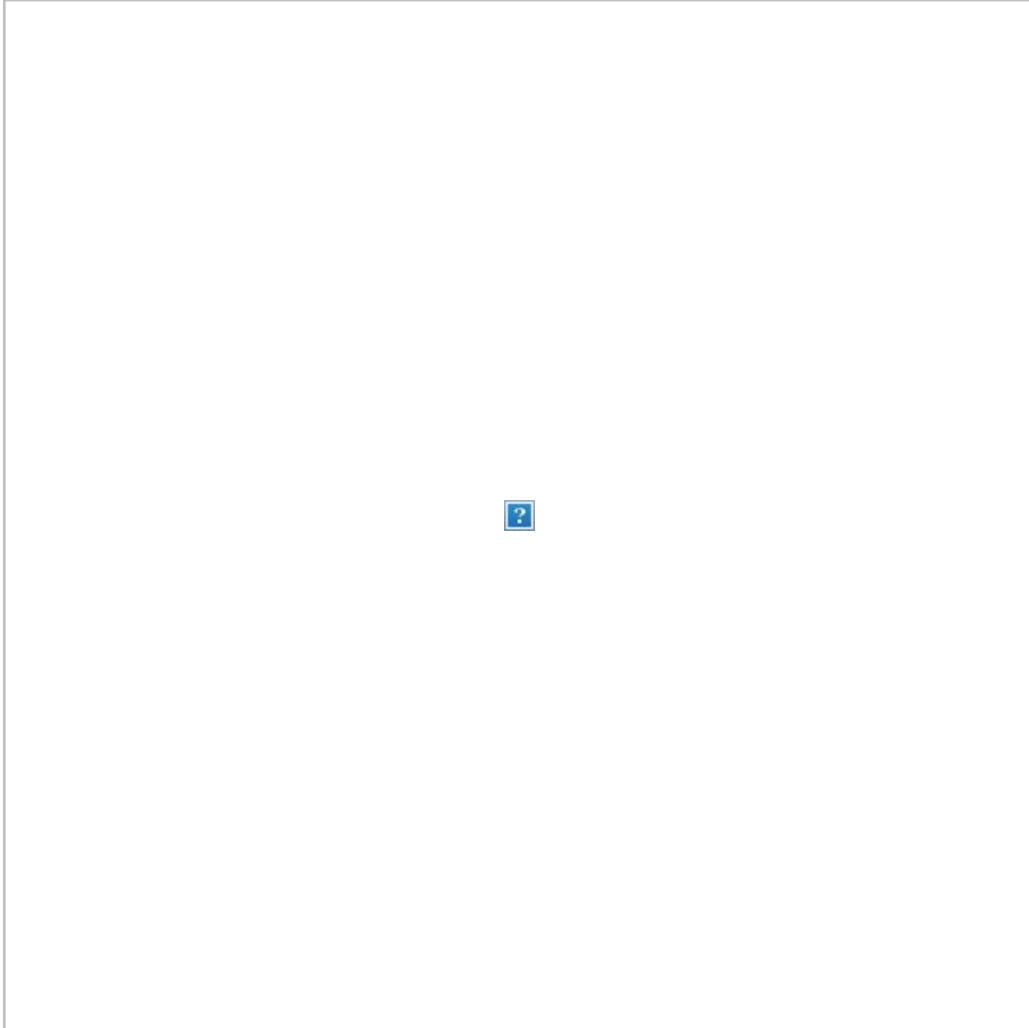
CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I implore you do NOT authorize the killing of Bears and Cougars. How can you do so, but for \$47 and \$43. Our wild life is far more valuable!! Alive, not dead!

[Sent from the all new AOL app for iOS](#)

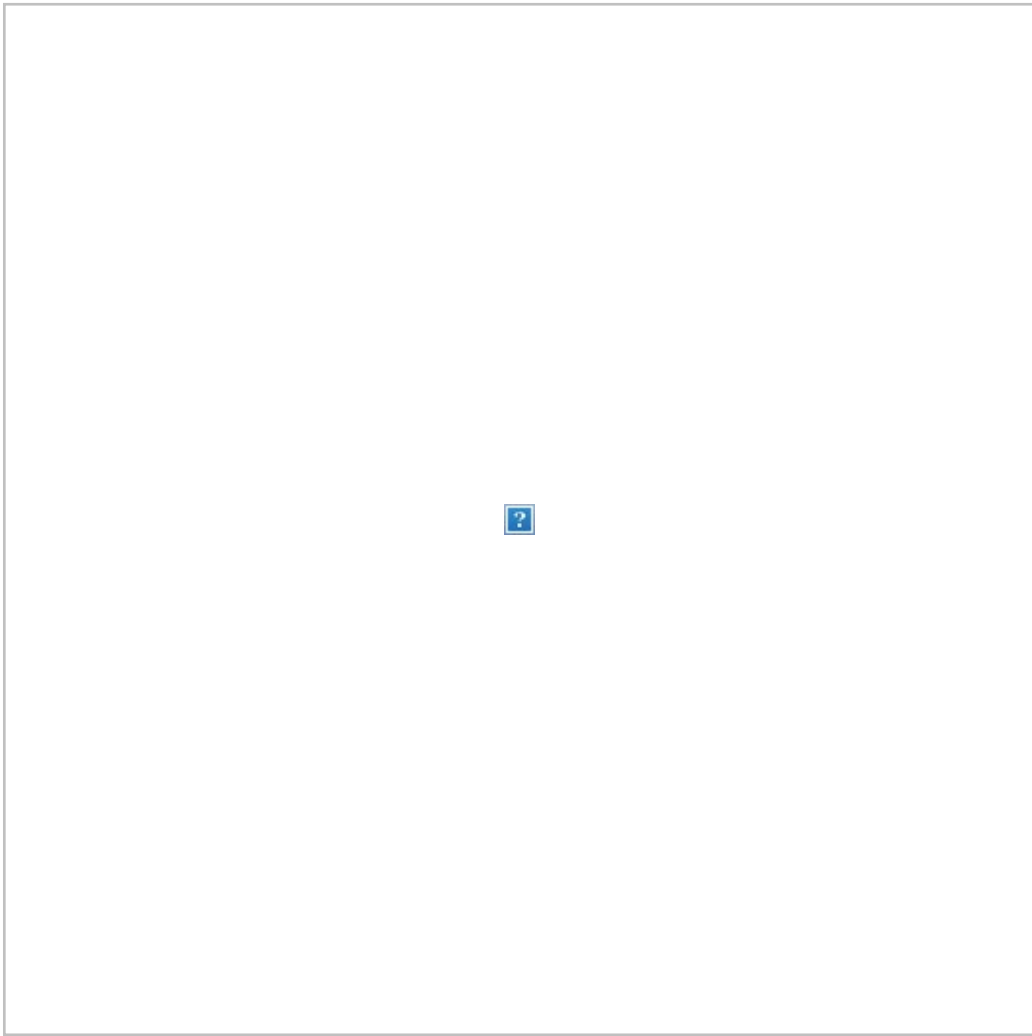
From: [Elite Crete Systems](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Automotive Surfaces & Flooring
Date: Wednesday, September 6, 2023 11:10:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.



HERMETIC™ Flake Floors are completely seamless protective coatings engineered for long-term durability. These finishes provide adjustable levels of slight texture and can be customized to match the existing design.

MORE PROJECTS



A HERMETIC™ Paramount Floor was installed in this service bay to provide a chemical resistant non-slip finish that is easy to maintain and available in fast set for a quick turnaround time.

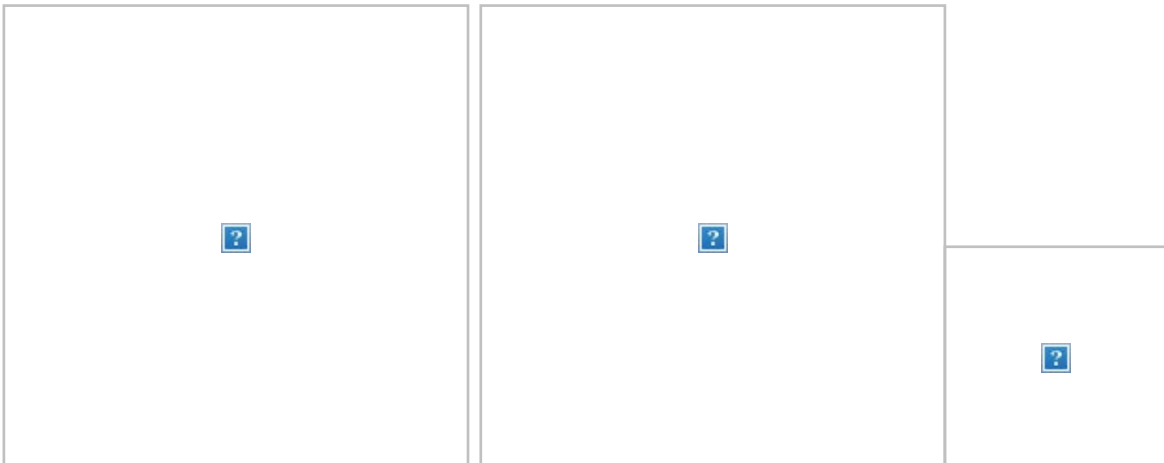


An aesthetically appealing REFLECTOR™ Enhancer Floor was fluid-applied in this showroom. This extremely durable coating can handle high traffic and can be applied on new or existing surfaces.



HERMETIC™ Stout Floors are high-build double broadcast coatings that use silica quartz aggregate and are sealed with a pigmented topcoat. These surfaces are easy to maintain and extremely hard, for abrasion resistance.

Visualization Tool





Info Catalog

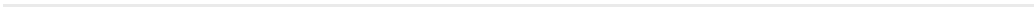
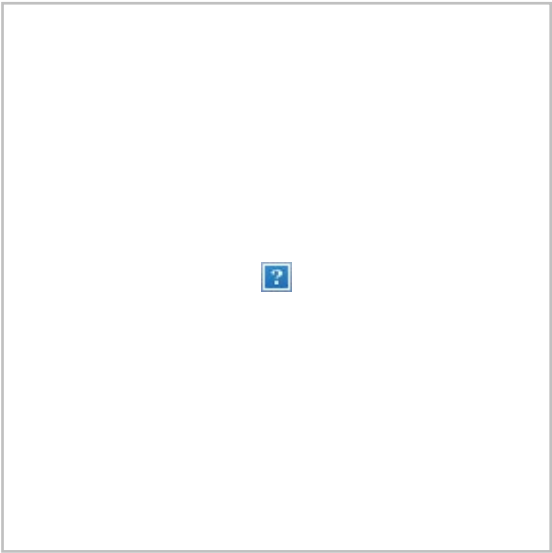
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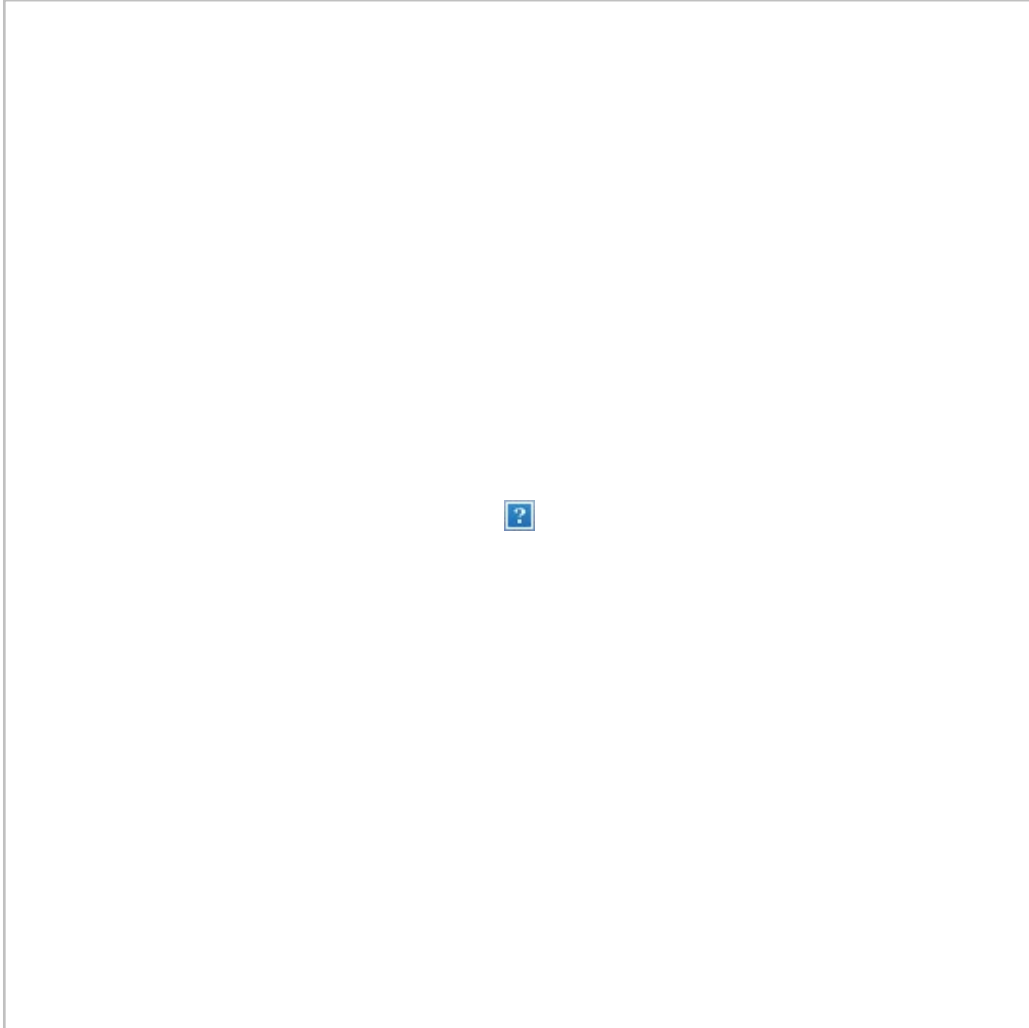


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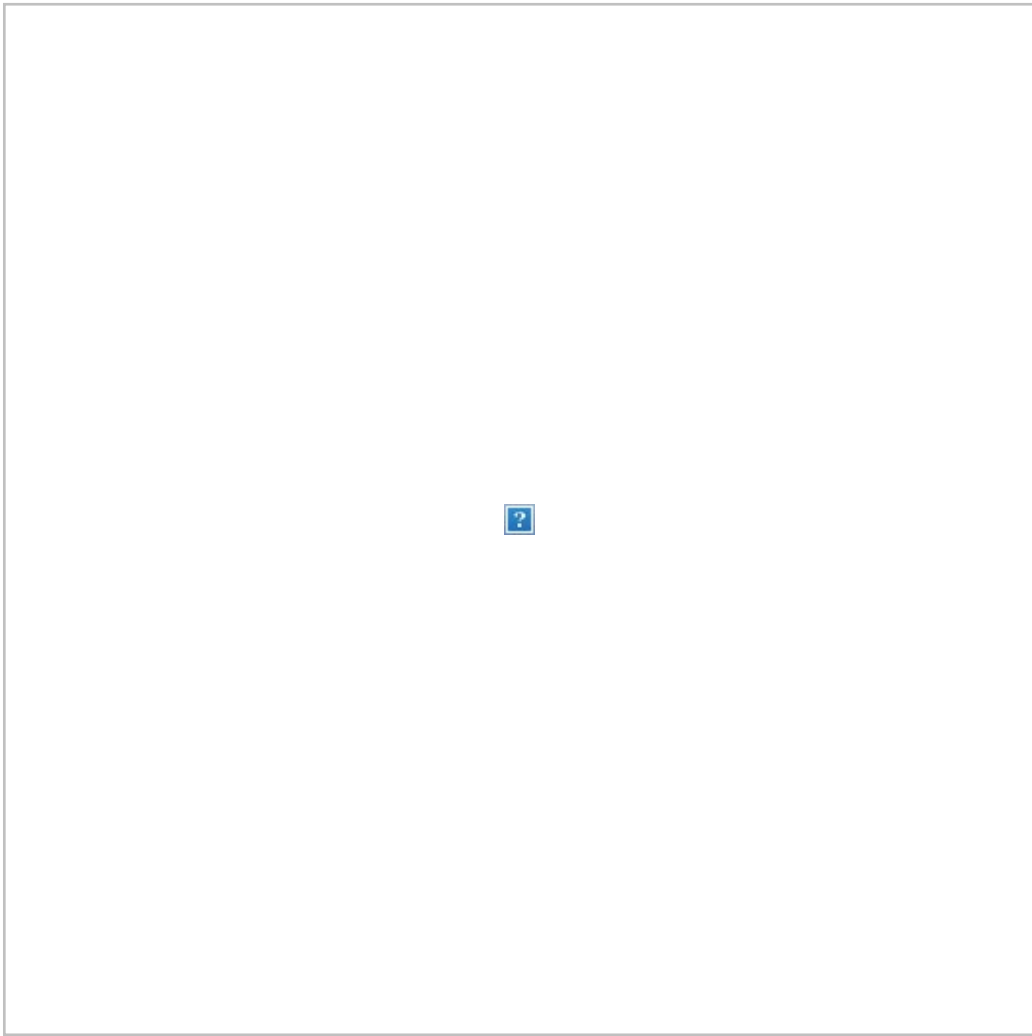
From: [Elite Crete Systems](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Aviation & Aerospace Surfaces & Floors
Date: Wednesday, September 20, 2023 11:11:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.



This hangar had a HERMETIC™ Neat Floor, with a custom graphic specified not only to provide a unique and customizable surface but also for durability and ease of maintenance.

MORE PROJECTS



A HERMETIC™ Flake Floor was installed in this in this commercial hangar to provide a finish that holds up to frequent cleaning and is resistant to solutions such as hydraulic fluid and petrochemicals.

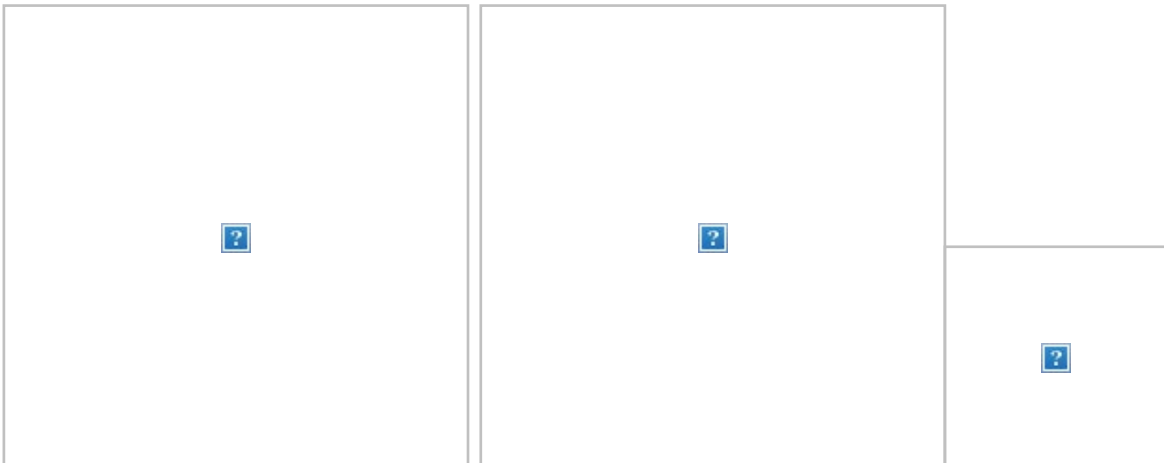


This Nasa Space Center had a HERMETIC™ Paramount Floor installed for a durable slip resistant coating that can withstand heavy equipment and abrasion.



HERMETIC™ Stout Floors are seamless protective coatings engineered for a long-term finish. These surfaces are easy to clean and available in fast set for a quick turnaround time.

Visualization Tool





Info Catalog

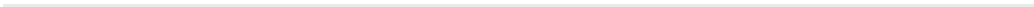
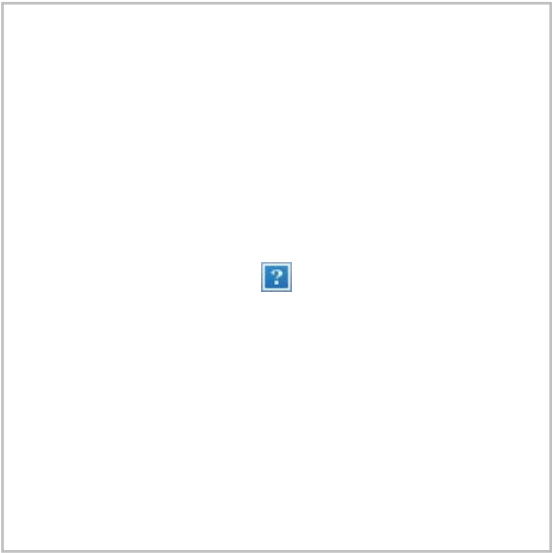
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From: [Patrick Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] BEAR AND COUGAR RULE - PROPOSED CHANGES 8/1/23
Date: Friday, August 18, 2023 2:30:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good Afternoon:

I am writing in support of the proposed rules as stated here:

https://www.wildlife.state.nm.us/download/commission/rule-development/BEAR-AND-COUGAR-RULE-PROPOSED-CHANGES-SUMMARY_2nEd_08032023.pdf?fbclid=IwAR3QVn5B_ytJ9I3vkbqy0eBMBpyy730ErVO3HWVtM55pDzRdh7Ns1cacOxY

Bear and Cougar hunting is an important part of overall wildlife management in our state. In addition, hounds are an essential tool in this effort to manage bear and cougar. Eliminating this management tool, as some vocal advocate groups would suggest, would harm wildlife populations, landowners, and residents in general.

Coming from a family of land-owners who homesteaded the Gobernador region over 100 years ago, I would hate to see our ability to manage wildlife responsibly eliminated.

Respectfully,
Patrick Smith
Aztec, NM

From: [austin powell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bad for the state
Date: Wednesday, August 16, 2023 6:48:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Removing hound hunting from predator control will be detrimental for the states wildlife and livestock producers. The predator population was an issue before the trapping ban. Removing hound hunting definitely isn't going to help the issue.

Put some logical thought process in the decisions made. Banning hound hunting is not the answer.

Sent from my iPhone

From: [Christian Wilcox](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Comment
Date: Wednesday, August 16, 2023 2:23:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support Bear and Cougar hunting with hounds. Anyone who is an avid outdoorsman or hunter understands that hounds are an excellent way to manage these predators. The anti hunters do not want to understand these proven management methods. They act with emotion and ignore decades of results from the wildlife management through hunting. This includes the traditional method of hunting with hounds for Bear and Cougar. We must continue to follow our proven management methods to have a healthy population of either of these predators.

Christian Wilcox, NM

Concerned citizen & Avid Outdoorsman

Sent from my iPhone

From: [Victoria](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Hunting
Date: Saturday, July 22, 2023 2:02:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

DGF,

Please take the items below into consideration in your upcoming decision re bear & cougar hunting for the next 4yrs.

Respectfully,

Victoria Linehan
43 Hollimon Rd.
Glenwood, NM 88039

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the

newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophies’ and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

From: [SUSAN ALEXIS](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Hunting
Date: Saturday, August 12, 2023 12:22:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs:

We are well beyond the era when men hunted of necessity to feed their families. Killing is now a sport. We have pushed some wildlife to extinction, others to the brink. We have usurped their territory piece by piece, just as we did with indigenous peoples. Let us not be further culpable. Have we not learned from errors of the past? Selling licenses to kill bears and cougars is just plain wrong.

Sincerely,

Susan J. Alexis
Albuquerque resident

From: [Kevin Musick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Hunting
Date: Thursday, August 17, 2023 7:51:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been hunting in New Mexico as a resident for 50 yrs. It's about time we stop allowing 10% of the people to dictate what the other 90% get to do! If we don't keep the predators in check our deer, elk, sheep, & Ibex will pay a heavy price! Which will also impact our hunting seasons. No hunter I know want to totally eliminate our bear & cougar population but it must be kept in check by reducing their numbers to a healthy limit which the New Mexico Game & Fish are trying to do! For once how about we listen to the individuals of this department that know what's best for our wildlife & hunting opportunities. Kevin M.

From: [Lance Eaton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Hunting.
Date: Wednesday, August 16, 2023 1:15:46 PM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Please allow the NMGAF biologists to do the work they were hired to do and let them establish the harvest quotes as per their research for bears and mountain lions.

Thanks,

Lance Eaton

From: [E. Amba Caldwell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Hunting
Date: Friday, August 25, 2023 3:36:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please protect them from free for all hunting which is being proposed.

The proposed kill quotas for both bears and cougars cannot be scientifically justified. How the quotas were determined is murky at best.

No consideration has been made for rising temperatures, extreme drought, or habitat loss from catastrophic fire.

Bears and cougars both evolved to be self regulating. There are not too many. But over-hunting can cause them serious harm and damage.

Sincerely,
Ellen & David Caldwell
PO Box 2556
Corrales, NM. 87048

From: [Caleb Schelle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Management in New Mexico
Date: Friday, August 18, 2023 12:40:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am writing to you regarding bear and cougar management in New Mexico. The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Best Regards,

Caleb Schelle

From: [Jen Judge](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Proposed changes
Date: Friday, August 18, 2023 10:55:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am not a predator hunter, but I believe you have to regulate all species otherwise the ecosystem will be out of balance. I respect others opinions but you must believe in the science.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jen Judge

From: [J Griego](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Thursday, August 10, 2023 2:57:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing in opposition to the proposed "bear and cougar rule" invoking increased quotas and hunting seasons for bears and the year-round cougar-hunting season.

The proposed rule ignores the incredible stresses that prey animals are already experiencing with habitat loss exacerbated by drought and wildfires. The studies used to justify these hunting increases appear to have selectively interpreted the data in order to support their case rather than relying upon balanced studies accurately characterizing the health of the target populations. The proposed rule ignores the collateral effect that killing adult cougars and bears has on their young and would have a profoundly negative effect on the health of our state's cougar and bear populations.

I am requesting the NM Department of Game and Fish reconsider and reanalyze appropriate data and make an honest assessment of the impacts of climate change, habitat loss, and other rapidly evolving factors. Please redraft a bear and cougar rule that will genuinely protect these animals, ensuring their long-term viability.

THIS IS THE DUTY of the NM Department of Game and Fish Department: "Conserving New Mexico's Wildlife for Future Generations"

Please do not implement this new rule.

Thank you for your consideration,

Janet Griego, Los Alamos NM

From: [Pamela Canyonrivers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Sunday, October 15, 2023 11:37:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Once again I am appalled at the complete absence of biologically and scientifically based policy proposals by this state department ! Your “cave man” hunting headset and money driven policies demonstrate wonton disregard for the survival of NM wildlife. They encourage out of state bounty hunters to come to NM and kill our precious wildlife! Global warming has created multiple variables that are impacting wildlife survival . Scarcity of food and vegetation , fire destruction of habitat and soils, water scarcity wasted on fracking, gene pool reduction impacting genetics with migration obstacles to mention a

few, not including hunting kill levels. And you promise increasing those levels by 50%! This is unconscionable!

This is not a biologically driven and vested proposal! We are not a “hunting and gathering society” but a technological one. This is not about hunting for food to survive! This proposal is a disgraceful approach to Wildlife “ management” and it demonstrated no regard for NM wildlife and an obsession with the sport of hunting and trophy seeking that is destructive and an anachronism in 2023! You need biologists and genetic and climate scientists and environmental scientists to study these populations and make appropriate recommendations! I will do everything in my power to update, educate and revise your mission and policies bringing them into this century!

This proposal is unacceptable and an uneducated

and damaging idea that will have major long term impacts on irreplaceable wildlife in the context of biological diversity and species loss! And all this to cater to the mentality of hunters , trophy seekers and economic gain.

I cannot stress enough how wrongheaded and uninformed this proposal is and the severe negative impacts it would have on New Mexico’s magnificent Wildlife!

Pamela Marshall

Pecos

Sent from my iPhone

From: [Joe Ward](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Saturday, October 14, 2023 6:22:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I live along Rio de la Plata which serves as a dispersal corridor for black bears, mountain lions, bobcats, deer and other wildlife. I enjoy seeing the wild animals even though a bobcat decimated my poultry and one morning a blonde black bear was on top of my chicken coop. When someone murders one of these fine wild animals I am deprived of the opportunity of observing and enjoying these animals alive and thriving in their natural habitat and the ecosystem these animals operate in are deprived of the services each individual provides. So stop the killing! New Mexico has *Cannabis* revenue now. We do not need the revenue from selling killing licenses! So just stop it. Stop the killing. Stop pandering to the psychosexual perversions of those who enjoy inflicting fear, pain and death on innocent, defenseless animals. These people are serial killers and it is only fear of consequences that keep them from practicing their sadistic arts on humans instead of non-human animals. I count on you, as the public servant of the Taxpayers, to do the right thing. Thank you.

Joe Ward
Farmington, NM
darwinsdog@yahoo.com

"Little garden planet,
Oasis in space.
Some hearts hurt,
They can hardly stand
The waste."
- from "Ethiopia" by Joni Mitchell -

From: [Janie Chodosh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Friday, October 13, 2023 6:51:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the Department of Game and Fish:

I live in New Mexico and spend a lot of my life in the outdoors. I love to backpack, bird watch, and hike. My husband is a hunter. But he hunts only for food, never for trophy or sport. I am writing to express my grave concern about the proposed new rule for bear and cougar hunting.

Bears and cougars are important animals in New Mexico. Because of their importance, ecologically and culturally, along with the uncertainty of population estimates for both species, their *kill quotas should be reduced*, not raised.

It is not just that these animals are important to us, it is their own intrinsic value. Bears and cougars are highly intelligent species. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

This proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Thank you for your time,

Janie Chodosh

From: [Brooklin Funk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Wednesday, August 16, 2023 6:05:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of Houndsmen and Hunting with hounds.

From: [Brooklin Funk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Wednesday, August 16, 2023 6:05:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of Houndsmen and Hunting with hounds

From: [Chet Funk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Wednesday, August 16, 2023 6:04:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of Houndsmen and Hunting with hounds.

From: [Brooklin Funk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Wednesday, August 16, 2023 6:03:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of Houndsmen and Hunting with hounds.

From: [Joanne Calkins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Friday, October 13, 2023 9:17:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico is unique because we have wildlife. I want to be able to see them and I want my children and grandchildren to be able to see them too. Please protect our animals.

Sent from my iPhone

From: [Marcos Roybal](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Monday, August 21, 2023 12:08:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Humans have terrorized and occupied nature since the dawn of time. However the New Mexico State Game Commission, New Mexico Department of Game & Fish, Bureau of Land Management, and National Forest Services have worked for decades to protect and maintain a healthy ecosystem for future generations utilizing the best resources we have available to do so. I have sadly accepted that none of these organizations have the guts to stand up for New Mexico citizens who struggle to enjoy what little of the prime hunting grounds are left to enjoy. Big for profit ranches pull political strings in order to raising factious signage & locking gates and bait game away from public lands without consequence; an example being the Express UU Bar Ranch and it's constant attempt to claim White's Peak for it's out-of-state clientele for example. But this rule review isn't in regard to the bad politics that plagues NM's Sportsmen and their ability to practice their craft. This ruling is in regard to the tools in place to assist with the management of a wildlife population. The use of hounds and trained dogs in hunting is written in the history of game hunting because it works. A rule change to minimize the ability to utilize canines in this capacity decreases the success rate of those hunts and hence will cause an undue burden on other organizations to manage the targeted game. Since 2019 citizens have found the outdoors as a refuge for the indoors and outdoor enthusiasts flocked to our open spaces and hiking trails to escape mask requirements. Without a plan in place to manage and maintain predator species, of which trained canines are utilized to track, we are putting the general public at risk with a larger population of predatory animals in nature. Take away a tool used to improve the success of a hunt and you are increasing the population of that species, in this case predatory species which do not have the best reputation of human interaction. Restricting a proven resource which would decrease the success of sportsmen means you're have to rely on the NM Department of Game & Fish to maintain those populations. And please show me where those man hours and funding are coming from; not big ranches like the UU Bar where NM Dept G&F already struggle in the policing of their encroachment and intimidation on NM's Sportsmen and which probably get tax rebates from the NM Legislature to operate hence taking from NM residents plates twice over. Most Country Sheriffs are busy fighting crime that is seeping out of larger communities into rural NM so who does that leave to pick up the burden. Who is going to raise their hand for decreasing the successfulness of a bear or cougar hunt when a family is attacked by a predator? None of this makes sense...

Respectfully,
Marcos Roybal
Albuquerque NM

From: [Bob Clancy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rule
Date: Friday, October 20, 2023 8:46:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Folks,

I strongly object to expansion of the hunting of bears and cougars. In fact I especially object to ANY hunting of cougars. If there is a 'problem' animal, Game and Fish should deal with it. We should be, as much as possible, letting these animals be, not catering to "sportsmen" who think it's fun to chase them with dogs and kill them like shooting fish in a barrel.

Sincerely,
Bob Clancy
Santa Fe County, NM

From: jodypugh@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Jody Pugh](#)
Subject: [EXTERNAL] Bear & Cougar Rules Comment
Date: Monday, August 7, 2023 8:35:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I'm writing to let you know that:

- 1) I oppose your bear and cougar quotas and long hunting seasons.
- 2) I would like kill quotas to be significantly reduced to protect our valuable wildlife.
- 3) Additionally, I would like a certified independent consultant to perform the census on these populations prior to any rules being proposed. Your decisions should be based on the science, the numbers, and the facts, without any possibility of undue influence.

Jody Pugh
jodypugh@aol.com
Santa Fe, NM

From: [Amy Louise](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rules
Date: Wednesday, July 19, 2023 2:40:26 PM
Attachments: [Bears and Cougars.docx](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Also see letter attached.

July 19, 2023

To Whom it May Concern:

I understand that this Friday, July 21st 9am - 5pm MT, the NM Department of Game and Fish is hosting a public and virtual gathering to hear comments to help inform their proposals for new rules that will govern the hunting of bears and cougars for the next four years. The NM Game Commission will then vote on these proposals this Fall, deciding the fate of hundreds of bears and cougars.

Since I work full time, I am unable to attend this meeting.

Below are comments that I would like to provide.

I am concerned that bears and cougars will be listed on threatened or endangered lists due to over hunting.

Last month USDA NRCS expanded their work on wildlife conservation. The State of New Mexico has funding to create wildlife corridors within the state. Increasing the number of kills for bears and cougars contradict wildlife conservation.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Please consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

To kill simply for killing is incomprehensible.

Sincerely,

Amy Louise

Amy Louise(505.463.6178)

Happiness is not a station to arrive at, but a manner of traveling.— Margaret Lee Runbeck

From: [Roxanne Carman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rules
Date: Monday, July 17, 2023 10:15:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I want to submit a comment on this issue. PLEASE PLEASE PLEASE DO NOT raise the hunting count. These animals have enough of a hard life to survive. Between the fires and Highways plus population taking their territory this would deplete numbers even more drastically.

Thank you reaching out to the public to voice our concerns.

Hope this DOES NOT pass.

Sincerely,

Concerned Nature Lover.

From: [Thomas Shade](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rules
Date: Wednesday, August 16, 2023 7:33:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am emailing you to let you know I support the scientific management proposal submitted by the game department biologists and the continuation of scientific predator management programs in our state.

Please do not let emotions of the uneducated sway our states management plan!

Thanks,
Thomas

From: [CHEMEN A. OCHOA](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar Rules
Date: Thursday, August 24, 2023 10:46:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The proposed kill quotas for both bears and cougars cannot be scientifically justified. In fact, how was this determined?

No consideration has been made for rising temperatures, extreme drought or habitat loss from catastrophic fires.

Bears and Cougars both evolved to be self-regulating. There are not too many. But overhunting can cause them serious harm and damage.

We need to make sure that Game & Fish exercises extreme caution when calculating kill quotas to ensure the populations are not negatively affected.

CHEMEN A. OCHOA

DGA 1ST A.D.

505-930-2311 Cell

chemenochoa@msn.com

From: [Sherri Landreth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar hunting
Date: Wednesday, August 16, 2023 9:12:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hunting bear and Cougar with hounds. Any avid hunter or outdoorsman knows that hounds are an excellent way to help manage these predators. Anti hunters do not comprehend these proven hunting techniques. We need to continue our proven and successful efforts to have a healthy population of both these predators.

Sherri Landreth, NM.

From: [Gregory Parham](#)
To: [DGF-Bear-Cougar-Rules](#); [Gregory Parham](#)
Subject: [EXTERNAL] Bear & Cougar new rules.
Date: Monday, August 21, 2023 2:41:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am not a bear or cougar hunter but I like to hunt deer & elk. If predators are not managed properly it won't be long until there won't be any deer or elk. Remember a full size cougar will consume a deer per week and a mother with cubs will consume one & a half deer per week. I have seen a black bear kill a cow and eat it in a week and a half. Remember; the only way a predator can be managed properly is by man. Take hunters out of the equation and you will not have any deer or elk. NM is trying to bring back the prong horn's at great length. If you don't manage the predators you can forget it.

Thank's for your time,

Greg

From: [Scott Collins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & Cougar
Date: Wednesday, August 16, 2023 9:11:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern, I am a NM resident and I'm of the opinion that the upcoming changes should best be managed by the following.

Rule 1 - Yes

Rule 2 - Disbanding Zone 7 - Yes

Rule 3 - They absolutely need to buy a tag to harvest a lion or bear

Rule 4 - Yes, increase harvest limit on bears.

I also STRONGLY support the removal of meat from the field for lion & bear.

Respectfully,
Scott Collins
505-270-3652

From: [William Coffman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & cougar
Date: Wednesday, August 16, 2023 11:38:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know it's not what the topic is I actually think they're all pretty good but it's become a concern that a majority of the comments were from anti hunters. I'd like to believe the state would leave it science based and take emotion out but seeing how the trapping thing went just figured I'd say how detrimental it would be to both predator and prey populations if they were to ban any type of predator hunting. It would make this stage just as terrible as we're seeing washing and California are now. I just hope you keep it out of the hands of our easily swayed spineless Governor& politicians and leave it to the biologists and other qualified folk.

Sent from my iPhone

Sent from my iPhone

From: [Eddie Campos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & cougar rule
Date: Wednesday, August 16, 2023 12:37:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Letter from a Houndsman

Hound hunting for bears and mountain lions in New Mexico is crucial for population management and the overall well-being of the state. By carefully regulating these populations, we can maintain a healthy balance in the ecosystem. Banning hound hunting could lead to overpopulation, which can have detrimental effects on both wildlife and the state of New Mexico.

Hound hunting allows for selective harvesting, targeting specific bears and mountain lions that may pose a threat to human safety or livestock. This helps prevent conflicts and ensures the safety of communities. Additionally, hound hunting provides valuable data for wildlife management, allowing researchers to gather information about population size, health, and behavior. This data is essential for making informed decisions and implementing effective conservation strategies.

If hound hunting were banned, the bear and mountain lion populations could increase unchecked, leading to overpopulation. This would result in a strain on their natural food sources and potential damage to the ecosystem. Overpopulation can also increase the risk of human-wildlife conflicts, as bears and mountain lions may encroach on human settlements in search of food. This could impact the safety and well-being of both residents and animals.

In summary, hound hunting plays a crucial role in population management for bears and mountain lions in New Mexico. It helps maintain a balanced ecosystem, prevents conflicts, and provides valuable data for conservation efforts. Banning hound hunting could lead to overpopulation and negative consequences for both wildlife and the state. Responsible and regulated hunting practices are necessary to ensure the long-term sustainability of these populations and the overall health of New Mexico's natural environment.

[Sent from Yahoo Mail for iPhone](#)

From: [Randy Crofts](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & cougar rules
Date: Wednesday, August 16, 2023 6:14:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, although I'm an out of stater, I did purchase a bear tag a few years ago in New Mexico, im an Arizona resident , but do hunt in New Mexico from time to time , bear & cougar hunting needs to remain open, there has to be population control , look what's happened in California , the cougar population has exploded due to non hunting , there are more cougar attacks on humans & domestic pets , it is also beneficial to funding for conservation the money created with the bear & cougar tags , thank you for hearing me out ,please uphold our hunting heritage & traditions , thank you

[Sent from Yahoo Mail for iPhone](#)

From: [Tony](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & cougar rules
Date: Friday, August 18, 2023 4:47:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Tony Crow
MN TRAPPER

[Sent from Yahoo Mail on Android](#)

From: [Kenneth Briody](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear & lion hunting
Date: Wednesday, August 16, 2023 2:35:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to keep hunting these apex predators, mule deer pop. Seems to be on the gain as well as some of the big horn sheep you already have a coyote problem thank you our esteem Governor, so lets not crate a bigger one by shutting down lion and bear hunts!

Heats and minds mentality will ruin hunting in NM as it has in California

From: terry.new.mex@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar Killings
Date: Tuesday, August 1, 2023 8:15:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Dept. of Game and Fish:

It is unclear to me why NM is authorized to kill 10% of the state's bears and Cougars every year.

To up that percentage to 25% is destructive.

Why do we humans have to kill them at all?

We aren't doing that to provide nourishment so that humans might eat!

Surely that is the purpose of the Dept of Game and Fish: To manage and provide food for humans!

We don't eat bear or cougar. So stop killing them as "recreation". They are an essential part of the eco-system.

Thank you for listening.

Terry Ihnat

Albuquerque NM

From: [Ryan Trimble](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar Rules Comment
Date: Thursday, August 24, 2023 8:30:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good Evening,

My name is Ryan Trimble. Thank you for your continued service to the lands and wildlife of the Land of Enchantment, and for the opportunity to share my thoughts and concerns with you.

As a native New Mexican and someone who has enjoyed and explored the great state, I am writing to strongly encourage you to revisit the new bear and cougar hunting hunting quotas.

Wildlife management needs to be based on sound science, and should not be rushed to appease any one group of stakeholders.

These keystone species play a critical role in New Mexico's incredible ecosystems, and to expand hunting quotas at this time would negatively impact the populations of each.

Please give serious consideration to not expanding hunting opportunities, or at the very least, pausing the consideration until more robust data and analysis can be procured.

New Mexico's wildlife belongs to us all. It is my hope that viewpoints from all stakeholders, not just consumptive users, will be heard and respected.

Thank you,

Ryan Trimble

--

Ryan Trimble

From: [Royal Jelly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar Rules
Date: Wednesday, August 16, 2023 11:45:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Why is the Agency listening to political pressure rather than biology and science? Game animals do not fare well under management using political ideology instead of sound age old well documented science & conservation management practices. Your Program Directors and Biologists should know this well and should stand firmly behind their craft and education on this and not be swayed by political agenda and activism. NM has lost public land trapping, and predator numbers easily reflect the impact that is having on game animals and the increased conflicts between the public and private land users. This is easily statistical data that is tracked and a matter of public record. Taking another well documented management tool from the system based solely on activism and unfounded claims and data is not how an Agency should "manage". Getting rid of hound hunting is a terrible idea. The State is watching the steady decline of Mule Deer in some regions due to predation and birth rates that are lower 1. Due to the increased stress Mule Deer feel and therefore have a lower conceive rate due to the stress or the natural stress induced aborting before full term. Mule Deer are sensitive to predator stress in that regard. Then Hunters and the Outfitters know very well that Bears are a primary predator of Elk Calves more than any other predator in the woods and the high population numbers are steady and well established, easily handling the current and increased quotes. Mule Deer suffer a large amount of predation from Bears as well, more than many people actually think.

The use of hound hunting is essential to management of numbers of the predators AND the numbers of other Game Animals in NM inventory. Not to mention the revenues that it creates to fund more study programs and management tools. Activists offer no replacement to those revenues and cutting out these current tools that the Agency uses to fund resources and programs and grow Game Animal numbers by reduced predation. Why is the Agency considering allowing Activists to dictate the reduction of revenues and decreased resources the Agency can continue to use and study and protect ALL Game Animals under their Charge? Every state, without exception, that has banned hounds has suffered the consequences. Please consider reinstating Trapping programs as a management tool both for management but also revenues and resources the Agency can use (by check stations that give data like population, size, health, ages etc of harvested animals that otherwise cost the Agency AND the tax payer huge dollars to otherwise collect) Due to Houndsmen and Trapping there are less conflicts of predator type animals with the public at large and this is a benefit to both the public and the Agency and the health of all remaining animals to include higher recruitment for Mule Deer and Elk populations.

The Agency would do well to stick to science and management rather than to be influenced, intimidated, and threatened to be managed by political agendas that are not based on historical data or any kind of successful management data to back it up. Hunters, Outdoorsmen, Houndsmen, Outfitters are the tools that provide large amounts and non-tax

payer funding, give huge amounts of volunteerism, and resources to the Agency that the Activists will never bring to bare for the cause. They only want to strip away the tools the Agency has to manage successful well funded programs and they want the hunters and outdoorsmen out of the woods - that's their only agenda. They are not offering Science or Management, nor resources, funding, or true solutions to long term health of ALL populations in the woods. Do not be intimidated by activists and get rid of Hound Hunting in NM. Furthermore, the reduced Cougar numbers in Zone Q is a horrible idea. I hunt numerous months in that zone and I can assure you the Lions are healthy. They are eating BigHorn Sheep, they are hammering the Barbary Sheep Population and birth rates there are extremely LOW... I have seen Lion Kills of Both Sheep Species and Elk carcasses in that Zone nearly every time I go there. Especially if the long term goal of growing the Big Horn Population is a stated Goal - reducing the Lion Harvest numbers for Zone Q is a horrible idea... it in reality should be INCREASED by 10%-20% in my opinion !

JJ Sutton, CPS, CMAS Lic NM Guide,

Non Resident Hunter (I pay Thousand each year to hunt multiple species in NM and predators are a problem that I know exists)

From: [Davin Bates](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar Rules
Date: Thursday, August 17, 2023 8:46:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Uvaldo Olonia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar rule
Date: Saturday, July 8, 2023 2:32:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I think that it's a good idea to allow bear or cougar harvest during deer or elk licensing season.... Thanks for conserving and managing New Mexico's natural resources

Sent from my iPhone

From: [Thiessen, Mike](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar rules
Date: Wednesday, August 16, 2023 11:31:29 AM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. Thanks!

Mike Thiessen
(505) 215-6361
mpthiessen@eprod.com

This message (including any attachments) is confidential and intended for a specific individual and purpose. If you are not the intended recipient, please notify the sender immediately and delete this message.

From: [Krista Ocana](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar
Date: Thursday, August 17, 2023 5:16:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [carlos.ortega](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Cougar
Date: Saturday, August 19, 2023 11:20:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern :

I am a hunting guide here in the state and I am against the hunting of said animals with dogs. These animals are harassed year round as these outfitters use out of season times to train their dogs . These hounds also suffer catastrophic injuries and even inhumane deaths all for profit by these so called Houndsman .

There is no fair chase given to these predators.

And on one more note Game Cameras are also not fair chase .

Please outlaw these activities.

Thank You CMO

[Sent from Yahoo Mail on Android](#)

From: [David Caster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Harvest
Date: Monday, July 10, 2023 4:36:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I live in the Manzano mountains at Capilla peak.

Though traveling almost weekly into the forest, we have not seen bear for 8 years now.

We are seeing more and more outfitters with dogs.

I am an avid hunter and land owner and believe bear hunting should be heavily regulated and curtailed until numbers can be increased.

William David Caster

From: [David Caster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Harvest
Date: Monday, July 10, 2023 4:45:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I live in the Manzano mountains at Capilla peak.

Though traveling almost weekly into the forest, we have not seen bear for 8 years now.

We are seeing more and more outfitters with dogs.

I am an avid hunter and land owner and believe bear hunting should be heavily regulated and curtailed until numbers can be increased.

William David Caster

From: brian.hecelectric.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Hunting Rights
Date: Thursday, August 17, 2023 9:07:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

"Please reinstate the august bear seasons in the southern zones."

Brian Jordan
HEC Holdings, LP
HEC Electrical Contractors, Inc
TXECL 18002 / TXECL 27327 / TXME 94118
IEC of Texas
Fort Worth / Tarrant County

From: [Michael Nickell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Hunts
Date: Tuesday, August 15, 2023 2:59:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a hunter in New Mexico, I would like to see Unit 34 & 36 open to bear hunts August 16th.

Michael Nickell

From: [Michael Nickell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Hunts
Date: Tuesday, August 15, 2023 2:59:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a hunter in New Mexico, I would like to see Unit 34 & 36 open to bear hunts August 16th.

Michael Nickell

From: [nuevomexicocazadores](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Lion hunting
Date: Tuesday, August 15, 2023 9:22:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The banning of bear & Cougar hunting would be detrimental to the life of other wildlife because hunters help to mitigate the predator populis. I'm for hunting these beautiful animals to help play a part in preservation and conservation of hunting. I believe that it's my right to hunt and gather by means within the law. The ban of such animals would also hurt ranchers who build a living by using the BLM resources to help produce beef for local areas. We also have to look at the dangers this ban would pose in cities and towns that are in close proximity to the natural habits and camp grounds that are used by the non hunting community. Please don't ban hunting these magnificent animals as an avid hunter I also consume the meat from both species of animals. Thank you for your time.

Richard V. Campos AKA Ric Sho
Nuevo Mexico Cazadores and Pato Loco Duck Calls
505-306-3355.

Sent from my T-Mobile 5G Device

From: [Gerry & Jean](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Rule Changes
Date: Friday, August 25, 2023 4:56:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am a fair chase bear hunter and would like to continue to be able to do that. Fish and wildlife resources are the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. Science based management has resulted in good sustainable populations of bear and cougar in New Mexico. This management has included reasonable harvest of these animals. I support legal bear and cougar hunting as an appropriate management tool. I believe you should continue stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Gerry Engel

4551 Eddie Ward Way

Silver City, NM 88061

575-590-3497

From: [Donna Pack](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear Season
Date: Thursday, August 17, 2023 5:04:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

"Please reinstate the august bear seasons in the southern zones."

Troy Pack
2545929306

Sent from [Mail](#) for Windows

From: luizlmoro@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear / Cougar rules
Date: Wednesday, August 16, 2023 1:09:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the Commission recommendations

[Sent from the all new AOL app for iOS](#)

From: [Rob Hoffman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear /Cougar hunting
Date: Wednesday, August 16, 2023 3:06:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to support the continued use of hunting to manage populations of predators in New Mexico. The use of good wildlife biology as practiced by good wildlife biologists in the department is the only sensible way to keep predator/prey numbers balanced. As a former member of the Game Commission I know that such decisions must be guided by a reasoned scientific approach rather than a wall of sound generated by zealots who simply wish to advance their anti-hunting agenda. They have no regard for health of the ecosystem or the tremendous benefits to people who utilize the outdoors for recreation, food sourcing, and agriculture. These zealots completely dismiss any opinions other than their own and as such are sanctimonious elitists. However they do generate a huge amount of noise which I hope you to discount. I furthermore urge you to continue allowing the use of hounds and dogs to aid in the taking of game as well. The use of dogs to help humans is a tradition dating back hundreds of thousands of years. To imply that partnership is no longer valid is an insult to dog owners and dogs as well. Thank you for hearing me out. Robert V. Hoffman Las Cruces NM

From: [hi Longmire](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Ban Proposal
Date: Friday, August 18, 2023 6:53:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings.

I live in Oregon but hunt in New Mexico. Simply put, leave bear and cougar hunting alone, here in Oregon the science has played out and bears and cougars WILL BE MANAGED. 100% of our liberal legislature agrees with the science. Our government now does our states cougar hound hunting and black bear killing with snares and bait, those bear and cougar are incinerated and landfilled. How is this management? It's not, this is CONTROL!

You need to include government in your ban proposal if you proceeded forward like Oregon and California has towards communism!

Mike Martell
Big Game Wildlife Manager
Holland Ranch
Cave Junction Oregon.

From: [Sara Hufford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Big Trophy Hunting
Date: Monday, August 7, 2023 11:15:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I'm writing to let you know that:

- 1) I oppose your bear and cougar quotas and long hunting seasons.
- 2) I would like kill quotas to be significantly reduced to protect our valuable wildlife.
- 3) Additionally, I would like a certified independent consultant to perform the census on these populations prior to any rules being proposed. Your decisions should be based on the science, the numbers, and the facts, without any possibility of undue influence.
- 4) I opposed to the killing of wildlife.

Thank you,
Sara Hufford
Santa Fe, NM

From: [Brett Rezek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Changes
Date: Thursday, August 17, 2023 3:53:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time. The desire to protect and manage these species in a respectful way is every responsible hunter's desire so that we may coexist with these species for generations to come.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Brett Rezek



Brett Rezek

970.247.2394

www.BestCDRS.com

789 Tech Center Dr, Unit D

Durango Colorado 81301

From: [Brendan Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Comment
Date: Thursday, August 17, 2023 5:19:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to extend the bear season in zones 12 and 13

From: [Brent Taft](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Comment
Date: Thursday, August 17, 2023 8:29:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Brent Taft

Licensed Hunter/ Angler and New Mexico Voter

From: [Nancy Gilkyson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Harvest Limits
Date: Thursday, August 24, 2023 1:34:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

In this era of increasing understanding of the critical role of apex predators in an eco-system, I find New Mexico's Game and Fish's current consideration to increase so-called harvest limits of bear and cougar in New Mexico to be both outdated and unscientific. I unequivocally object to increasing the harvest limits of either species, and I believe most people in the state feel the way I do. Please don't allow a very small amount of people - cattle ranchers and the few hundreds who buy these permits - to dictate policy that the rest of us would vote against were we given the chance. Some day in the not too distant future, we will look back on these rules as shameful and ignorant.

Thank you,
Nancy Gilkyson

Nancy Gilkyson
96 Arroyo Hondo Rd.
Santa Fe, NM
505-780-5970 (land)
505-264-3419 (text)

From: [Jason Myers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hound Hunting
Date: Friday, August 18, 2023 4:36:17 AM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning,

As a long time hound hunter, small game hunter, and big game hunter, I am writing today to say that I support the scientific approach to predator management in New Mexico. I was a registered guide in New Mexico for a few years and spent a lot of time in the field. New Mexico is one of the best and well managed states I have ever hunted and the only way to keep it that way is to manage by research, boots on the ground, hunting reports, and game studies. As stewards of the land we cannot allow groups and people to persuade decisions based on emotions and beliefs. These decisions will be detrimental to the future of our wildlife and outdoor/hunting opportunities for our youth. Please do not ignore the facts, the research, and the future to appease groups that only have one agenda.

Thank you for your time

Sincerely,

Jason Myers

614-940-1377

From: [Dan Stephens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunt rule change
Date: Sunday, July 30, 2023 1:22:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

What are u doing?? What possible rationale is there for killing more wildlife. If NMGF has no clue as to the total number of these animals present, then they have no idea which parts of our forests have how many animals. How can NMGF assess impacts and unintended consequences if NMGF doesn't know the population or it's distribution. Sounds like USFS prescribed burn policy! Let the animals just be.

And why not make the hunt more like a hunt than a roundup using packs of dogs to run the poor beasts into exhaustion so the 'hunter' can blast it at short range from his ATV. Hard to call that sportsmanship, all for a machoman wall trophy. NMGF should be ashamed they have these rules and now want more forest brutality! Absolutely absurd!!

Do not do this!!!

Daniel Stephens

Get [Outlook for Android](#)

From: ml620817@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Michael Lake](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 2:54:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I strongly support the bear and cougar hunting to remain as it is now. We hunters do more for conservation in our public lands than any of the anti-hunting groups. We're tired of the outsiders coming for our rights as legal gun owners and hunters. Stop the crap from these anti-hunting groups!

Sincerely,

An advent Hunter, Michael Lake

Sent from [Mail](#) for Windows

From: [Justin Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting Legislature
Date: Wednesday, August 16, 2023 11:55:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a NM born resident I am in favor of continued hunting of black bear and mountain lion throughout the state. I side with the biological studies over the court of public opinion on this issue. The ecosystem of the states wildlife is a delicate balance that the State Game and Fish have been charged with maintaining. Hunting of wildlife and specifically the hunting of bear and lion are part of that balance. Ignoring the science in favor of those opposed on other grounds is irresponsible.

Thank you for your consideration in reading my opinion and right to speak on it.

Justin Lee

From: [Dustin Berg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting Proposal
Date: Wednesday, August 16, 2023 11:41:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMDGF,

As a lifelong NM outdoorsman and hunter in my home state, I want to give my full approval in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.

I have hunted both cougar and bear for many years and have noted the importance of managing their populations responsibly to maintain a balance between ungulate species, predators, and deadly human / wildlife conflict.

The only change that I propose is : Non-residence should not be able to purchase over-the-counter hunting permits for bear or cougar, because I have witnessed how our state is flooded with non-residence during these hunting seasons causing quotas to be met early at the expense of resident hunters who deserve more favorable opportunity, such as is the case with other big game species such as elk, deer, etc.

Sincerely,

Dustin

From: [Vern Andrews](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting Rule Considerations
Date: Wednesday, August 16, 2023 6:11:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear sirs,

I am writing you in support of sensible bear and cougar hunting in New Mexico. Predator control is an important aspect of the overall game management in New Mexico. I have 4,000 acres of leased land in Unit 2B in NW New Mexico and I find mountain lion kills of both deer and elk on the property from November thru April each year and have watched bears kill deer fawns and elk calves. It is my opinion that the highest mortality of our fawns and calves occur due to bear and lion predation. The decline of our Mule Deer and elk populations will be exacerbated without sensible hunting of both mountain lions and bears.

Thank you,
Vern Andrews
505-320-1763

From: [Lars Sego](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting Rule
Date: Wednesday, August 16, 2023 12:01:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM State Game Commission,

I would like to express my support of the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Lars J Sego
4808 Jefferson St NE
Albuquerque, NM 87109 USA
Office: 1+505-883-9100
Mobile: 1+505-269-8813
Email: lsego@dbabq.com

From: pheren2967@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting Rules
Date: Thursday, August 17, 2023 1:37:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I believe that current rules governing bear and cougar hunts should remain unchanged. Pete Herendeen 45 Otero Rd. Los Lunas, N.M.

From: [Peter J Walsh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting Rules
Date: Wednesday, August 16, 2023 2:02:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sirs/Madams;

Please consider that Hunting is and was, and should be a continuing right for people. By no means does everyone need to be a hunter, I feel it's just that those who appreciate game management, shooting sports, and the woods so to speak should not be deprived for spurious pseudoreasonings of some who would wish all were like them.

Having been a life long hunter, I'm now 74, in my life I have had the opportunity to go on mountain lion hunts in the Gil Wilderness in the 50'-70's with my Father and his rancher friends, jump ducks on tanks in southwestern NM, Fish for Gila natives in White Creek in the 60's on 2 week pack trips at the end of school, deer and elk hunt the Gila, and learn to be self confident, resourceful, and to have a love for the wild.

Hunting is a dear part of this tradition, and at worst, bag limits should be set by conditions on the ground, not arbitrary declarations. I believe in science and the possibility of scientific management of game animals, reinforced with on site data.

Do not succumb to unreasonable and ill advised arguments.

Thank you,

Peter J Walsh

--

Peter J Walsh
Southwest Scientific Design LLC
739 42nd St.
Los Alamos, NM 87544
cell 505-670-1328
pjwalshla@comcast.net
hm 505-662-3072

From: [sbcruise](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting in N.M.
Date: Sunday, August 6, 2023 2:35:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the powers that be regarding the hunting of bears and cougars in N.M.,

STOP THE NEEDLESS KILLING OF OUR WILDLIFE !!

As a resident of N.M. for more than 40 years I strongly feel that the only shots that should be taken of the bears and cougars or any other members of our wildlife families in N.M. are photographs. Sell permits to take photographs only.

If you want to promote population control then start with controlling our human population - there's no shortage of humans on this planet.

Anyone who takes pleasure in trophy hunting should hang the heads of their dead relatives on their living room wall and leave the animals alone for the rest of to enjoy in the wild.

Shirley Cruse

From: [Michael Rotruck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting in New Mexico
Date: Wednesday, August 16, 2023 1:02:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state of New Mexico. Additionally, I am opposed to taking away any hunting rights that the residents/citizens of the state of New Mexico inherently own!

Michael Rotruck

From: [JOHN M Nichols](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting in New Mexico
Date: Wednesday, August 16, 2023 11:48:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am a wildlife biologist by training, and I support smart, targeted wildlife management in New Mexico for all species, including all game species, predators, and non-game species. In regards to management of predators, and in this case specifically bears and mountain lions, I support managing species through active population monitoring, and when those populations allow for the taking of animals, I support the harvest of those predators through all currently legal harvest means including hunting (with and without the use of dogs). Managing wildlife populations is a balancing act, where choices for one species can often have ramifications for other species. Predators play an important role in all ecosystems, but if their populations are allowed to grow unchecked, there are often severe adverse effects for all other game and non-game species. I do not advocate for taking predators when populations fall below acceptable thresholds that might endanger the well being of that species, but I believe that the ability to harvest predators when their populations are healthy helps improve and or at least maintain the well being of other wildlife species that are also important in New Mexico. I firmly support the continued harvest of predators in New Mexico by all currently legal means where those populations are able to sustain such harvest.

John M. Nichols

johnmnichols@comcast.net

From: [Gary Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting in New Mexico
Date: Wednesday, August 16, 2023 2:42:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs:

I am a resident and hunter of the great state of New Mexico. I am not surprised that the anti-hunters want to stop the hunting of bears and cougars in New Mexico. I think the New Mexico Dept. of Game and Fish have a pretty good handle on allowing the take of bears and cougars in the state. With the change in the weather patterns, these animals are starting to get closer to residences of people which includes young kids. We need to very careful about not allowing our responsible citizens the ability to defend ourselves, as well as to hunt to further ensure that the numbers of animals do not get too high. I think the numbers of bears and cougars has increased in the last few years. This can cause problems for small communities, ranchers, farmers, hunters, hikers, horse riders, etc. I DO NOT AGREE WITH THESE EFFORTS TO STOP HUNTING OF BEARS AND COUGARS. Thank you.

Gary Montoya
875 W. 9th St.
Truth or Consequences, NM 87901

From: [Michael Rotruck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting in the State of New Mexico
Date: Wednesday, August 16, 2023 1:03:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state of New Mexico. Additionally, I am opposed to taking away any hunting rights that the residents/citizens of the state of New Mexico inherently own!

Michael Rotruck

From: [Budd Berkman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Sunday, July 16, 2023 9:36:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I urge you to REDUCE not increase the number of bears and cougars hunted in New Mexico each year.

How certain are you of their population? Climate change is already reducing their numbers. These animals are important to the overall health of our ecosystem.

If you have a "problem animal" seek that animal out and relocate it. Otherwise, random hunting does not take care of this issue.

Again, please REDUCE the killing quota. We need more, not less, of these animals in our ecosystem.

Thank you,
Budd Berkman
11 Canoncito Rd.
Placitas, NM 87043

From: [Bo Laws](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 11:27:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not ban or change how we can hunt bears and cougars in New Mexico. Predators need to be kept in check so that our deer and elk populations can support healthy numbers. Often times people that want a ban argue with only emotion and not logic. I hope that the Department of Game and Fish will keep a scientific and unbiased approach to this matter.

Thanks

Bo Laws

From: [Jake Roumanos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 6:16:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM State,

I would like to voice my opinion that outlawing the cougar and bear hunting would be a huge mistake. I do not support the ban of hunting bear and cougar.

-Jake Roumanos

From: [Eric Higgins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Monday, August 28, 2023 10:47:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I strongly support the continued hunting of bears and cougars in New Mexico, please continue to allow for the regulated hunting as it currently exists.

-Eric Higgins

From: [Kevin Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Thursday, August 17, 2023 4:17:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Allowing harvesting of bear and cougar in the state of New Mexico is the only valid solution to keep the numbers in somewhat of a balance with the food sources they consume. I have not seen many elk calves this year (2023) or fawns. Visiting with other hunters and ranchers have confirmed my suspicions that a large portion of these young elk and fawn are being consumed by too many bears and cougars. Thus we have seen a decline in the last several years in the overall populations of deer and elk. The one place deer seem to be doing well are within town limits. However this has also drawn these predators into town with frequent sightings/encounters among individuals as well as some public discord it causes. Within the last couple of years one of the local schools kept the children in from recess due to sightings of a cougar close to the school that day. Not too infrequently we encounter pets who have survived an attack by a cougar, but unfortunately many do not survive the attack. There even has been more human and cougar/bear encounters when out in the forest trail systems. There was a man in Pinos Altos, NM who was killed and partially eaten by a cougar within the last 10 years. The biologist who work for the NMDGF have the best data to establish the harvesting quotas for the wildlife within our state. Responsible stewardship of the many species of wildlife within NM is best served by the NMDGF with knowledgeable people chosen from the public to serve as committee members. Radical groups without sound knowledge and common sense of the wildlife ecosystem within our state need to be countered in their false claims to try and limit the management decisions of our NM wildlife.

From: [David Pennington](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Thursday, August 17, 2023 5:42:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This email is to express my support of managed bear and cougar hunting. I support a managed approach to the hunting of these species based on the recommendations of NMGF biologists and scientific analysis. Please consider my comments in the decision making process as rules are updated.
Thank you.

Sent from my iPhone

From: [DAVID MARTINEZ](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 7:01:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It would be a major mistake to NOT to continue to allow the use of hounds to manage the population of bears and cougars. Management of these species is essential for the successful management of many other game animals whose numbers are greatly effected by the numbers of bears and cougars. Management of bears and cougars will also play a major role in minimizing the interaction of these species within cities and populated rural areas.

David J Martinez

From: [jimmie.daw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 3:18:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I urge you to leave the bear and cougar hunting as is.

There is nothing wrong with the current hunting regulations of these two species.

Thank you for considering my point of view,

Jimmie Daw
915-241-4318

From: [Justin Holub](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 11:36:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. I do not support letting emotions and feelings regulate my states game numbers and my right to hunt bears and cougars

-Justin Holub
575-200-7496

From: [Gene Brent](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 11:35:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commission Members,

I support the scientific management Proposal presented by the Department of Game and Fish biologists to structure hunting regulations for Bear and Cougar management in New Mexico.

Thank You,
Gene Brent
Angel Fire, NM

From: [Kevin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 11:31:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern.

I wanted to take this time to comment on the proposed bear and cougar rules for New Mexico. I propose that any quotas supported by the NM game and fish wildlife biologists to be true and exact. NMDGF pay wildlife biologists to study and maintain all wildlife conservation efforts within the State of NM. I propose the NMDGF continues to take the advise of their hired biologists on bear and cougar quotas set forth each year. Basically I believe in what the department is doing to have a healthy wildlife population and any attempt to close hunting in any way, shape or form of any NM wildlife is just an attempt to allow the populations to explode.

Thank you,

Kevin Kelleher
Santa Fe, NM
505-699-6830

"Let's Roll" Todd Beamer: Never Forget 9/11

From: [Michael C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunting
Date: Friday, August 18, 2023 7:52:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a lifelong hunter **I SUPPORT BANNING HUNTING AND TRAPPING OF BEAR AND COUGARS.**

I eat what I kill and see no need to continue the hunting of these animals for sport.

If management of these animals is needed (which is very seldom) it should be done by wildlife managers not by someone looking for a trophy.

Sincerely,

Michael Carter
210 621 4456 cell

From: [C.J Swanson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Hunts
Date: Wednesday, August 16, 2023 7:22:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to control and adjust the bear and cougar population. So appropriate hunting, harvesting is sensible, necessary.

Thanks!! Jeff Swanson

From: rocaudt@cybermesa.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Kill Quotas
Date: Monday, October 9, 2023 7:54:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game and Fish staff. Please read below and enter it in the public record of the October 27, 2023, Game Commission meeting.

Some important information regarding the proposed kill quotas for bears and cougars in New Mexico:

The most destructive species known to Man is Man. Not cougars, not bears. Man.

Cougars and bears play critical roles in the maintenance of the natural Biosphere, of the health and well-being of the plants and animals that exist here in New Mexico. Killing large numbers, actually, killing any number of bears and cougars upsets the natural balance. Man upsets the natural balance. Game and Fish upsets the natural balance.

Rethink your proper roles here, humans. At the absolute minimum action, seriously reduce the kill quotas. Or, better still, eliminate them, let Nature do the balancing, not humans. Humans are just one species here, and not a particularly beneficial one in the natural world.

Ann M. Young Santa Fe, NM email rocaudt@cybermesa.com

From: [Elaine Diers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Killpng
Date: Monday, August 7, 2023 1:16:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Your proposal rule authorizing killing bears and cougars is unethical and unscientific. You have no idea how many there are so how do you come up with a 25% number.

You need to get the opinion of New Mexicans. I live in the Sandia foothills and we coexist peacefully with these animals. You are making this state look like Idaho.

Paying \$43 to kill a cougar and using inhumane ways of execution style killing goes against the ideals of most New Mexicans. This is not sportsmanship. These animals were here long before we were. Please let them be.

Elaine Diers
13208 Moondance Pl NE
Albuquerque, NM 87222
Evdiers@msn.com
Sent from [Mail](#) for Windows

From: [David Nielsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Management
Date: Thursday, August 24, 2023 5:14:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As an avid hunter and sportsman, I strongly believe in using scientific-based evidence for wildlife management. I support the recommendations of the New Mexico Department of Game & Fish in the management plan and strategy for bears and cougars.

I believe the department has taken into consideration the needs of differing interests as well as the wildlife they are they are tasked with managing. I strongly urge the commission to adopt the the Game & Fish Departments recommends regarding bear and cougar management.

Sincerely,
David Nielsen

From: [Hendershot, Scott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Quota
Date: Thursday, July 20, 2023 7:43:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I'm writing to express my concern about raising the Bear and Cougar quota in New Mexico. I'm a contributing member of the Mountain Lion Foundation, which tracks mountain populations across the country. According to their research, mountain lions are not at a sustainable level in New Mexico. Raising the quota on kills would put them even more at risk.

Please consider my voice and the voices of others before making a decision.

Thanks for your time in reading this.

Scott Hendershot

Mr. Scott Hendershot
Instructor of Mathematics
Eastern New Mexico University
JWLA 211-D (575) 562-2692

From: [Caleb Spellbring](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Thursday, August 17, 2023 9:06:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise. Thank you.

Sent from my iPhone

From: [Mary Graves](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule - Proposed Changes
Date: Wednesday, August 23, 2023 2:49:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management. While I don't reside in NM, I support predator management everywhere as a management tool for the world we live in. Legal bear and cougar hunting *is* an appropriate management tool. I hope you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Mary Graves

From: [bob.bowden](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Sunday, September 3, 2023 9:17:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Robert H Bowden III

Get [Outlook for Android](#)

From: [drew.garnett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule Changes
Date: Wednesday, August 16, 2023 10:28:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning,

I am thankful for a Fish and Game Department, like ours in New Mexico, that follows the science. I am a scientist and a hunter and believe from attending the meeting in Roswell and follow up research that the NMDGF is living up to the ideals of the North American Model of game management in this decision. I am in favor of the rule changes, and in pursuing more similar studies in other GMUs across the state.

Thank you,

Drew Garnett
Chaves County Resident and Hunter

From: [Scott Daugherty](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule Development
Date: Thursday, August 17, 2023 10:14:33 AM
Attachments: [image001.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.



Scott Daugherty
Equipment Mechanic I
Western State Colorado University
970.943.2193
sdaugherty@western.edu

From: [Philip Daugherty](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule Development
Date: Thursday, August 17, 2023 10:15:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Melissa Amarello](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule Proposed Changes
Date: Monday, July 31, 2023 11:37:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In this time of mass extinctions, mega-fires, and persistent drought we need to prioritize the protection of wildlife and wild places over human recreational opportunities.

I have a Masters in Biology, a Bachelors in Wildlife Management, and see nothing in the proposed rule changes that supports an expansion of seasons or increased kill quotas to promote the health of bear and cougar populations, their prey, or the ecosystem.

New Mexico is not a game farm and should not be managed as such. Any changes made to the Bear and Cougar Rule should prioritize the protection of biodiversity over recreation or align regulations with Fair Chase hunting principles by banning the use of dogs in cougar and bear hunting. Do not expand seasons or increase kill quotas for cougars or bears.

Sincerely,

Melissa Amarello, MS Biology
Executive Director
[Advocates for Snake Preservation \(ASP\)](#)

ASP is a 501c3 nonprofit that is changing how people view and treat snakes

From: [Gary Alderete](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule Update
Date: Thursday, August 17, 2023 3:27:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management. I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully ask that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Gary Alderete

From: [Kelly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule proposals
Date: Thursday, August 17, 2023 10:29:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to voice my support for the NM Game & Fish bear and cougar proposal as it was updated on 8/1/2023.

Thank you,
Kirsten Dow

From: [Garrett Gabaldon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule topic
Date: Thursday, August 17, 2023 9:02:42 AM
Attachments: [MATH101-06 Week 5 Research Proposal.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing in regards to the proposed change in harvest limits of bears and mountain lions. I am a 27 year old hunter from Northern California currently going to school to obtain my degree in wildlife conservation. During my research of the bighorn sheep for a course project I found that the number one cause of mortality among sheep is mountain lion predation. My states population of deer and sheep species are on the decline due to an excess number of preedators in the area. Mountain lion hunting was outlawed in 1992 and the use of dogs for bear hunting became illegal in 2013. Attached is a research paper that has some graphs one of which specifically showing New Mexicos herd numbers of bighorn sheep before and after population control of mountain lions. The results speak for themselves. I do not believe putting more restrictions on predator management will help anything but the anti hunters sleep better at night.

From: [Chris Romero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule!
Date: Wednesday, August 16, 2023 11:24:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern, I am an avid outdoorsman, camper, wildlife watcher, hunter, and taxpayer, and I support the hunting of bear and cougar including hunting them with hounds.

Thank you for your consideration in this matter.

Chris Romero
505.263.8436
Alb, NM

From: [Allen, Bradley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Thursday, August 24, 2023 9:40:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion, and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule, which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data, such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,
Bradley Allen
Alamogordo, NM

From: [Jacob Poper](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Wednesday, August 16, 2023 11:41:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Thank you,

Jacob Poper
Corrales, NM 87048

From: [Steven Elmore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Monday, August 21, 2023 2:37:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a nonresident I appreciate the State opening the comments for the bear rules, I don't have much input on the cougar rules, other than I'm finding a few more deer carcasses than in the past.

Having certain units that open and allow dog use to any legal weapon before the archery elk and deer seasons seems to influence the archery hunts and is pushing elk and deer from public land onto private prior to the season opening. My comment would be against having an any legal weapon bear season prior to archery seasons or allowing dog use prior to archery seasons. Either one of those options will improve the early archery hunts in North Central New Mexico. To me it would make sense if the post archery season bear hunts were the only any legal weapon hunts and if bear populations were a concern open the spring season again. I would apply for a spring bear tag.

My opinion on harvest, sex, and zone limits is that the biologists need to determine those.

Thanks for the opportunity to hunt and comment on the hunting in your state.

Thanks,

Steven Elmore II
Vice President
FM Fuel & Resources

Office: 866-455-3835
Cell: 325-280-2921

From: [David Stambaugh \(TEI-Vermejo\)](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Thursday, August 24, 2023 10:57:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the Department's science-based proposal for the bear and cougar rule.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

David Stambaugh

From: [David J. Adkins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Monday, August 21, 2023 10:04:42 AM
Attachments: [image003.png](#)
[image001.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I think it's important that we continue to hunt predators. It is vital with regard to population control. Additionally, cougars unlike other predators, will sport kill deer. Much like a house cat that isn't hungry, but will kill anyway for sport. I've noticed that I've seen less deer in areas that used to hold them greater numbers. The only way to effectively hunt cougars is with dogs. This practice should not be banned.

Thank you.

David J. Adkins
Regional Manager
2023 Core Value Champion
Office: 575.746.8768 x702
Direct: 575.616.4022
Cell: 575.441.4835
Fax: 575.746.8905
Emergency: 866.742.0742
Web: www.talonlpe.com



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From: [Jonathan Garofalo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Sunday, August 20, 2023 4:04:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to urge the State Game Commission to adopt the rule proposed by DGF bear and cougar biologists based on scientific management. I am IN FAVOR of bear and cougar hunting supported by scientific management. These species need to be managed just like every other game animal. It is imperative to continue to manage and hunt bear and cougar in the state of NM in order to maintain healthy populations, keeping human safety in mind.

Sent from my iPhone

From: [Grant Jerry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Friday, August 18, 2023 7:27:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game and Fish commission,

Please maintain bear and cougar hunting rules in line with the NMGF biologists recommendations. Do not allow anti-hunting extremists to hijack the discussion and diminish the North American Model of Wildlife Conservation. Please maintain appropriate predator management in order to preserve continued hunting opportunities for New Mexico residents.

Thanks,
Grant Jerry

Sent from my iPhone

From: [Jacob Garcia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Friday, August 18, 2023 2:13:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I would like to reach out and voice my support for continued hunting of bears and cougars in New Mexico. Predator management is essential to overall wildlife conservation and hunters are an important tool in achieving management goals. Responsible predator hunting based on NMDGF biologist recommendations should continue on in the state.

Thank you!

-Jacob Garcia

Sent from my iPhone

From: [Yahoo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Wednesday, August 16, 2023 3:01:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider this appeal to continue the practice of responsible predator hunting in New Mexico. Our state game biologist and department do an excellent job of scientific management of wild game to include predators all within our traditional norms.

I know that there is a loud voice of largely out of state people trying to curb our hunting traditions here in New Mexico. These people have significant financial backing and they are not working in the interest of conservation nor our wild animal population.

Thank you for your consideration.

Danny Hughes

From: [Mark C. Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Wednesday, August 16, 2023 12:15:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dir sir or madam:

I am a New Mexico license holder, as well as a conservationist. New Mexico already employs good game management practices, and hunting black bears and cougars is an essential part of that program. I strongly urge all rule makers to keep bear and cougar hunting in New Mexico.

Regards,

Mark C. Walker Member

Board Certified, Personal Injury Trial Law
Texas Board of Legal Specialization

221 N. Kansas St.
Suite 2000
El Paso TX 79901

Phone 915-541-9322

Mobile 915-433-5587

Fax 844-670-6009

Email MWalker@dickinsonwright.com

[Profile](#) [V-Card](#)

DICKINSON WRIGHT PLLC

ARIZONA CALIFORNIA COLORADO FLORIDA ILLINOIS KENTUCKY MICHIGAN
NEVADA OHIO TENNESSEE TEXAS WASHINGTON D.C. TORONTO

From: [Don Lommori](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Wednesday, August 16, 2023 12:07:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NM Game Department Biologists have submitted a management proposal to CONTINUE specific predator management programs in our state. The management proposal is based on SCIENTIFIC DATA RESEARCHED, COMPILED AND ANALYZED using sound scientific principles. Let SCIENCE guide you in making your decision to adopt the Bear and Cougar Rule. Do not let raw emotion from a FEW take away from the MANY the opportunity to hunt and assist the NM Game and Fish Department in this MANAGEMENT PROGRAM!

Respectfully DML

From: [Marc Choyt](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: nmwildlife@nmwildlife.org
Subject: [EXTERNAL] Bear and Cougar Rule
Date: Thursday, August 17, 2023 7:57:38 AM
Attachments: [reflective.vcf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings,

I have been hunting in our state for 30 years-- mostly elk. I was glad to find out about this upcoming issue from New Mexico Wildlife.

I strongly oppose bear and cougar hunting. Apex predators play a critical role in our environment that is increasingly stressed out due to major changes. I was just in the Santa Barbara divide up at Truchas lakes two weeks ago, astonished to see the bark beetle damage. Plus, there has been so much habitat loss due to the fires.

There is no biologist who can determine the impact of these changes on apex predators. With climate change, we are in a totally new paradigm. Plus, we have a non-soon, not a monsoon. There's no question that the loss of forage due to the burn will impact bears. We cannot continue on the same path that we have in the past. That very kind of mentality-- not being up to date with current data due to climate change, lead to the fires that we had last summer.

Hunters who ignore this reality and want to continue just as things have been are not paying attention and do not have the interest of our wild lands at heart. Plus, people are not hunting bear and cougar to fill their freezer like deer and elk, which I hunt. It's all about trophies-- which is an ugly.

As a hunter, as someone who truly loves to hunt, I urge you to ban apex predator hunting. It doesn't belong in today's climate change habitat loss world. These predators need all the protection we can offer them.

I would also add that there are many hunters who feel just as I do. Don't be fooled by the vocal few.

Sincerely,

Marc

--

Marc Choyt

President: Reflective Images Inc.

www.reflectivejewelry.com

Twitter: @CircleManifesto

912 Baca Street

Santa Fe, NM 87505

Tel: 505-988-7393



From: [Tymeson, Chris](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rulemaking
Date: Tuesday, August 22, 2023 1:27:26 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[image007.png](#)
[image008.png](#)
[NM Bear and Cougar Proposed Rulemaking 2023 - LH Signed.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please find attached the comments of Laird Hamberlin, SCI CEO on the Bear and Cougar Rulemaking.

Thanks,
Chris Tymeson



Christopher J. Tymeson, J.D.
State and Local Liaison
Mobile: 785 640 1946
ctymeson@SCIfirstforhunters.org
safariclub.org | safariclubfoundation.org



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From: [DeborahR.Granillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Friday, August 18, 2023 6:33:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting with dogs as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Respectfully,

Deborah Chacon

From: [Michael Bain](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules Change
Date: Thursday, August 24, 2023 1:49:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

I manage a ranch in Mora County and believe that hunting bears and cougars reduces human, pet, and livestock encounters/conflict, which helps ensure human, pet, and livestock safety. I also believe this is in bear's and cougar's best interest as well.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Michael Bain

Phone: (505) 795-1597

From: [Don DeLorenzo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules Input
Date: Wednesday, August 16, 2023 6:49:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Support the science based recommendations of professional biologists. The voices wanting to stop hunting are the same type of voices that crushed logging. Now we see thousands of acres at a time burn with increasingly hot fire. These people intend well with their view and emotions but they are wrong. Let professional science based management set the Rules and not emotions. When a mountain lion was found at an elementary school in Arizona, the professionals had it removed. The animal protection voices led a campaign to fire the Director of AZGF and the Coronado NF Forest Supervisor. These people would have never said a word if that lion had killed a small child. Reject management by emotions and act on the good science and experience of the professional Department managers.

Sincerely,
Don De Lorenzo
Certified Wildlife Biologist
Sent from my iPhone

From: [Shannon Patrick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules Public Comments
Date: Thursday, July 20, 2023 1:54:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please protect the wildlife you are responsible for. Kill quotas should be reduced for both bears and cougars, not raised. Both species can self-regulate their own populations and do not require human interference. Additionally, the hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. There has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Further, NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

I personally oppose any killing for "fun", "sport", "recreation", or "trophies". Please consider policies that are humane and responsible instead.

Thank you!

Shannon Patrick, M.Ed., MLS

Las Cruces, NM

From: [Mark Mattaini](#)
To: [DGF-Bear-Cougar-Rules](#); [Lopez, Tirzio, DGF](#); [Fulfer, Gregg, DGF](#); [Hickey, Sharon, DGF](#); [Garcia, Edward, DGF](#); [Clemente, Fernando, DGF](#)
Cc: [Charles Tripp](#); [Katie DeLorenzo](#)
Subject: [EXTERNAL] Bear and Cougar Rules Statement
Date: Thursday, August 17, 2023 8:13:44 AM
Attachments: [NMBHA Bear and Cougar Statement letter.docx](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please see attached.

Mark Mattaini, DSW
(mattaini@uic.edu)



From: brixeycattle@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 23, 2023 3:33:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

While I'm not a New Mexico Resident, I would be a hunter who would come hunt black bear and mountain lions. I support the research and the changes recommended.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Rusty Brixey

From: bkrogers@gilanet.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Thursday, August 17, 2023 12:50:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, I am writing regarding the "Bear and Cougar Rules". I fully support the hunting of bears and cougars by all currently legal means. This includes dogs and electronic callers. Use of hounds is not only a longstanding tradition, but also one of the only effective means of managing populations, especially of elusive cougars. Managing the predators is important to the health of all other species as well. The use of electronic callers is also a safety issue for hunters as the predator can be called away from the hunter's actual location. I would also be in support of raising the current quotas on these two species.

Thank you.

B. Keith Rogers
810 E. Oak St
Silver City, NM 88061
575-574-2004

From: [Joe Valdez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Thursday, August 17, 2023 6:34:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting has been a part of the American tradition since our fore fathers came to establish a new country.

It has been a means of supplying table fare for our families. And a way of proper conversation.

It has been proven by state biologists; without proper management of wildlife. The balance of nature becomes out of balance. And wildlife over populates their habitat.

Food becomes hard to find for wildlife. And soon they wonder into populated areas. And endanger the public.

I recently was working on a customers property in the Sandia Heights area in Albuquerque, NM.

The property has apple trees and cherry trees in the back yard. While cleaning the area. We noticed a large pile of bear scat around the apple trees. Only 12 feet from the back entrance of the home.

Pets go missing and often their remains are found after being consumed by cougars and bears. The question is what happens if hunting and trapping are outlawed?

Putting the public in danger is not a priority? Proper control of these animals is critical! Over grazing of the habitat. Leads these animals to seek food such as pets, live stock and possibly the human population.

Nature has always had a way of balancing this. But, it is out of balance. What predators keep bears and cougars in check with their habitat!

The answer is proper conversation through controlled hunting practices!

Look at Raton NM a few years back. A woman was attacked and killed by a bear. That broken into her mobile home.

The Philmont Boys Ranch has had bear attacks on boyscouts camping in that area.

Anti hunting groups do not consider the danger and loss that occurs when Winnie the Pooh and Tigger can't find food. Because there are too many of them and they no longer stay in the natural boundary of nature.

Please listen to our biologists and those who know the importance of proper wildlife management!

Thank you for your concern in maintaining a proper solution. That has been in place for generations!

Joe Valdez

From: [JEROD BROWN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 1:43:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Being an out of state hunter from Texas, Myself and my family have enjoyed hunting in New Mexico for around half of my life (20 years). We've hunted mule deer, elk, Coues Deer, bear and cougar and enjoy everything New Mexico has to offer. To allow non-hunting activist to stop bear and cougar hunting would be devastating not only for the local guides and economy, but also to the out of stators, and not to mention all of the other big game wildlife New Mexico has to offer that would suffer by those populations getting out of control.

Thank you
Jerod Brown

Sent from my iPhone

From: [Heath Williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 12:41:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of all current rules and hunts applied to bear and cougars. If anything, there should be more cougars and bears knocked down in some units. If bear and cougar quotas get any lower, big game numbers will be affected drastically. People from out of state, never go out hunting or in the wilderness should have no affect on how the state handles quotas or dictate any laws or rule changes.

[Sent from Yahoo Mail on Android](#)

From: [Larry D. Cospers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 11:36:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NMDGF needs to follow science based recommendations in setting management and harvest regulations. Regulated hunting manages populations and provides a deterrent to animals becoming habituated to humans and population centers. It is an accepted fact that exact population numbers are impossible to determine with current science, however this should not preclude managing the animals.

I support set seasons and current legal methods of take, including hounds.

I do not support indiscriminate killing in support of the livestock industry. However, animals in the act of killing livestock or pets should be removed or killed as necessary.

Thank-you for your consideration.

Larry D. Cospers
Wildlife Biologist (Retired)

Sent from my iPad

From: [Christopher John](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 4:32:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support science-based decisions in regards to wildlife management. Please strongly consider the opinions and findings of your wildlife biologists when making decisions on wildlife management. I am a strong supporter of our rights to responsibly pursue and harvest game species, especially through the use of our hunting dogs.

Best regards,

Chris Taggart

From: [Wild Trout](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Sunday, July 16, 2023 7:24:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I fully support your proposal to raise limits on bear and cougar and trust your science that is behind it.

I live in the East Mountains and can confirm that cougars are alive and well in the wild. We get lions on our game cameras frequently throughout the year. A couple of years ago, we got a shot of four lions at once getting a drink from our water source.

Thank you for what you do

Jeff Young
Sandia Park

From: [Spencer, Christopher \(USMS\)](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 4:01:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The hunting seasons for both bear and cougar need to remain the same. A system is already in place through New Mexico Game and Fish to monitor the amount of Cougars and Bears in Hunting Zones that cover the entire State. Therefore both species are already being managed successfully I believe throughout the entire State.

I grew up in Unit 2 for example. Especially in unit 2A growing up as a kid in the 80s and 90s and hunting with my Grandad and Uncle every year (when we would be able to purchase OTC tags at the local Handy Bait and Tackle Store in Aztec) we would see numerous amounts of deer and even elk, but definitely more Bucks than anything. Now days you take a drive through those same hills you still see deer and elk but definitely not the number of Bucks and overall deer and elk in general as I used to see.

I believe this is in big part to the Mountain Lion population that has grown here just in the NW portion of the State (probably state wide). If a cougar takes out a deer or and elk a week to survive our numbers of deer and elk are going to decrease within the State dramatically as I believe they already have up in this NW area of the State.

If hunting seasons are even more limited on bears and cougars you are going to see bear and cougar populations rise and deer and elk population continue to decrease.

Thank you for your time,
Chris Spencer

From: [Rusty Holt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 11:51:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Y'all ran me out of the state when you didn't support trappers. Now look what's happening to you. Give the antis an inch and they'll take a mile. Have fun with the woke agenda that NM is always caving to.

From: [cory.murchy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 23, 2023 2:49:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am a New Mexican resident and a strong believer in The North American Model and the Public Trust Doctrine. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Cory Murchy

Peña Blanca, New Mexico

From: [Melissa Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Thursday, August 17, 2023 11:39:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

It has come to my attention that a large number of comments have been received and directed to your commission, from well intentioned but largely uninformed citizens who have argued for the cessation of Bear and Cougar hunting. This is in direct opposition to all scientific data and population estimates based on true research.

I would strongly appeal to you to please not give in to the emotional and uninformed plea from these people to stop hunting of both species. Currently our state enjoys healthy numbers of both bear and cougars as they are correctly and intelligently managed by the NMDGF. To change these two species to totally "protected" would result in devastation of our cattle ranching industry and our deer and elk herds as well. Both of which currently face tremendous pressure from a burgeoning wolf population. Ultimately this would of course seriously reduce the Apex predators themselves as they would run out of prey species, turn to livestock and then be eliminated to preserve private property of the ranchers.

The changes as proposed by NMGFD to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our department biologist and the recommendations developed from their science-based data such as non-invasive scat/hair sampling, remote/trail cameras, GPS collars, hunter surveys, landowner reports and other traditional measures.

Thank you for your sincere consideration of this request.

Respectfully,
Melissa Moore
(505) 463-7020

From: [Pennington Carter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 16, 2023 5:59:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Pennington Carter

--

Regards,

Pennington Carter

From: [Missy Mraz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Wednesday, August 23, 2023 11:02:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi my name is Missy Hale.

I have been an avid hunter for many years in NM. I am for opening up the bear hunting in August again. I also think it would be great for those who draw a wildlife management tag to be able to hunt cougar and bear.

I am also for hound hunting. They took away our trapping rights and those of us that live in the dry desert country is the only way to protect our livestock from lions and bears is with hounds. I'm not sure what's on discussion for cougars but I'm sure they are coming after our hound hunting next.

Not sure why you don't have a depredation list on problem bears and lions where the state could make revenue from them instead of just having a govt. Hunter dispatch them. Without our bear and lion seasons they will become a bigger problem as people are moving out into their habitat. Bear are loosing habitat daily by new development in many areas in NM so in places their numbers need to be kept in check so there are not as many problem bears.

I hope our seasons stay open and we can enjoy hunting for years to come.

Thank you

Missy Hale

From: [Selso Fernandez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Sunday, August 20, 2023 11:31:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

DGF-Bear-Cougar-Rules@state.nm.us

Sent from [Mail](#) for Windows

New Mexico Department of Game and Fish:

Hunting as a method of putting food on the table has been a way of life in the United States of America since our country was formed. Proper conversation through controlled hunting of Bear and Cougar practices is the key to proper control of over population of these species.

Many people lose their pets to cougars and bears. If hunting and trapping are outlawed, how many more family pets will be consumed by these animals if their number increases as a result of laws that prevent the hunting of bears and cougars?

It is in the best interest of New Mexico and its residents for public safety and the safety of their pets, to not outlaw the hunting and trapping of bears and cougars in the State of New Mexico.

Thanking you in advance for maintaining a proper solution, that will not outlaw the hunting and trapping of bears and cougars in the State of New Mexico.

Selso Fernandez

From: [Jason Sutherland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Saturday, August 19, 2023 3:13:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of the new Bear and Cougar rules.

Thanks

Jason

From: [Dale Heppler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Saturday, August 19, 2023 7:32:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please follow the guidance of Professional Biologists when considering new rules for any hunting. Do not submit to the wishes of Anti-Hunter Activists.

Dale Heppler

Sent from [Mail](#) for Windows

From: [Rodney Griego](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Thursday, August 17, 2023 9:35:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the proposed changes for cougar and bear hunting, thank you
Rodney Griego

--

Sent from Gmail Mobile

From: [Jim Corcoran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Friday, July 14, 2023 1:20:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

From: [Impact Outdoors](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Ruling
Date: Wednesday, August 16, 2023 1:00:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the continued use of dogs for targeting the best harvest possible for New Mexico bear and cougar hunters. Dogs allow for folks to pass on females, and also on subpar harvest. Please continue this tradition in New Mexico.

Matthew Monjaras
Founder/ Director
Impact Outdoors

From: [Vince Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Topic Meeting
Date: Tuesday, August 15, 2023 8:52:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi,

My name is Vince Martinez, I was unable to attend any of the meetings this week but I wanted to give some input on some changes that I would like to see happen to our bear and cougar hunting.

First I would like to start off with bear hunting. I feel that it is unfair to us residents to all of these out of staters that come hunting to our lands and can just purchase a tag over the counter. I would like to see some changes done to that and make it for out of staters to have a draw system like the way Utah does and only allow a few out of state hunters to draw a pursuit only tag or a kill tag and slow down the amount of out of staters that come hunting on our lands. I feel that this should go for mountain lion as well. It's sad to see your favorite hunting spots get flooded with out of staters come August and September.

Another note that I would like to make is to allow a spring/summer bear pursuit only season for NM residents. I feel that it would produce more income for the state allowing houndsmen get out and train their dogs only. No harvesting in the spring/summer only a pursuit season.

Lastly for cougar, something needs to be done and changed with taking out unit 6 from the current zone it is in and putting it back to the way it was before the changes. It's not fair to the other houndsmen that hunt unit 6 and it gets closed right away because of all the harvesting they do in 50,51 and 52.

I'm hoping this email falls to someone who has an open ear and is willing to help out to make this state better for generations to come for future hunters and houndsmen. I have also been seeing a lot of talk about the anti hunters that attended the meetings as well and it kills me and fellow New Mexicans, houndsmen and hunters that this is happening to our beautiful state as well. We have some of the best hunting in the US and a lot of houndsmen come out to this state to hunt. It brings in a ton of revenue for the state also. Look what the anti hunters have done in the states that they have moved from in California and Colorado. They have multiple attacks on humans each year from bears and cougars. Why we ask? Because of them and stopping the population management that we provide. They're out of control in those states and not to mention all of the inbred animals because they are overpopulated. Please don't let this amazing state turn into another California, it's sad because I see it turning this way not only in hunting but all around the state.

Thank you,
Vince

From: [Rodger Daniel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar and Wolves
Date: Wednesday, August 16, 2023 5:42:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

These predators need to be hunted to control there population, they are a contributing factor in the decline of our mule deer herd and they are ruining the elk herds in the Gila!!!

[Sent from Yahoo Mail on Android](#)

From: [Matt Holsten](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar comment
Date: Thursday, August 17, 2023 7:56:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been watching how New Mexico has managed the Bear and Cougar population and it is very impressive. New Mexico has a healthy population of both species and provide very good opportunity for harvest. I am from Nebraska and will be coming to New Mexico to hunt Bear with hounds and horses in the Gila Wilderness area. Hunting with hounds in wilderness is special and adds a level of excitement that is hard to explain. The harvest is secondary to the hunt.

Hunting Bear and Cougar with hounds provides a valuable tool for management. No one wants to maintain a healthy population of Bear and Cougar than the hound hunter and I hope this tradition will continue in New Mexico. I want to bring my Grandkids to hunt someday.

Thank You,

Matt Holsten

From: [Doug Boykin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar comments
Date: Thursday, August 17, 2023 4:37:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern.

There's allot of numskulls in this day and age that DO NOT understand wild game CONSERVATION. They are being funded by radical left bunny huggers that don't have a clue either. These Bears and lions in New Mexico are being managed just fine with the State Game Department. Yes there's always flaws in any system. But these animals that aren't harvested with legal hunting of all kinds end up being a nuisance and are harvested anyway by the game department or their select contractors. Many die of starvation and disease and or predation from other Apex predators. Very much not a humane way to go. Do not bend to the crybabies that make the most noise. They know not what they do! Keep the Bear and Cougar hunting just as it is. It's a win win situation as it is now.

Thanks

Cheers,

Doug

Sent from my iPhone

307-223-6922

From: [EDWIN ZURAWSKI](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunt
Date: Sunday, July 30, 2023 8:46:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Why don't you people work to protect wildlife not destroy it? Who gave you the right to destroy wildlife that belong to all New Mexicans? Don't all animals including bears and cougars have a hard enough time trying to survive brutal heat and drought without allowing cowardly hunters with nothing better to do savagely kill up to a quarter of our bears and cougars every year?

Do the right thing for once and cancel the kill.

Edwin M Zurawski

Albuquerque

From: [Kim](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting in NM
Date: Saturday, August 26, 2023 1:59:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

I am a female hunter and I am in favor of responsible predator hunt programs in the State of NM. I also think Bear and Cougar hunters should be allowed to hunt with their dogs. Once a dog trees an animal, the responsible hunter can then see the sex of the animal. I should not have to tell you why that is important.

I personally am tired of anti-hunters, whom typically are the "woke blowing smoke" up everyone's ass.

Thank you.
Kim

From: [George Tachick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting in New Mexico.
Date: Monday, August 21, 2023 11:03:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am totally in favor of responsible control of predator hunting in New Mexico as proposed by the biologists of New Mexico Game and Fish. To stop this hunting would be a disaster for many other game animals in this state. The explosion of predators when not controlled would lead to drops in numbers of all other game animals. The two large predators would ultimately see many more attacks on hikers, bikers, hunters and children in the woods and in cities. We have enough of that now with global warming and drought conditions. Just look at California, a state that seldom does anything right. Count me in favor of continuing responsible control.

From: [Orie Adcock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting rules.
Date: Wednesday, August 16, 2023 11:31:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMDGF, I oppose any further restrictions on bear and cougar hunting. If anything, they need to be expanded and bag limits raised. Thank you, and we appreciate what you do for the sportsman in our state. O.L. Adcock, ATCS (AW) USN Retired 575-625-6908

From: [Branden Sanders](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Thursday, August 17, 2023 5:53:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it may concern,

Please keep the scientific and necessary current bear and cougar hunting rules in place. Predator control is a necessary and important part of responsible wildlife management, and to abandon that is to invite ecological disaster.

Thanks,
Branden L. Sanders
Edgewood, NM

From: [Sarha Muller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Tuesday, August 15, 2023 7:24:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with hunting bears and Cougars in NM
With or without hounds.

Please do not pass a bill that will take this away!
Sent from my iPhone

From: [Grant Meyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Thursday, August 17, 2023 5:53:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing today to tell you that keeping current conservation practices in New Mexico as it pertains to Cougar and black bear is of the utmost importance.

Bringing a hunting model to an apex predator often finds those lands that these predators live on to benefit greatly.

Keep the seasons, ignore the noise. The people fighting against this don't understand wildlife models.

Grant Meyer

[Sent from Yahoo Mail for iPhone](#)

From: [William Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 8:26:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been involved as an outfitter and now as retired, as an avid hunter. The need to control all predators is very important to BALANCE to the entire ecosystem.

Those that propose any reduction in taking of predators without SOUND observation and analysis are making a horrible mistake.

Predators take more wildlife than almost anything other than automobiles.

I have a brother that has had to kill more bears in the last year due to depredation (Killing his chickens and turkeys) than I have in the last 5 years. All because of the reduction in harvest over the last 25 years.

The bear and cougar populations are stronger and in some cases out of control.

NO REDUCTIONS !!! Only increases in harvest numbers of predators!!

William H. Lee RN-CEN

575-590-2952

From: [David Rauber](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 6:28:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

Dear Commissioners,

As a New Mexico outdoorsman I would hope you always keep the New Mexico tradition of lion and bear hunting alive and that you don't ever cave to the anti hunting groups. These hunts are regulated and the lions and bear seem to be doing very good just the way things are.

Thank you,

David Rauber

From: [Michael Leonardi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 4:02:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and Cougar hunting is an integral part of wildlife conservation for the entire state. Legislation or bans that tie the hands of biologists and take away critical management tools have a proven record of negative outcomes (see California). Please continue to allow state biologists to set quotas for sustainable predator harvest for the good of all New Mexico wildlife.

Sincerely,
Mike Leonardi

[Sent from Yahoo Mail for iPhone](#)

From: [Ryan ODeil](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 1:40:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please allow scientifically regulated bear and cougar hunting in Mew Mexico.

Thanks
Ryan ODeil

[Sent from Yahoo Mail for iPhone](#)

From: [webedux](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 11:57:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and cougar hunting should continue to be based on scientific analysis, conducted by professional game management personnel. Anti-hunters have absolutely no business interfering with this practice! The 10yr cougar study on White Sands proved the stupidity of not managing via regulated hunting. Tell the anti-hunters their "feelings" have no place in sensible game management!

Sent from my Verizon, Samsung Galaxy smartphone

From: [Andrew Phillips](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 11:39:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to say that I believe that predator hunting is an important part of maintaining a healthy balance between humans and nature. Hunting these animals should be allowed.

--

~Andrew

From: [Shawn Andrus](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Wednesday, August 16, 2023 11:35:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Just wanted to write you a short note stating that my family and I are in favor of keeping bear and cougar hunting as it currently is. These animals are continually increasing in number in residential areas which will only make them less afraid of human interaction. Hunting will help to maintain those numbers and lessen the push for the animals to encroach upon residential areas.

Thank you.

Shawn Andrus

From: [g.matthew.Allen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunting
Date: Thursday, August 17, 2023 6:18:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good day. I am writing in support of bear and cougar hunting.

Most hunters realize the bears and cougars have no natural predators. Should our ability to hunt them be stymied by non-hunters, who in reality don't understand man's role in keeping the system in balance, it will result in unchecked population growth for both species.

Both bears and cougars, if left alone, will wipe out the deer and elk populations. Cougars kill and eat roughly one deer or small elk per week. The number of deer/elk that will be killed, should these two species be left to their own accord, will ultimately result in decimation of both deer and elk.

G. Matthew Allen
Milan, NM.

From: [Ronald Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunts
Date: Wednesday, August 16, 2023 9:24:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Look at Utah's laws pertaining to Bear and Cougar hunting if you want to see how a well administered conservation plans work. We have no further seasons for Mountain Lions as we have so many it no longer matters. We hunt them year round without a permit. Utah DWR collared and tracked several Mountain Lions in the Pine Mountains of Southern Utah and found they were each killing 4-5 yearling Deer a week. A spot and stalk Bear Hunt is about the hardest hunt known to humanity and the success rate has no bearing on Bear populations. Do not let peoples emotions make game laws. Let science determine the best pathway forward. No to hunting bans. SFC Ronald "Kilmore" Moore (USA ret).

From: [Daniel Marzano](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunts!
Date: Wednesday, August 16, 2023 8:39:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Let the people in the field decide on the best ways to manage our predators and game, the north american model of conservation is unparalleled across the globe. Biologist should be the ultimate influence on management along with sportsmen and others in the field, not politicians and folks that are not even involved or immersed in the outdoors. Follow the real science!

Regards,
Daniel Marzano

From: [Jonathan Eskridge](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunts
Date: Tuesday, August 15, 2023 7:46:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hunting bears and cougars with hounds in New Mexico. The landscape is very rugged in our state and the use of hounds is very necessary to help control predator populations. One cougar can eat a deer a week. That is at least 52 a year. Combine all the cougars and that is substantial reduction in deer numbers. Add bear kills and habitat loss and it is easy to see why deer numbers are down. I have seen two cougars in 56 years of hunting. Not easily hunted using traditional methods. If baiting and traps are illegal how else are you going to control cougar populations without hounds? I see cougar tracks more and more and deer less and less.

Jonathan Eskridge
Rio Rancho, NM
Sent from my iPhone

From: fivegarcias@valornet.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar hunts
Date: Wednesday, August 16, 2023 12:23:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Haven't we learned from our mistakes. First the anti hunters cry when an animal is harvested legally. Then they cry when possibly that same animal kills and eats their dogs and cats. Let the professionals (Dept of Game and Fish) do their job. wah! wah! wah!

From: [Nicole Trousdale](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar increase kill limits
Date: Thursday, October 19, 2023 9:29:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to protest the new ruling allowing increased number of Bear and Cougar kills as well as lengthening the hunting season.

As a resident bordering wilderness we regularly witness hunters inhumanly tracking and killing these animals with hounds. We had an incident 2 years ago where hunting dogs were on our property, we got them off, the hunters however ended up killing the bear they were tracking which was a female with a cub. The cub came out of hibernation on our property starving and in very poor shape. We contact Fish and Game and were told he would move on. The cub caused no harm and without a mother had no idea how to survive and ended up dying in our hay field. We have witnessed a similar case with a cougar cub roaming aimlessly because the mother had been killed.

These animal cause no harm as long as humans respect the environment we choose to live in. They are part of the ecosystem keeping things in check. Perhaps it is the hunters wanting to increase cougar kills so they will have more elk to kill?

Please let the natural system regulate itself.

Thank you for your consideration.

Nicole Trousdale



Nicole Trousdale
Ute Creek Equine
P.O. Box 23
Amalia, NM 87512

Tel: 575-586-1513
Cell: 303-903-2721
nicole@utecreekequine.com

"There are only two days in the year that nothing can be done. One is called yesterday and the other is called tomorrow, so today is the right day to love, believe, do, and mostly, live." Dalai Lama

From: [joanie berde](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar increased hunt limits proposal
Date: Tuesday, July 18, 2023 1:38:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

On behalf of Carson Forest Watch Citizens' Group in rural Taos County, NM the following are comments regarding the proposed increase in hunt numbers for New Mexico's bear and mountain lion populations:

- 1) We have been involved in predator management and protection issues in New Mexico for over 35 years, and have attended NMDGF public meetings and submitted comments for wildlife proposals and management concerns since the late 1980's.
- 2) We remain concerned that the recent NMDGF proposed hunt quota increases have not provided the public with hard data or RECENT population surveys and habitat usage maps that would support a scientific need for such hunt increases.
- 3) On the contrary, there has been significant loss of habitat for these animals in just the past year, let alone since the last population studies and surveys were conducted. In northern New Mexico in particular, the Hermit's Peak and Calf Canyon fires, which were the largest in NM state history and burned over 350,000 acres of prime lion and bear habitat in and adjacent to the Pecos Wilderness have decimated some of the most used and critical habitat for these and other wildlife species. Much of the severely burned area in the perimeter of these fires contained some of the best bear and lion habitat in NM.
- 4) In southern NM, it's the same situation with the large fires that burned in the Gila National Forest, also providing some of the best bear and lion habitat in that part of our state.
- 5) However- we saw no mention of the impacts of these large fires, loss of habitat, data that shows how many acres were lost or degraded for bear and lion, and what population surveys have been conducted within and adjacent to these burn areas in 2022 and 2023.
- 6) Because of the tremendous loss of habitat, stress to the bear and lion populations from both the fires and lack of secure adjacent habitat, as well as likely cub and adult mortality during and after the fires- the NMDGF needs to address how the fires affected bear and lion, if studies and surveys have been conducted documenting where in the burn areas these animals are persisting and where they may have moved into other habitat, whether this habitat is suitable, the condition of this habitat, and what this year's population numbers are showing- specific to the Hermit's Peak/Calf Canyon and Gila fire areas.
- 7) More than one season of data and surveys and observations are needed after these fires before a scientific determination can be made as to how the Pecos Wilderness and Gila bear and lion populations have either recovered, declined, or changed.
- 8) It is absolutely premature and irresponsible for the NMDGF to propose any hunt limit increase until after such studies and analysis are completed.
- 9) Please address our concerns and withdraw any hunt limit increase for New Mexico's bear and lion populations until such studies are finished and we have more sound information as to the effects of these fires upon these animals.
- 10) Note that simply excluding the burn areas from the proposed hunt limits is not adequate. These animals can travel long distances, and are likely having to move to other habitats already occupied by bear and lion, and possibly suffering increased stress and mortality, and cannot sustain any increase in hunt numbers and loss of population.
- 11) We should be adding more protection for New Mexico bear and lion populations because of severe recent habitat loss, on-going drought, climate change and warming impacts, human population increase into bear and lion habitat, etc. Not less protection and further threats to these important wildlife species.

Sincerely,
Joanie Berde
Director
Carson Forest Watch
PO Box 15
Llano, NM 87543

Carson Forest Watch

From: [Birgit McGaughey](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: media@apnm.org
Subject: [EXTERNAL] Bear and Cougar kill increase
Date: Wednesday, July 19, 2023 6:55:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

There are 3 major entities who create profits from hunting, competing for a limited amount of business, aiming for quick immediate success:

Outfitters, Hunting Guides and Taxidermists, including meat processing.

Wealthy outfitters from out-of-state have bought up land and ranches in NM to turn them into high-end hunting ranches. Often they develop one, sell after a few years of exploitation only to buy more and again repeat the process. Unfortunately they don't care much about future wildlife populations, the impact on the land or our communities.

Local hunting guides and taxidermy businesses have

to adopt the same profit oriented practices to compete, shoot as many bears or cougars as possible to get a piece of the action. If they won't the wealthy outfitters will succeed in taking it all in a short period of time. The wealthy outfitters move on to "greener pastures" after they have eliminated the wildlife population.

Or, nowadays, the trophy bull elk are farm raised and trucked into NM to sell hunts for astronomic prices.

So far they haven't done it with bears and cougars for whatever reasons.

In order to increase quick immediate profits they claim here in northern NM are high amounts of bears and cougars. They often also claim there is a nuisance or even endangering impact on people to get NMGF to release more permits.

More permits also means more money for the State of NM and NMGF.

As long as the survival of any wildlife is determined by profit oriented entities wildlife will always lose. Bears nor cougars have a chance when hunted down by packs of hounds, being treed and then conveniently shot out of the tree.

I spent and still do much hiking on Natl. Forest and public lands.

From 2001 to 2012 I have seen 29 cougars and over 35 black bears, encountered several on my own ranch or neighboring properties.

From 2013 to 2023 I have encountered no cougar and 3 bears even though I spent equal amount of time hiking and mushroom hunting, less fishing though.

I would like to ask the NM department of GF to use the suggested period of 4 years to rather observe the bear and cougar population to see whether it will increase under current rules.

4years might also give us a better understanding what the impact of the seemingly changing climate will be. Increase in temperatures, more frequent and hotter forest fires will definitely impact prey and predators detrimentally.

Thank you for giving me the opportunity for sharing and giving input.

Best wishes -

Birgit McGaughey
447 State Road 95

Los Ojos, NM 87551

Sent from my iPhone

From: [ROBERT HAYS](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar kill limits
Date: Sunday, October 22, 2023 3:45:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am shocked by the proposal to raise kill limits on NM bears and cougars. This proposal is based on outdated information and old studies. I am in favor of reducing the total kill limits by 50%. Please think this through and base your proposal in sound science. At the least, perform current research on populations and make your proposal based on current populations.

From: [Deborah Williamson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar kill quotas comment
Date: Saturday, July 15, 2023 12:44:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Decision-makers:

Bears and cougars are extremely hard to count accurately as is evidenced by ongoing, multi-year surveys. Game and Fish should adhere to strict science when calculating kill quotas to safeguard the remaining populations. Current proposals to raise the kill quotas are ill-conceived, disregard scientific methods, and ignore the ever-growing and dangerous climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel, and is certainly not what the vast majority of New Mexicans or Americans want for these fellow creatures. Please review with the utmost caution and revise over zealous quotas.

Sincerely,
Deborah Williamson, Ph.D.
505-918-2593
Sent from my iPhone

From: [Debbie Conger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar killings
Date: Thursday, August 3, 2023 1:36:59 PM
Attachments: [EXTERNAL Bear and Cougar killings.msg](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [Lizabeth Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar management plan
Date: Thursday, August 24, 2023 6:59:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Thank you for allowing the public to comment on management of bear and cougar populations. I'm urging the commission to decrease the kill quotas on bears and cougars in New Mexico. There is no scientifically sound study of bear and cougar populations available to provide for an accurate assessment of how many bears and cougars can be safely removed from the state population without causing a significant decline in both species, a decline that would have a negative knock-on effect on those species that rely on the environmental impact of bears and cougars for their own survival. In addition, any such study would need to take into account the years of drought New Mexico has experienced and the effect of rising temperatures, which affect the food both species rely on to survive.

In closing, I once again urge the commission to consider decreasing the kill quota for bears and cougars this year and to invest in a sound, scientific study to indicate what the population of both species actually is and how climate change is affecting them. Only then can New Mexico's wildlife be effectively and productively managed.

Thank you,

Liz Johnson
Los Alamos, NM

Sent from [Mail](#) for Windows

From: [Jeremy Byrd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar management support
Date: Wednesday, August 16, 2023 11:50:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to express my strong support for the proposed rule drafted by the New Mexico Department of Game and Fish biologists, which allows for the continuation of bear and cougar hunting within regulated seasons. This proposal isn't merely about sport; it's about sustainable wildlife management, maintaining a balanced ecosystem, and conserving our natural resources.

The predator hunt programs have been designed with scientific expertise and thoughtful consideration of the delicate balance that exists within our local ecosystems. By regulating the population of these predators, we can ensure that they don't become overpopulated, leading to a negative impact on other species and the overall health of our environment. I firmly believe that responsible hunting practices, guided by the professional insights of our game biologists, can contribute to the well-being of our wildlife and their habitats.

I understand that the subject of hunting can be emotionally charged for many. However, I urge the New Mexico State Game Commission to carefully consider the well-researched and scientifically sound proposal at hand. By adopting this rule, we not only respect the natural order, but we also safeguard the intricate connections between species that make our environment vibrant and robust.

Much appreciated, Jeremy Byrd

From: [Michael Farrington](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar management
Date: Wednesday, August 16, 2023 11:35:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Honorable Commissioners,

I am writing today to ask that you allow science and experts with NMGF to continue to manage black bear and cougar populations in the state. Hunting of these species is an invaluable management tool that should not be taken away from resource managers.

Respectfully,

Michael Farrington
Lifelong New Mexican

From: [Chris King](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar proposal
Date: Thursday, August 17, 2023 9:39:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal for bear and cougar management, submitted by the game department biologist and the continuation of scientific predator management programs for the state of New Mexico.

Thank you,

Chris King

King Electric
2145 W. Moore Ln.
Fayetteville, AR 72704
O: 479-225-1917
C: 479-841-6231

From: [ethanshoop78](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar proposal
Date: Wednesday, August 16, 2023 9:33:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

We as hunters fully recognize the impacts of not adhering to science based management and fully dismiss views based solely on emotion.

Respectfully,
Ethan Shoop (New Mexico resident hunter)

Sent via the Samsung Galaxy S21+ 5G, an AT&T 5G smartphone

From: [Briley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar proposed changes
Date: Wednesday, August 16, 2023 4:17:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

DGF,

As a NM resident and avid hunter, I am in favor of the proposed changes to the Bear and Cougar rules. The changes will help to keep the wildlife population at healthy numbers and I think they are necessary to the sustainability of our hunting and sporting future.

Thank you,
Brennan Riley

Notice: New Mexico law requires government agencies to disclose to the public, upon request, most written communications, including those in electronic form. Persons communicating with City officials or employees should expect that any communications could be released to the public and that this disclosure could include the email addresses of those communicating with City officials or employees.

From: [Jon Klingel](#)
To: [DGF-Bear-Cougar-Rules](#); [Darr, Ryan, DGF](#); [Forman, Nicholas, DGF](#)
Subject: [EXTERNAL] Bear and Cougar quotas proposal. JK comments
Date: Friday, July 21, 2023 12:38:23 PM
Attachments: [JK Bear + Cougar comments.doc](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Attached in MS WORD format are my comments and a photo of dead spruce at serpent lake. Unfortunately I apparently had technical problems and was unable to provide comments at the Game Commission meeting today.

Thank you,

Jon Klingel

From: [Glenn Griffin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar quotas
Date: Thursday, August 24, 2023 6:40:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NM Game and Fish,

Bear and Cougar quotas drawn up by graduate students don't have proven science behind them. Increasing proposed kill quotas is short term thinking during a prolonged and deep drought with habitat and forage loss.

Your income is derived from selling hunting permits. Let the bear and cougar live. The ranchers' Wildlife Service in Grant County, NM only shoots cougars, they never relocate trouble cougars. They only shoot bear here, they never relocate as their contract states they must do first.

We are saying no to increasing the kill quotas. Thank you for considering our public comments in your decision making.

Sandra and Glenn Griffin
3701 Tracy Circle
Silver City, NM 88061
575-388-4130, home.

From: [Charles Barnes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar regulations
Date: Wednesday, August 16, 2023 11:50:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,

I am writing to express my strong support for maintaining the current rules and regulations concerning the management of bear and cougar populations in New Mexico. As stewards of our natural environment, it is essential that we strike a delicate balance between conservation efforts and public safety. The rules in place that govern these apex predators have demonstrated their effectiveness, and any alterations could potentially disrupt the equilibrium that has been established.

Bears and cougars are integral components of New Mexico's diverse ecosystems. They play critical roles in maintaining ecosystem health and biodiversity by controlling herbivore populations and influencing the structure of plant communities. Altering the current regulations could disrupt these roles, leading to unforeseen consequences such as overpopulation of prey species and habitat degradation.

Furthermore, consistent rules regarding the management of bear and cougar populations are essential for public safety. By keeping these regulations uniform, citizens can be better educated about how to coexist with these predators, thus reducing the potential for conflicts and promoting responsible outdoor behavior. This is especially important in a state like New Mexico, where outdoor recreational activities are a significant part of the culture and economy.

Maintaining the current regulations is also vital for research and data collection. These regulations have been developed based on a thorough understanding of the behavior, ecology, and population dynamics of bears and cougars. Any changes could disrupt ongoing research efforts and hinder the ability to accurately assess the impact of these predators on their ecosystems. Consistency is key for building a robust body of knowledge that guides informed decision-making.

In conclusion, I urge the New Mexico Department of Game and Fish to maintain the importance of consistent bear and cougar regulations. These rules have been carefully crafted to strike a balance between conservation and public safety, and any alterations could upset this equilibrium. By upholding the existing regulations, we can continue to protect the state's natural heritage and promote responsible interaction between humans and wildlife.

Thank you for your dedication to preserving New Mexico's unique and precious ecosystems.

Chad Barnes
4A Farms

From: [Timothy Gallagher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Wednesday, August 16, 2023 11:32:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the current rules in place.

From: [Timothy McElheny](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule changes
Date: Friday, August 25, 2023 4:40:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning, I wanted to take a moment to give my input on the proposal for the rule changes on Bear and Cougar hunting in New Mexico. I will start off by telling you a little bit about myself. My name is Tim McElheny and I live within the boundaries of unit 34 in Southern NM. I have been a houndsman for a little over 10 years now and I truly have a passion for hounds, lions, and bears. I also believe the amount of time I spend in the mountains trailing, catching, photographing, and at times harvesting these amazing animals gives me a good perspective of where we stand with populations and changes over the past 10 years. So my input would specifically be in my home unit (unit 34) and surrounding areas. My observations of this area prior to lion removal efforts for big horn sheep showed a strong presence of lions, but I would not say over populated. Most lions we caught during this period were healthy and females typically had good reproduction rates it seemed. During this time sign from these lions was difficult to find at times and I am unsure if this was due to the fact several large males covered much of this territory or if the higher populations allowed for less communications. But fast forward to today post big horn sheep lion removal. There have been significant impacts to the lion population across the unit but very specifically to the west side of the unit. Places I used to be able to get a lion started nearly everyday now seem nearly void of lions at times. This has drastically impacted the lion sign especially scratching by Tom's specifically. If there is a Tom working an area now we will typically trail and eventually catch these lions due to their consistency in marking their territory, therefore making them easier to locate and find. I believe this is due to a lack of lions using this area encouraging more communications to find other lions. My main question for this unit is why lower the quota if you are going to continue to pay a contractor to remove lions? Why not allow hunters maintain the lower Lion populations that seem to be required for these native sheep to survive. It really makes no sense to take from paying hunters to give to a paid contractor. Aside from that I currently support the cut to hopefully allow the population to recover from the big horn effects. But please consider allowing hunters to manage these numbers vs a contract hunter. Bear population seem consistent with small noticeable changes year to year based on what harvest were the previous years. I personally have a ton of respect for bear and lions and want these animals to be managed as well as possible to sustain them well into the future. I would love for my daughter, 20 years from now to have the opportunity to trail these animals through all of the beautiful country our state had to offer if she so chooses. As far as hounds I would say the larger percentage of houndsman don't do it to kill but for the love of the dogs and the ability to see new amazing places that might never be visited if it weren't for following hounds in pursuit of lions and bears. I would challenge anyone with thoughts otherwise to reach out to me and go out with myself and my hounds. I would like to see a change to the removal of bear and lion meat from the field. The meat from these animals is perfectly edible and good at that. I hate to think of these animals being wasted and I do believe this rule should change. I also stand behind the use of hunters with hounds and having the ability to discriminate on harvesting animals based on sex, age, and condition is an invaluable tool to manage populations of these animals. Hopefully my thoughts and input will be considered as you move forward into this process. I could talk about this for hours but I think this email will cover my main concerns at this time. I would be more than willing to talk to anyone interested in my view on this subject and specific area my phone number will be on this email please feel free to reach out to me now or in the future if you would like to discuss this subject more. Thank you for your time and attention.

Tim McElheny
575-921-5479

Sent from my iPhone

From: [Rearick, Michael Sean](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Thursday, August 24, 2023 8:13:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

Our North American Model of wildlife conservation and the Public Trust Doctrine define wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based wildlife management. I continue to support legal bear and cougar hunting as an appropriate management tool in the collective management tool box. Please continue to advance sound stewardship policies that are guided by science not politics, emotion and conjecture. Recent articles in the ABQ journal and NM Political Report are based purely upon emotion and offer no science backing to their statements.

The proposed changes to the bear and cougar rule are modest adjustments to the current rule which has maintained healthy and abundant populations of both species over time.

Please prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

I encourage folks to spend more time in the forest or desert and see for yourself that these species are indeed thriving. Their signs are everywhere. Observation is a powerful tool.

Sincerely,

Mike Rearick

Michael Rearick
C-AAC
Los Alamos National Laboratory
505-667-1224 (CMR)
505-664-2366 (pager)

From: [dan.cornelius](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Sunday, August 20, 2023 11:32:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to voice my support of the proposed changes to the bear and cougar rule for the upcoming cycle. I believe the department biologist knows what is best for the bear and cougar population and support his science based recommendations. Thank you

Sent from my Verizon, Samsung Galaxy smartphone

From: [Joshua Yager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Thursday, August 17, 2023 1:52:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear DGF,

I am a local houndsman from up in the Farmington area and I would like to send out a quick word.

Being a 3rd generation houndsman means a lot to me and also my family. My kids are a bit too young to really get out quite yet, but as soon as they get a bit older, they will be 4th generation without a doubt. I Have done a little bit of research on how these anti-hunting groups have been trying to flood us hunters out by attending some of these meeting held across the state. I don't think this is right for someone that has no clue about hunting, trying to take our traditions away. I believe I speak for all of us hunters/houndsman when I say, hunting with hounds is more than just a sport, IT IS A WAY OF LIFE...

Thank you for your time.

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From: [AT](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Wednesday, August 16, 2023 9:56:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm in favor of the hunting and wildlife management on bear and cougar to sustain healthy populations of all of NM's wildlife.

Thanks,

AT.

From: [MATTHEW CHAVEZ](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Wednesday, August 16, 2023 11:38:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm in favor of allowing hounds for bear and cougar.
I'm a life long New Mexican and life long hunter.

Matthew Chavez

Sent from my iPhone

From: kpdown575@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Wednesday, August 16, 2023 8:48:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to voice my support for the NM Game & Fish bear and cougar proposal as it was updated on 8/1/2023.

Thank you,
Kelly Dow
Socorro, NM
575-835-8441

From: [James Calhoun](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rule
Date: Monday, August 28, 2023 1:58:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Why do we let science and common sense be overruled by emotion and a minority without facts.

From: [Katie Bruell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rules comments
Date: Tuesday, July 11, 2023 9:47:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am against any increase in bear and cougar hunting. Taking out top predators is very disruptive to the environment.

Thank you,

Katie Bruell
Los Alamos
505-310-4095

From: [adam.whitefield](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rules
Date: Thursday, August 17, 2023 6:27:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This email is to support Bear and Cougar hunting in New Mexico. I am an avid outdoorsman, hunter and registered guide and know the necessity of controlling predator populations.

If the anti hunting groups have their way and ban bear and cougar hunting, this can have a detrimental effect on not only the other wildlife but on humans as well.

Not only do I strongly support hunting but I also feel the harvest limits for bear and cougar need to be increased. It is very common for several zones to close within a week or two after opening. This should indicate an abundance of animals and require a higher harvest limit.

Thank you for your consideration.

From: [Matthew Hinde](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rules
Date: Wednesday, August 16, 2023 9:05:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMDGF,

I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists. Similar to other species, hunting is a necessary step to balancing the population of Bears and Cougars in New Mexico.

Thank you,

Matthew T. Hinde

Sent from my iPhone

From: [Robert T](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar rules
Date: Thursday, August 17, 2023 9:00:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM State Game Commissioners,

As an avid outdoor hiker, hunter, and fisherman, I support our American model of wildlife conservation. I support science based decisions on hunting to maintain healthy and sustainable wildlife populations.

Without hunting and fishing the American model of conservation would die, and wildlife itself will suffer the consequences.

I support the proposed rule changes to the bear and cougar hunting regulation. They will help maintain a healthy bear and cougar population and allow hunting and fishing to continue to support wildlife conservation.

Robert Truncellito
Las Cruces, NM

From: [phil.mellor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar ruling
Date: Wednesday, August 16, 2023 12:45:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good day,

I 100% support hunting and management of the bear and cougar populations. Management is a necessity to keep these animals healthy and out of populated areas.

Thank you.

Sent from my iPhone

From: [Brad Bright](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar seasons
Date: Wednesday, August 16, 2023 6:45:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am an avid supporter of multi use of public lands and maintaining all traditional methods of take for all game animals including predators like the cougar and bear. Though I am out of state, I participate in your lottery and buy the license every year to apply. Please do not listen to the minority opposed to American conservation model and things gray associated with this country. Stand firm so my sons will be able to enjoy hunting the great state of New Mexico for years to come.

Brad Bright

Sent from my iPad

From: [Michael G. Sanchez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar tags
Date: Thursday, August 17, 2023 10:05:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir or Madam,

Please do not make bear and lion hunting just another lottery draw license.

These licenses end up being sold to out of State rich hunters.

Meanwhile NM hunters are being priced out. Again...

Michael Sanchez
505-514-1140

From: [tony](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Thursday, August 17, 2023 10:51:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

[Sent from Yahoo Mail for iPhone](#)

From: [Gustavo Castilla](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Thursday, August 17, 2023 8:40:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,
As a Hunter and Trapper that also traps as a contractor for the department I will like to say....

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully

--

BlackPaw
Gustavo Castilla
505 469 8341
GustavoCastilla0@gmail.com

From: [Scott Thalacker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Sunday, August 27, 2023 4:55:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a full time resident of northern New Mexico, I fully support bear and cougar hunting. I strongly recommend following the recommendations of wildlife biologists, who research and understand overall ecological needs best. We are long past the possibility of healthy ecosystems without hunting management. In addition, these hunts are critical cultural heritage that is part of the fabric of our state and nation. Hunting is also a way that I am able to provide for my family by harvesting healthy meat. Without a freezer full of game meat, the last few years would have been much leaner.

Thanks,
Scott Thalacker

From: [Kristy Mostly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Thursday, August 24, 2023 6:04:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello-

I am in support of these new changes. NMGF first responsibility is to the balanced population of the species it is charged with managing.

There are many these days who are opposed to any sort of predator hunting. This stance, however well intended, is misguided. First, are any of these people in direct interaction with the species they wish to "save"? Do they realize that there are healthy populations of animals due to responsible game management?

Second, you cannot squeeze the toothpaste back into the tube. The prey/predator dynamic has been irrevocably changed by humans. There is no way back, only forward with proper management, taking into consideration the population of humans who have the closest relationship with these animals, (the internet doesn't count).

Third, as seen in other States such as California and Washington, when predator hunting is banned the removal (death) of bears and mountain lions still takes place as does a secondary layer of management to monitor human/predator interactions. All of this using taxpayer money to hire people for their removal. Well intended people also contribute to the removal of bears who get habituated to humans by being fed, "a fed bear is a dead bear".

And lastly, there are MANY species that are in need of attention, funding, and behavioral change by humans. Bees, frogs, songbirds, feral horses, just to name a few. The desire to change other people's behavior for a perceived, "good cause" is as misguided as believing you do not kill anything if you are a vegan or vegetarian. Agricultural crops are killers of rabbits, hawks, voles, mice, snakes, and frogs.

Let's believe in science. Let's let the Game Department do its job.

Thank you for the work you do,
KF

From: [John Giannini](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Thursday, August 17, 2023 7:54:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Both hunts need to be continued as they are currently managed. To end the hunts would put a damper on the elk and deer population. New Mexico has a nation wide reputation as having outstanding hunting for both Elk and Deer and rightfully so. Please look at the the long turn effects of ending the hunts and the disasters effect it would have on both Elk and Deer as well as its economic impact. Thanks for letting me express my thoughts. John Giannini 4101 Clear Ct NE Rio Rancho New Mexico

Sent from my iPhone

From: [John H](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Thursday, August 17, 2023 6:52:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It has come to my attention that NM is trying to reduce more and more of our legal and ethical hunting rights. These hunting rights we currently have, is one of the main reasons I retired from the military and stayed in New Mexico. Taking away these rights not only affects the ability of to ethical hunters but also affects the population of our deer and elk. I live in a very rural area and constantly finding kills of the over abundant cougars that rone the lands. Not being able to hunt these predators will decrease our other herds more rapidly. Please help in maintaining our rights to hunt and help with the maintaining of the predator species.

Thanks,
John H

From: [joseph.maes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Wednesday, August 16, 2023 9:54:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing to promote hunting/regulating the predator population.

As a hunter I believe it is a privilege to be able to hunt and provide game meat for my family.

I also believe that there are times that predators (Bear, Coyote and Cougar) also need to be hunted. If left alone they will diminish our game populations and move on to our livestock and pets. Recently in Questa, NM a dog was attacked by a Cougar in the middle of the day. Here's the story.

(<https://questanews.com/residents-cautioned-following-mountain-lion-attack-in-questa/>)

The dog was able to make it, but imagine what the story would've been like, had the Cougar gone after a child or elderly person.

If managed correctly we can all get along with minor incidents. But if we don't manage predators it could be like a cancer. They will spread and eat away at everything.

Thank you NMDGF for managing the predator population. It's because of what you all do that we are able to enjoy the outdoors safely, and all the activities it has to offer.

Joseph Maes

From: [Jason Sutherland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Wednesday, August 16, 2023 7:09:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi,

Please continue to allow Bear and Cougar hunting in NM

Thanks,

Jason

From: [Justin Retallack](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar
Date: Friday, August 25, 2023 7:01:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species for decades.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Justin Retallack

From: [dstark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougars
Date: Monday, August 7, 2023 10:48:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Madam or Sir;

The Department of Game and Fish should reconsider the state of the world and of our environment today. Hunting should be a tightly regulated activity if, allowed at all. It is no longer the case that we need to hunt for food. There is more than enough meat on the grocery store shelf. A head on the wall, or skin on the floor is simply a measure of pure vanity.

Please do not extend the hunting season, nor increase the quotas on the number of bears and cougars that can be shot down.

It is a new world - rethinking how we live and regard the environment can be crucial to the health of all, animal and human alike. We need the animals to assist us in restoring the balance in the natural world. Killing them off will do good whatsoever. It is long past time for us to change.

Sincerely,
Debra Stark
Tesuque, New Mexico

stark
agbartholomew@icloud.com
www.eulogytheextinctionproject.com

From: [Talon Reynolds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Cougar Rules
Date: Sunday, August 20, 2023 11:42:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'd like to voice my opinion regarding the proposed rule changes regarding bear and cougar hunting. Responsible and controlled predator hunting is an important part of overall wildlife conservation. There has been a long history of responsible predator hunting in the state and it has never caused a problem. As a matter of fact, it can be seen by those who spend time out in the field what happens when predators are not properly regulated. Since the ban on coyote hunting contests and more recently trapping, there has been a noticeable decline in small game. I've heard a lot of talk about the lack of quail in areas that normally hold healthy populations. Anyone who spends much time in the Guadalupe mountains knows how much the deer population suffered a few years back due to too many cougars. When the predators are left uncontrolled they will wipe out the prey until they have no choice but to look elsewhere for food. At that point livestock, pets, and possibly people become the target. As a lifelong hunter and hunter education instructor, I ask that you please stand up to the so-called environmentalists that can't see the long term harm they will cause. Hunting laws and regulations are in place for a reason. Long term studies and observations guide what we do. And it's hunters like me that keep those studies funded. I think our opinion should carry some weight over that of those who sit in town and judge us based on a few law breakers or irresponsible hunters. After all, you never see a news story about the guy who followed the laws and respected the land. We 99% can not be judged based on the poor actions of 1%. Thank you for taking the time to read this and consider my opinion.

Talon Reynolds

From: [Born 100 Years Too Late](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting
Date: Tuesday, August 15, 2023 4:40:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I hope that you please leave the existing rules in place for the bear and lion hunting. It is only through our hunting and managing these great predators with hounds that there can be some kind of balance between predator and prey. If the hunters aren't allowed to do it and pay the state the state eventually will have to pay to have it done.

Thank you ,

Proud Houndsman
Brett Vaughn

From: [Julie B](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting
Date: Tuesday, August 15, 2023 5:22:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of keeping tags for bears and lions. They should not be taken with a deer or elk tag. Hounds and hounds men are the best way to harvest the animals. Hounds men decide which to harvest and which to continue to reproduce and help keep a healthy population. A hunter with a deer or elk tag that can kill any bear or lion along the way, would take down the population in a heartbeat. Hounds men hunt with dogs for the challenge not the kill.

Julie Brantner

From: [Leo Hise](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting
Date: Wednesday, August 16, 2023 12:04:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and Mountain Lion hunting with dogs is a time honored and, in many cases, the best way to successfully hunt bears and, especially mountain lions. Please continue to allow these methods and continue to manage bears and lions scientifically, according to the biologists and wildlife management officials who actively study and monitor the population of these animals. Do not succumb to sensationalism and dogma of the anti hunter and radical groups, most of whom have never, and will never, see a wild bear or mountain Lion except on YouTube.

Sent from my iPhone

From: [Daniel Owsley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting in NM
Date: Wednesday, August 16, 2023 7:34:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a Hunter and a Voter I wish to let the Game Commission know of my stand on the subject of responsible, scientific based decisions concerning controlling Bear and Cougar populations.

I am in favor of the knowledge based, Game and Fish Department using Hunting as a tool to keep in balance the needs and populations of both Bear and Cougars.

The use of dogs is also one of the means to assist in the hunting these Predators that only a few people have access to. The use of dog's by a small percentage of hunters still has to abide by all laws and Limits established by the Game Commission and Should be Allowed for the Hunting of Bears and Cougars.

Without dogs, only a few hunters will ever see a bear or cougar in their lifetime in the wild and responsible population control will be extremely difficult to manage.

Sincerely,

Daniel M. Owsley

Los, Lunas, New Mexico

Sent from my iPhone

From: matthewkunz@yahoo.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting in New Mexico
Date: Wednesday, August 16, 2023 11:28:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir or Ma'am,

It has come to my attention that, once again, a key tool in the arsenal of the North American model of wildlife conservation is under threat from a ballot box initiative. Hound hunting for bears and mountain lions is crucial for appropriate management of the species and is THE ONLY catch and release method of hunting available. It allows hunters and state wildlife agencies to selectively harvest specific bears and lions that pose a threat to human safety and livestock as well as maintain a healthy balance within the respective populations. Hound hunting also provides valuable data to wildlife agencies and allows those agencies to make informed decisions in order to implement effective strategies for conservation.

The recovery of bears and mountain lions post 1960 is owed directly to the North American model of conservation. Tag allocations and money from hunters and anglers has allowed species decimated by overhunting in the past to recover and expand their ranges through their controlled harvest and funding of research and monitoring for wildlife agencies. Removing hound hunting for bears and lions (or their hunting outright) will simply remove a way of funding their study and conservation. Instead of hunters removing problem animals, the state will continue to do it. California banned mountain lion hunting in their state in 1972. At that time hunters were harvesting an average of 300 lions a year. Following the ban, California officials have continued to remove approximately 300 lions a year using tax payer dollars.

Banning hunting does not stop the killing of lions and bears. They still must be managed. It simply moves the privileges of hunting to the state. This is not Europe. These are not the King's animals. Hunters, and hound hunters in particular have been crucial in the management and recovery of these animals in New Mexico since 1927 for black bears and 1971 for mountain lions. They should continue to play a vital role in lion and bear conservation and not fall prey to a popularity contest.

Respectfully,
Matthew Kunz

From: [Kevin Earl](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting in New Mexico
Date: Wednesday, August 16, 2023 12:37:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want to offer that I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists and do not subscribe to the anti-hunting emotional argument to eliminate the use of hounds while hunting predators in New Mexico. I would welcome the opportunity to discuss in greater detail.

Kevin Earl
230 Cynthia Loop NW, Suite C
Albuquerque, NM 87114
P: 505-238-5545

From: [Loretta Ortega](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting
Date: Saturday, August 19, 2023 6:32:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

First of all, I want to say that I am a hunter, my family are hunters; my children and grandchildren have been taught to respect wildlife and to always be ethical when harvesting animals. I also understand that animals such as bear and lion need to be hunted in order to maintain a balance between other animals and habitat. What I don't agree with is the hunting of these animals with dogs. Let me explain why.....not only are dogs turned out during hunting season, but they are being trained during the whole year. In order to train them they are constantly chasing bear and lion. What is the ethics in that? These animals are being chased year round and caused undo stress, especially in drought stricken years such as what we have been experiencing. I know dog owners are fighting to continue hunting with the use of their dogs, but not everyone agrees with this method. Thank you for letting me voice my concerns.

Respectfully,
Loretta Ortega

Sent from my iPhone

From: [David England](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting.
Date: Wednesday, August 16, 2023 11:54:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support responsible and science based hunting recommended by department game biologists.

David England

From: fredmoore4488@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Hunting
Date: Monday, August 21, 2023 11:46:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Keep Bear and Lion seasons open.

Allow hunting Bear and Lion hunting with Hounds.

Fred Moore
Concerned Houndmen
505-934-5858
Sent from [Mail](#) for Windows

From: [Brian Rudolph](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion Management.
Date: Friday, August 25, 2023 5:56:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am a longtime houndsman here in New Mexico. By listening to these comments that are trying to prevent us from running our dogs is just wrong.

People making these comments have no idea the hours we put into these dogs to catch bears and lions. This the only way you can catch and be able to harvest mature animals. There is no other way of seeing the animal age class up close and personal. I have only taken mature bears and lions over the past several years with the side of my hounds. What I think needs to happen is that the out of state houndsman need to get throw in into a draw for bear season we have these people show up from across the country and 95% of the time they will kill whatever they can catch. More often than not being immature or female bears. I would like to continue this tradition down to my sons. This is something that they have grown up on so far in their lives.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully

Brian Rudolph
Las Vegas NM 87701
505-426-7614

From: [Carter Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion hunting
Date: Wednesday, August 16, 2023 6:23:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Fully support science based management of these wildlife resources by New Mexico Fish and Game.

Sent from my iPad

From: [Jess Stuart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion hunting
Date: Wednesday, August 16, 2023 4:12:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please use the scientific evidence by the NM DEPARTMENT of GAME AND FISH when it comes to management of bear and cougar hunting. Sound management insures good healthy populations of wildlife.

Sent from my T-Mobile 5G Device
Get [Outlook for Android](#)

From: [Mark Pantuso](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion hunting
Date: Thursday, August 17, 2023 7:33:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Yet again our hunting way of life is under attack. I hope our weak state government won't bend the laws to appease a few who oppose bear and lion hunting. The predators need to be controlled just like anything else. I hope that another important part of our hunting heritage isn't taken from us. The point I'm trying to make is I strongly support bear and lion hunting.

Thank you

Mark Pantuso
Bio Med Tech II
Phone 575-622-8170 x4241
Fax 575-627-4134

Eastern New Mexico Medical Center
405 West Country Club Road
Roswell, NM 88201

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From: [christian marrujo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Lion rule
Date: Tuesday, August 15, 2023 10:49:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I as a houndsman in the state of New Mexico have taken some time to write out the importances of hound hunting for bear and lion in the state.

Hound hunting for bears is important for population management because it helps ensure a balance in the ecosystem. By carefully regulating bear populations, we can prevent overpopulation, which can lead to habitat destruction and increased human-bear conflicts. Hound hunting allows for selective harvesting, targeting specific bears that may pose a threat to humans or livestock. This helps maintain a healthy and sustainable bear population while also minimizing potential risks to communities.

Additionally, hound hunting provides valuable data for wildlife management. Through this hunting method, researchers can collect important information about bear populations, such as population size, age structure, and health. This data helps inform conservation strategies and allows for more accurate population estimates. By understanding the dynamics of bear populations, wildlife managers can make informed decisions to protect both bears and their habitats.

Overall, hound hunting for bears plays a crucial role in population management by promoting ecological balance, reducing conflicts, and providing valuable data for conservation efforts. It allows for responsible and sustainable management of bear populations, ensuring the long-term survival of these magnificent creatures.

Mountain lions,

Hound hunting for mountain lions is important for population management as it helps maintain a balance in the ecosystem. By carefully regulating mountain lion populations, we can prevent overpopulation, which can have negative impacts on both wildlife and human communities. Hound hunting allows for selective harvesting, targeting specific mountain lions that may pose a threat to livestock or human safety. This helps ensure a healthy and sustainable mountain lion population while minimizing potential conflicts.

Banning hunting of mountain lions could lead to overpopulation and associated problems. Without hunting as a population management tool, mountain lion populations could increase unchecked, leading to a strain on their prey species and potential damage to the ecosystem. Overpopulation can result in increased competition for resources, which can negatively impact other wildlife populations. It can also lead to more frequent human-wildlife conflicts, as mountain lions may encroach on human settlements in search of food.

Furthermore, hunting provides valuable data for wildlife management. Through hunting, researchers can collect important information about mountain lion populations, such as population size, age structure, and health. This data helps inform conservation strategies and allows for more accurate population estimates. By understanding the dynamics of mountain lion populations, wildlife managers can make informed decisions to protect both mountain lions and their habitats.

In summary, hound hunting for mountain lions is important for population management as it helps maintain a balanced ecosystem, reduces conflicts, and provides valuable data for conservation efforts. Banning hunting could lead to overpopulation and associated problems, impacting both wildlife and human communities. Responsible and regulated hunting plays a crucial role in ensuring the long-term survival of mountain lions while also promoting the overall health of the ecosystem.

Thanks,

Christian Marrujo
575-637-5817

Sent from my iPhone

From: [lee.lance](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Mountain Lion Hunting
Date: Wednesday, August 16, 2023 7:07:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting with dogs as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Lance Lee

[Sent from Yahoo Mail for iPhone](#)

From: [antoINETte armijo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Mountain Lion Limits
Date: Monday, July 31, 2023 6:50:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, my name is Antoinette Armijo and I am writing to express deep concern over the proposed raised limits on mountain lions and bears. Not only am I strongly against raising limits, but I highly oppose the cruel method of "hunting" them down using hunting dogs. This is extremely cruel and barbaric. This is 2023, we should be way more evolved as a society and we all should know better that these beautiful, intelligent animals that we're blessed to share this state with are an important part of this ecosystem. The thought of these animals being hunted down the way that they are is totally disgusting. I cannot comprehend how any person thinks that this is ok. Do they have no respect for life whatsoever? God blessed us with these creatures to respect, protect, and preserve for future generations. I come from a family of hunters and this is not what they stand for, at all. Native Americans, the original stewards of these lands only took what they needed. There's absolutely no need or reason for this to be allowed. This should be illegal. We should turn our focus to education and preservation. These dogs are turned loose with no control whatsoever. For what? To come across families, parents, babies? When a mother or father is killed, most times the entire family does not survive. Is this what we want NM to stand for? Wasteful, unnecessary slaughter of beautiful animals that are truly misunderstood? NO!!! WE need to evolve into a civilized society and make our citizens proud of what we stand for, proud of how we protect and respect our wildlife, and a model for other states. Even a classroom full of kindergarteners could tell you that this is so very wrong on every level. It's truly heartbreaking that this is allowed at all. I wish people would take the time to educate themselves about the impacts they have on our wildlife and ecosystem. We've already done too much damage to our wildlife. They already face enough threats and challenges without us humans getting in their way - such as loss of territory, climate change, and wildfires. We should be helping them to recover. We need to make their lives easier, not slaughter innocent, defenseless animals. I'll leave this email with my two favorite quotes:

Our primary purpose on earth is to help others. And if you can't help them, at least don't hurt them

Do the best you can until you know better, then when you know better, do better

Let's be a better New Mexico. Let's represent what the majority of people want. Most of us have evolved past this cruel and evil way of thinking and living.

Thanks for your consideration,

Antoinette Armijo
Chantel Armijo
Summer Armijo
505/490-3686

From: [Leslie Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and Mountain Lion hunting
Date: Friday, August 25, 2023 12:33:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I feel that these hunts should not be banned. They should be monitored and managed by the wildlife biologists through the Fish and Game department to ensure that we do not deplete or start to harm the existing populations.

I do agree with banning these animals hunting with dogs.

Leslie Smith

From: [Allen Taylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 10:09:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Tim Taylor
Las Cruces, NM

From: [Billy Jack Pound](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 4:51:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Responsible hunting is necessary for predator control and protection of deer, elk, bighorn and pronghorn game as well as most wildlife. Please rule responsibly and please no knee jerk reactions.

Sent from my iPad

From: [Doug Neel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 12:56:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need hunting season for bear and cougars. This allows for hunting opportunities that are not draw tags. We need to be able to control these animals and hunting is a good way to do that.

Sent from my iPhone

From: [mark.torres](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 8:02:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I think we need to stop bear and cougar hunting until the out of control elk population is controlled. They eat a lot of elk.

Sen from my iPhone

From: [Nate Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar Hunting
Date: Sunday, August 20, 2023 2:30:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

I am a lifelong sportsman In New Mexico, I would like to express my deepest concern on the Bear and Cougar issue.

I strongly feel that we as Sportsmen and Sportswomen are privileged and Honored to be able to continue to hunt Bear and Cougar with or without hounds (Dogs) in New Mexico. Hunting in itself is hard, and with Hounds (Dogs) can be an essential tool in obtaining these elusive creatures.

Anti hunting activists would not like to have their pets snagged from their porch by a Cougar, Bobcat or Bear. and neither would I, so the continued use of hunting with hounds is a very viable resource to have.

Once again I strongly approve the use of hounds (dogs) for the pursuant of Bears Bobcat and Cougar.

Thank You
A concerned Sportsmen.

From: [Jack Stacey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar as well as other predator population need to be controlled by legal hunts.
Date: Wednesday, August 16, 2023 5:36:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPad

From: mark.markthunderwolf.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar executions
Date: Sunday, July 30, 2023 11:02:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a citizen of this great state one of the things I so enjoy is our wildlife. I have lived all over this great country of ours and I think it is an absolute atrocity to just declare war on these animals. I have had the honor and privilege of seeing both species in the wild and they are considered a sacred part of the circle of life to all indigenous peoples and are to be treated with compassion and respect!

The fact that “hunters” are allowed to hunt them down with dogs and murder them is an archaic style of execution. A mindset that was brought to this country when my ancestors were butchered and slaughtered in much the way.

In my opinion, the fact that fish and game is allowed to “play God” is yet another example of government overreach!

I pray that the folks who are in a position of power in the great state of New Mexico will stand up to this lawlessness and bureaucracy and say NO the ridiculous rules they set for us in New Mexico to just randomly butcher and slaughter our bear and cougar populations without even knowing how many actually live and thrive in our state. These animals have the God Given right to live and thrive! They have their place in the world as much as any of you humans who hold positions in government.

I, a Native American of Lakota descent, implore you to PLEASE, PLEASE change these laws and protect what rightfully belongs to ALL of us to enjoy.

Please say NO to the ridiculous overreach of the fish and wildlife agencies and leave these helpless animals alone to just be.

Sent from my iPhone...

Mark ThunderWolf
Citizen of the state of New Mexico

From: [Mike Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Sunday, August 27, 2023 12:06:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support being able to hunt bear and cougar.

Hunting is the American way.

Sent from my iPhone

From: captsbishop@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 11:49:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Keep the hunting regulations to allow hunters to hunt these animals. Hunters and fishermen are the best stewards of the wildlife and outdoors. Thank you

Sent from my iPhone

From: [carla.rothmeyers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 11:36:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm totally in facet of continuing hunting and increasing the quotas. On my ranches I lease the deer population is steadily decreasing and bears snd cougars we are even seeing during daylight hours. Please continue!!

Sent from my iPhone

From: fritzsenior1@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 5:39:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I see no good reason for recreational hunting of bear and cougars. Limit the hunt.

Respectfully,
David Fritz

Sent from FritzWire

From: [gary.ross](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting in NM
Date: Wednesday, August 16, 2023 4:17:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please let the Game and Fish biologists who have real data determine the hunting regulations and seasons and bag limits for bear and cougar and not the emotional pleas of the anti hunting groups who are simply against hunting of any kind(unless of course one of these predators happens to do something that impacts them. Respectfully, Gary M. Ross DDS

From: [George Parrish](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting in NM
Date: Thursday, August 24, 2023 11:20:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time. Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory. Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel. The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars. NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them. Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars. Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles.

Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophy' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

From: [Ken](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting need"s to continue or they will become more dangerous as they look for prey as their numbers rise hunting helps control the population!!
Date: Wednesday, August 16, 2023 1:18:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [John Mayhill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting needs to be left as is. Game biologist need to be the ones to make the recommendations on hunting.
Date: Wednesday, August 16, 2023 5:43:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPad

From: [Adam Sapp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting rule
Date: Thursday, August 24, 2023 11:34:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, I am writing to comment on the upcoming proposed rule review cycle. I've been a New Mexico hunter for the past 11 years. The hunting, fishing, and trapping opportunities are the reason I continue to want to live in New Mexico. That being said, I don't believe my vote is worth more, because of how long I've been here, or the fact that I'm a hunter. Instead I ask that you consider my points based on their own merits, and weight them based on that. I will try to be brief.

1. Wildlife resources are a public trust. New Mexicans have right to access these public resources, regardless of some people's opinions against how we feed ourselves through ethical, responsible, and sustainable harvest of these resources. Something that has been the natural right and traditions of all human beings since the beginning of time.
2. Please continue to use science based management practices for the democratic allocation of bear and cougar resources and ignore the demands of extremist anti hunting groups based on their personal religious beliefs about eating meat, that wish to control how other people feed themselves and access natural resources that belong to all of us,.

Thank you.
Sincerely,
Adam Sapp

From: [Robert Holt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting rules
Date: Wednesday, August 16, 2023 2:38:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs,

I wish to log my opinion regarding public comment. I want you to preserve public hunting of bears and cougars in a responsible scientific process as you allow now. I am a legal resident and responsible hunter and realize the need to have this rule to balance the animals population density as indicated.

Thank you,
Robert Holt

From: [Darrell Savage](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting rules
Date: Wednesday, August 16, 2023 4:47:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and cougar do not have any natural predators, only humans in the form of hunting. The cougar populations in NW New Mexico seem to be abundant due to the number of kills (Buried deer) found while hiking and hunting.

Hunters help maintain a healthy population in the area.

Please don't change the rules or give in to the anti-hunting mobs.

Thank you!

Darrell Savage
Farmington resident.

From: [Aaron Knezevich](#)
To: [DGE-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting rules
Date: Saturday, August 19, 2023 7:27:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Aaron Knezevich
505-315-7299



From: [Don](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting support
Date: Wednesday, August 16, 2023 5:42:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a New Mexico resident and support DFG recommendations for bear hunting and cougar hunts.

Wildlife management should be based on biological reasons not human emotions.

Thank you,
Don Sliger

From: [Gilbert Pinon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Friday, July 14, 2023 2:35:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This may sound way too obvious of a question to consider- but why are people allowed to hunt ANY bears and cougars when they serve an important role in balancing our ecosystems? Trophy hunting is barbaric and should never be thought of as "sport". Sport implies fair competition between individuals. What's fair about a bear or cougar being hunted down by high powered rifles with scopes on them. Let's end this barbaric practice and allow these animals to live their lives unhindered from human cruelty.

Gil Piñon
2430 Camino de Vida
Santa Fe, NM 87505

From: frank@pistoneagency.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 12:59:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Too many times legal law abiding hunters are hurt and punished for no reason. From outside influencers that don't know what is actually going on. Please support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs. Those are the ones that do the actual studies and not bend/twist reality in order to change laws to fit a growing narrative.

Thank you for your time.

God Bless,

Frank Pistone

From: [johnny.allen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 12:47:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and cougar hunting in New Mexico is important to manage the numbers. Bear and cougars are prolific predators and can overpopulate if not managed. The state does a great job of regulating the numbers taken each year keep up the good work !!!!

Thanks

Johnny Allen

Sent from my iPhone

From: [Chris Francia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 12:34:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of bear and cougar hunting and harvest with the use of hounds.
Thank you,

[Sent from Yahoo Mail on Android](#)

From: [Don Armijo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 12:26:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the managed hunting of both species. It is the best practice to manage and support the eco system.
Keeping animals and humans safe
Donaciano Armijo
P.O. Box 38

Williamsburg nm 87942

Sent from my iPhone

From: [Kevin Gaines](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 11:38:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please keep bear and cougar hunting for population control purposes in place. This allows sportsmen to participate with Game and Fish in controlling populations of predators and put food on their tables.

Thanks

From: [Martin Griego](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 11:32:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is ridiculous that these animal rights activists continue to infringe on our freedoms and our way of life that has been passed down for generations.

Please keep our hunting privileges alive.

Sent from my iPhone

From: [Brian Johnston](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 11:25:20 AM
Attachments: [image001.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Gentlemen:

I would insist that the game commission opposes any and all attempts to limit or stop trappers / guides from using hounds when Hunting bears and cougars. As I know you are well aware that the scientific method of controlling the bear and cougar population Only benefits all other species and benefits NM's revenue through selling of hunting licenses.

Anti-hunting organizations will not stop BUT someone has to stand up to them....this is your job.

Regards,

Brian Johnston

The Johnston Company
4800 Hardware NE, Suite B
Albuquerque, NM 87109



Office – (505) 343-8190
Mobile – (505) 280-7920
Web – www.tjc-nm.com

From: [Mary Helen Follingstad](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 10:37:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [Jim Schmidt](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Nancy Schmidt](#); mlefevre@outlook.com
Subject: [EXTERNAL] Bear and cougar hunting
Date: Sunday, August 20, 2023 10:49:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am totally opposed to ending or even restricting all bear and cougar hunting with dogs. It has been a legal form of hunting for decades without issue. Animal activists are counting on the weakness of political leaders to ignore scientific recommendations concerning the management of all predators. Legal coyote hunting has been under attack for many years and New Mexico did ban coyote contests that were a 100% form of legal hunting. It was an emotional decision and not one that was based on any science.

That was the open door for animal activists to continue their push to end all hunting in New Mexico. They raised millions on that one. They see and smell weakness and foolishly law makes feel that there can be compromise and there is not with these people. They want to end all hunting, fishing and trapping in America.

Death by one thousand cuts is the plan here. There is no compromise with these extremists. They win no matter what they do; win or lose they raise millions of dollars for their cause. They care little about science and they care even less about ranchers and farmers losses due to predators. They have clearly demonstrated that they care little about human life too when a bear, coyote or cougar killing anyone including an infant. O well-it was the humans fault.

If they do not pick a fight then they do not raise money. They will say and do whatever it takes to raise money for their retirement, huge salaries, health insurance and nice offices. They often argue about an issue having no real idea about the facts of the cause; they just know they have been told to argue and raise money. They read from a playbook prepared by staff that is skewed or out and out lies.

I ask that New Mexico Game and Fish remember who pays the bills for them and it sure is not the animal activist. Please say a loud NO to the animal activities and their effort to eliminate another legal form of hunting in New Mexico.

From: [Dusty Bauer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Thursday, August 17, 2023 9:35:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a New Mexico hunter, angler and outdoor enthusiast I hope the game commission votes in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists. Please don't let anti hunting organizations cloud your judgement on what the state of New Mexico should do with their wildlife programs.

Thank you!
Dusty Bauer
Djbauer889@yahoo.com

From: [redrockbeefjerky](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Thursday, August 17, 2023 7:51:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support bear and cougar hunting with dogs in New Mexico. This is a effective control of predators in the ecosystem these are top predators and have no natural enemies. Remember that one cougar eats a deer a week to survive this is a huge impact on deer and elk populations.

Sent from my T-Mobile 5G Device

From: [Dick Kreiner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Thursday, August 17, 2023 8:13:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the rules that allow bear and cougar to be hunter in NM. The hunting of these predators enables the Game and Fish to better manage game species in the state.

Sent from my iPhone

From: [Dick Kreiner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Thursday, August 17, 2023 8:10:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the hunting of bear and cougar in NM. In fact I would like the Game and Fish to increase the number of animals that can be taken.

Sent from my iPhone

From: [Michael McDaniel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 7:31:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunters are the biggest conservationists that there are in today's wildlife society. I believe in continuing to be able to hunt bears and cougars in New Mexico. We rely on the input and education from our wildlife biologists to how to best manage the wildlife.

Sincerely,

M H McDaniel

[Sent from Yahoo Mail for iPhone](#)

From: [Misty Werkman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 6:10:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hunting and in New Mexico!

I also support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. As a producer in the state, management of these species is vital to our industry!!!

Misty Werkman

Sent from my iPhone

Please excuse abbreviated responses and grammatical errors

From: [Alfred Gallegos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Wednesday, August 16, 2023 4:12:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I fully support the scientific management proposal submitted by game dept. biologists and the continuation of scientific predator management in our state.

Al Gallegos

A Circle G Construction

06 Tres Hijos

Peralta, NM 87042

NM Lic# 51123

Phone: 505-252-0910

Email: acircleg@comcast.net

From: [Amelia Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunting
Date: Thursday, July 20, 2023 11:08:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears and cougars can self regulate their populations.

Do not allow killing of increased numbers of bears and cougars until there has been a study of their populations.

Also stop the practice of allowing dogs to chase the bear or cougar until exhaustion . What kind of decent hunter lets the dogs do the hunting and then they, the big fat hunter, rides up on their ATV and shots the exhausted bear or cougar. That is not hunting, that is shooting fish in a barrel . Give the bear and cougar a fair chance.

Jane Carson 505 690-4902

Sent from my iPhone

From: [ALLIE CRAIG](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunts
Date: Wednesday, August 16, 2023 3:22:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am for the continued hunting of bear and cougar on public and private land. I am an elk and deer hunter and have seen what both those animals can do to elk or deer.

Craig Bull
Placitas New Mexico

Sent from my iPhone

From: [R.G](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunts
Date: Wednesday, August 16, 2023 1:19:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To NMGF,

I strongly support keeping cougar and bear hunts as appropriate measures to manage predator species in accordance with sound biology.

As a now non resident, the consideration of available hunting opportunities is something that I look at and consider hunting in different states for unique opportunities.

If bear and cougar hunts are closed the long term issues could include a crash of mule deer and sheep populations as well as reduced opportunity for youth to experience the great outdoors in a sustainable way.

There is tradition and life values entrenched in the hunting community that helps youth of today and the future develop into responsible adults who value public lands and the animals on the land.

Sincerely,

A public land hunter and conservationist.

Rueben

Sent from my iPhone

From: [mike henderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar hunts
Date: Wednesday, August 16, 2023 12:30:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support nmfg in there proposed rules for the law full hunting of black bears and cougars.

From: [Linda Wolcott](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Jenny Lisignoli](#)
Subject: [EXTERNAL] Bear and cougar hunts
Date: Thursday, August 10, 2023 9:41:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have one question: why harvest more animals if you don't know how many bear and cougar presently live in NM? And if you did know those numbers (I don't see them), how do you know how stable the population is?

In addition, do you know the effect our drought has had on these animals? Apex predators such as these are important to a healthy ecosystem. The number harvested should not be increased without research to show that action is sustainable for those species.

Linda Wolcott
675 Perfecto Lopez Road
Corrales, NM

Sent from my iPhone

From: [charles.holland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar management
Date: Friday, August 18, 2023 9:59:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I'm writing you in support of your upcoming rule changes to bear and cougar management.

As you are already aware these animals, as is true with all wildlife, must be managed for a number of reasons. The best tried and true management tool has proven to be a science based approach in direct correlation with public hunting.

We can take a look around the country and see the devastation that's unfolding in other states that has been the outcome of mismanagement of wildlife. The reintroduction of apex predators without sound management policies, the closures of public hunting seasons such as the use of hounds and trapping, the lack of access for outdoorsmen, fish and wildlife commissions that have been influenced by outside, and uneducated, sources, etc.

Please continue to support sound, science based wildlife management going into the future.

Respectfully,

Charles Holland

[Sent from Yahoo Mail on Android](#)

From: [Gabriel Flores](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar management
Date: Sunday, July 30, 2023 10:46:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting bears and cougars for sport is primitive and humans should be evolving way from the practice. Not even our Native American brothers engage in this primitive practice.

I am a 62 year old native of New Mexico who grew up hunting deer, elk and turkey. I even like the idea of using primitive weapons for all game animals.

Gabriel Flores

From: [pat.manaster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar proposals
Date: Saturday, October 7, 2023 3:18:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I propose that New Mexico citizens like me should be entitled to be able to view the way the most recent bear and cougar population estimates and kill quotas are derived. According to what I have read, we do not have really sound information on cougar and bear populations and I am concerned that we will be allowing larger kill quotas that their populations sustain. If there is any misinformation given in the latest Rio Grande Sierran publication on this concerning matter, I would like to know what it would be. I just am a normal person concerned about letting our bear and cougar populations get too low. Our wildlife here in our beautiful state is one of our treasures and we must do all we can not to lose the species. Thank you for listening to my concern.

Ms. Pat Manaster

From: [Evalyn Bemis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar quotas
Date: Thursday, August 24, 2023 9:12:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Proposed bear and cougar quotas are too high.

The numbers for bears and cougars killed cannot be scientifically justified. How the quotas were determined is murky at best. No consideration has been made for rising temperatures, extreme drought, or habitat loss from catastrophic fire. Bears and cougars both evolved to be self regulating. There are not too many. But over-hunting can cause them serious harm and damage.

Please exercise your oversight to not allow this to happen.

Evalyn Bemis
@ebemisphoto
www.evalynbemisphotography.com

Member: American Society of Media Photographers

505-577-4141

From: [Jon Crawford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar regulations
Date: Wednesday, August 16, 2023 6:19:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it may concern,

I believe the current laws and regulations in this matter should stay in place.

They are working well with the conservation of the land and wildlife.

Ask the anti hunters how much money they spend each year to preserve the bears and cougars and enrich their habitat.

Best regards

Jon Crawford

--

Jon Crawford

J. Crawford Construction Systems, L.P.

474 N Hays Road, Suite F-1

Prosper, TX 75078

Office: (972) 346-2490

Cell: (214) 202-5854

Fax: (972) 347-9431

www.crawfordconstructionsystems.com

From: [Alexander Walechka](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule 19.31.11
Date: Wednesday, August 16, 2023 6:24:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Department of Game and Fish Attn: Bear and Cougar Rule Amendment
P.O. Box 25112 Santa Fe, NM
87504-5112

Subject: Request to Increase Bear and Cougar Hunting Permits

Hello, my name is Alex Walechka and I am writing to respectfully request that the New Mexico Department of Game and Fish consider an increase in the number of hunting permits allocated for the Bear and Cougar hunts, as outlined in Rule 19.31.11 NMAC. I believe that such an adjustment could positively impact both wildlife management efforts and the responsible utilization of tax dollars. Recent population data reveals encouraging trends in the population health of both bears and cougars within the state. The stable and healthy population levels of these animals signify the effectiveness of the current management strategies. However, as populations grow, so do concerns regarding potential human-animal conflicts. By increasing the number of permits allocated for Bear and Cougar hunts, we can achieve a twofold objective. Firstly, it would provide responsible hunters with the opportunity to contribute to wildlife management through controlled hunting. This approach aligns with the principles of sustainable conservation and fosters a sense of stewardship among our hunting community. Secondly, by allowing hunters to engage in regulated hunts, we reduce the likelihood of an increase in human-animal conflicts. If the permits were to be decreased, there is a risk that such conflicts may rise, potentially endangering public safety and the well-being of these animals. In such a scenario, the Department might be required to allocate tax dollars for costly removal efforts. By contrast, hunters, through permit fees and associated expenses, fund the opportunity to participate in these hunts, alleviating the financial burden on taxpayers. In conclusion, I urge the Department to consider the proposal to increase the number of permits allocated for Bear and Cougar hunts. The healthy population data and potential benefits for both wildlife management and tax dollars make a compelling case for such an adjustment. I appreciate your commitment to responsible wildlife management and look forward to the positive impact that an informed decision can bring. Thank you for your time and consideration. Please feel free to reach out to me if you require any further information or have questions regarding this issue matter.

Sincerely,
Alex

--

Alexander Walechka
Electrical Engineer

Email: alex.walechka@gmail.com
Mobile: 608-459-0665

From: [Seth Holcomb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule change
Date: Wednesday, August 16, 2023 5:30:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon,

I am writing in regards to rule changes for cougars and bears. In unit 2, the four corners area and many other areas of the state we are seeing a sharp increase in lion activity and growth. Just a few weeks ago a lion was trapped and relocated in Rio Rancho. I'm asking that the board bring back lion trapping on private land to manage the population and be able to fill the quota. With changing weather cycles and less moisture lion and bear encounters are increasing in urban areas, houndsman are unable to run dogs and be successful. Bear management and rules should stay the same. Thank your time.

Seth Holcomb

From: [JJJ.TT](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule comments
Date: Thursday, August 24, 2023 11:49:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

Regarding the proposed changes to the bear and cougar rule I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists. The recommendations of the department were developed on science-based data and represent modest adjustments to the current rule that have been proven to maintain healthy and abundant populations of both species over time.

In a time where partisan politics and emotions have stifled the public discourse, science based wildlife management is one of the few areas that can transcend party lines. Bears and cougars have a special place in both hunter and anti-hunting circles alike but the truth is neither sides influence should outweigh what the science tells us.

Following the pillars of the North American Model and the Public Trust Doctrine by allowing the NMDGF to manage the stewardship of the publics fish and wildlife resources is paramount. These models are the foundation of science-based fish and wildlife management, and the populations of these animals have benefitted from the departments policies and management practices.

Bears and cougars are a sustainable and renewable resource and I support legal bear and cougar hunting as a data driven management tool. I also believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

Respectfully,

Joseph Tharpe

From: [Trey Kaukola](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Saturday, August 19, 2023 12:47:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support science-based decisions in regards to wildlife management. Please strongly consider the opinions and findings of your wildlife biologists when making decisions on wildlife management. I am a strong supporter of our rights to responsibly pursue and harvest game species, especially through the use of our hunting dogs.

Thanks, Trey

Sent from my iPhone

From: [Bill Ritchey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Wednesday, July 19, 2023 6:15:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with the new proposal rule change and would like to add that we increase the cougar quota in zone B
And add bear zone 10 to start August 16

Thank you
Bill Ritchey
Out on a limb guides and outfitter
505-333-5378

From: [James Cain](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Thursday, August 17, 2023 10:28:07 AM

jwcainiii@gmail.com appears similar to someone who previously sent you email, but may not be that person. [Learn why this could be a risk](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the changes to the bear and cougar rules proposed by NMDGF biologists. I think that they are based on the best available scientific data on population abundance and demography. The proposed changes will contribute to sustainable management of bears, cougars and the prey populations on which they depend.

James Cain
Wildlife Ecologist
Las Cruces, NM

From: [aubrey lott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Thursday, August 17, 2023 10:19:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom this may concern,

Our community can not afford for the lion and bear population to get out of control. The hunters help to reduce the population of these predators in the area. If there are no hunters for these predators, they will become over populated which will result in excessive killing of livestock, and pets and maybe even children. Please reconsider this information before banning the predator control as this is a life or death problem. Please also consider bringing back trapping on public land. The varmints are out of control. Thank you,

Sincerely a New Mexico resident,
Aubrey Wren- Lott

From: [Patrick Hinds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Thursday, August 17, 2023 7:00:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been a resident of NM my entire life I live in the Chama valley where there is an abundance of wildlife in which I hunt and work I believe the hunting of bears and cougars is absolutely needed to keep our deer and elk herds healthy and growing

[Sent from Yahoo Mail for iPhone](#)

From: [Matt Montano](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Wednesday, August 16, 2023 2:35:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

You have to have predator management. A cougar will eat one elk or deer every 9 to 12 days. If you let that number multiply you will decimate our deer and elk herds. Activists don't think like that. Game management isn't a concept to them. Numerous studies show black bear are the number 1 predator to elk calves in a multitude of different environments. Keep predator management up!!! It is your responsibility to manage predators.

Matt Montano

From: [Daniel Harrison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Wednesday, August 16, 2023 11:49:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We NEED to continue to allow hunting for bear, cougar and other predators in the state of New Mexico. The New Mexico state legislature needs to listen to the hunters in the State of New Mexico and will NOT have my support if they choose to act against this rule.

Daniel Harrison

From: [George Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Wednesday, August 16, 2023 11:47:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please support science based wildlife management of bears and cougars that includes hunting! Please don't give in to the anti-hunting activists!

Respectfully,

George Brown
505-386-6194
cuttingedge136@gmail.com

From: [Robin Powell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Tuesday, August 15, 2023 6:54:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I strongly encourage you to continue the use of hounds for the lawful take of Lion and Bear. While I believe it is the only effective way to manage these animals it would be wise to remember that all 3 west coast states that banned the use of hounds have seen predation on humans begin in ALL 3 states .

Robin J Powell
Oakland, Oregon

From: [Bill Ritchey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Tuesday, August 15, 2023 4:41:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am for hound hunting in New Mexico
Further I support the departments rule change

From: [lenkadner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rule
Date: Tuesday, August 1, 2023 9:18:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am opposed to the proposed policy of killing 25% of the bears and cougars in the state. Bears and cougars are both native to NM. There is no evidence that these populations need to be managed by killing them. The population of these animals has not been established. How can they suddenly decide that they want to kill off 25% of the populations when they don't know how many animals exist here.
I

It seems to me that the Dept is actually conducting a canned hunt. They are charging people to kill our animals. The Dept of Game and Fish should be run as a humane department which treats our wildlife in a humane and compassionate way.

Judith Kadner
Albuquerque

Sent from my iPad

From: [Dave Lane](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 6:57:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm in favor of responsible predator management please keep the bear and cougar management seasons and dates in place and bring back trapping on public land. Without management species can impact public and other wildlife Please listen to hunters and public who live in rural areas of the state that coexist with nature.
Thank You for your consideration of our input.
Sent from my iPhone

From: [Joshua Fraser](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Tuesday, August 15, 2023 7:51:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hound hunting is a huge tradition in your state and we have a need to be able to very selectively manage predators and hound hunting is the best way to select the most mature animals to harvest. I plead that you keep hound hunting in your state! Thank you for your time

Sent from my iPhone

From: [Seth Holcomb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules change
Date: Friday, September 15, 2023 10:15:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning,

I am writing in regards to the proposed rule changes for bear and cougar.

Concerning the bear changes please follow all scientific evidence for what is best for the animal. However, I strongly disagree with changing the start dates from Sept 1st to Aug 16th in BMZ 12 and 13. Historically those units opened in Aug and the units generally closed very quickly, before the start of bow season. Leaving the dates to Sept 1st will encourage bow hunters to purchase a tag creating more revenue for the department. I know that I purchase a bear tag when I'm lucky enough to get an archery tag in those units, however I won't if the dates return to Aug as the likelihood of the unit being open is slim to none. The bow hunters are very unlikely to close the unit due to harvest, allowing the hounds men to come in the end of September and run their dogs in cooler weather.

Again please leave these two units start date as Sept 1st. Thank you for your consideration.

From: [warren.goode](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules proposal
Date: Wednesday, August 16, 2023 11:26:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. They are the qualified and trained personnel who are hired to come up with the science backed management plans for all game species.

Get [Outlook for iOS](#)

From: [tim.johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Thursday, August 10, 2023 4:34:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear friends at the Department of Game and Fish:

I am a lifelong resident of New Mexico, I am 66. I am opposed to raising trophy hunting quotas for bears and cougars in NM. The estimates of the population numbers for these animals is insufficient and at best, a guess. They are already stressed with diminishing territory and climate change issues. They are a part of the wildlife balance that we must continue to work to maintain.

The methods employed by the trophy hunters including the use of radio collared dogs for tracking, give the bears and cougars few options if any, for escape. The method is deplorable. It certainly is something I don't brag about when I talk with out-of-staters.

I commend your progress in halting foot-hold trapping, a decision that was long overdue. Thank you.

It is time for Fish and Game to speak loudly in support of protecting wild animal populations. Raising quotas on bears and cougars is simply uncalled for in insuring the safety of these magnificent animals.

Sincerely,
Tim Johnson
40 Camino Ancon
Santa Fe, NM 87506
505-795-4014

From: [Randy Creighton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 4:24:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm in favor of keeping the status quo regarding management of bears and cougars, with quotas adjusted by NMGF biologists. No need to change the rules on any method of take now legal

Thanks,
Randy Creighton
505-715-0657

Get [Outlook for Android](#)

From: [Bart E. George](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 1:41:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please support hunters and scientific big game management. The proposed changes are appropriate for wildlife management and will support healthy, sustainable populations into the future.

Thank you,
Bart George

From: [Tanner Bloom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 1:35:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone.

Without the ability to hunt bears and cougars with hounds we lose the most selective way of harvest of these animals, as well as the most effective conservation tool in monitoring the health of the population of these animals, with the limited resources of the New Mexico Department of Game and Fish to effectively manage populations in rough and rugged isolated environments , harvest reports play a huge role in conservation of funds and species. It also mitigates confrontation between these species and humans.

From: [Allen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 11:39:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists. Please allow bear and cougar hunting to continue in New Mexico.

Thanks,
Glenn Lucas

From: [justin.lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Sunday, July 9, 2023 12:20:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern

My name is Justin Lee, I would like to state my opinion in regards to the NMGFD bear and cougar hunting rules change. In the last 3 years of living in this state and spending the majority of my free time out on public lands, both Forest Service and BLM , I have had many encounters with Bears. I have observed at least 3-4 bears during hunting season every year, and have had harvest opportunities every year, though I have only taken one. I do not believe that we are over populated or the bear population is struggling. I believe that current population management strategies are working well both in providing opportunities to citizens for hunting and viewing, as well as sustaining a healthy overall population in the state.

Lions however are a different story. I do not personally hunt lions but the guys I know who do are having more opportunities every year. Lions being strictly carnivorous have a much higher impact on ungulate populations in this state and it is observable that our deer, sheep and ibex populations are being impacted by the increasing numbers of lions on the landscape. All carnivores in this state are in need of higher harvest, cougars are definitely part of this group. Hunters are deeply invested in sustainable harvest and balanced systems within this state. Trapping should be allowed on public lands, hounds should continue to be used as it is the most effective method of harvest as well as other traditional methods of take.

As a citizen of this state it makes perfect sense that hunters who contribute to wildlife conservation both in actions and financially should be used for management in a proactive management plan, as apposed to State money being used to pay contractors to depredate problem predators on a reactive basis. Let's be the example of balanced conservation for other states to emulate instead of the emotionally charged wildlife disaster that has become the trademark of our west coast states CA, OR, and WA.

Respectfully
J. Lee

Sent from my iPhone

From: [Vigil, Victor R](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Friday, July 21, 2023 3:09:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

Propose to add a springer bear season statewide. I live in the northeast part of the state and number of bears I capture on game camera and see while out in the woods has greatly increased. I had 11 different bears on my cameras last year just in one small canyon. Also allow trapping of cougars .

Thank you for allowing my input.

Ray Vigil

Phone: 575-571-6928

From: [Br](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, July 19, 2023 1:36:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please no increase in hunting quotas.
Bryan Romkey
2146 rivers edge drive ne
Rio Rancho, NM 87144
505-273-1297

From: [Tyson Mathews](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Thursday, August 17, 2023 3:34:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering the state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sent from my iPhone

From: [Jonathan McKinney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Thursday, August 17, 2023 7:26:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jonathan McKinney

Sent from my iPhone

From: [Steve Jimenez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 3:26:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Steve J](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 3:24:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Ray Tavizon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Friday, August 18, 2023 9:57:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please note that as an avid hunter and fisherman and conservationist. I am with hope that you continue fighting all the anti hunter bills that are coming up we already lost the right to trap on public lands we don't want to lose our bear and lion hunting, thank you
Sent from my iPhone

From: [William LeFevre](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 10:51:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs,

I support the bear and cougar management proposal submitted by game department biologists and the continuation of active predator management programs in our state.

Any proposal to stop the active management, including public hunting, is doomed to failure because such a proposal is based on a wildly emotional fantasy instead of reality.

Bill LeFevre, Tijeras NM

From: [John Pearce](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Wednesday, August 16, 2023 10:04:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been hunting in the NM mountains and deserts for 45 years. The need for sound scientific predator management in NM over emotional non scientific management couldn't be more important. The fact that each year more and more people are entering our NM forests and deserts requires the NMG&F to be very responsible and diligent when it comes to predator control. Hunters, fisherman, backpackers, day hikers and cyclists should all want the NMDG&F to have a scientific approach to predator management since this approach will be the best way to keep predators in check and to maintain a healthy and robust population of predators, last but not least, to help keep the public who do not hunt safer.

I'm a hunter and I know first hand the need for predator control, in the last 4 years I have been stalked by a mountain lion and a bear, both wanted to take me out but I was able to deal with it, unfortunately many people who visit our forests and deserts do not. Without sound scientific predator management and because of the influx of people to our state there will no doubt be more and more incidents like what happened to me.

Thank you for your time and support on this issue,

John Pearce

From: [Mike Rudahl](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar rules
Date: Sunday, October 15, 2023 10:27:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Ladies and gentlemen:

I don't think any human being eats bear or mountain lion meat. Trophy hunting is despicable. Please consider those two facts and make the "bag limit" for these magnificent animals 0.

Sincerely,

Michael Rudahl

Please do not publish my name or email anywhere.

Sent from my iPad

From: [DH55](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar ruling
Date: Sunday, July 30, 2023 10:34:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please protect New Mexico's indigenous animals from wanton killing and mismanagement. Bears and cougars are New Mexico's public asset and should be treated as such.

Dave Holland
Santa Fe NM
505-660-8868

From: [jesse Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 7:33:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Nm state game and fish I hope you will make the right decision on this issue sportsman's are for the wildlife and managing it correctly. We would like to keep the predator number's at a sustainable amount that they would thrive and so all other wildlife will thrive. With all hunters in mind I hope you will make the right decisions and use all types hunting to manage these predators. Thx Jesse

From: [CW](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 6:55:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears and cougars continue to need to be responsibly hunted to maintain populations and manage many other species of animals that are prey to these animals.

From: [Travis Allen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 3:21:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and cougar hunting must continue for many years to come. Predation control is huge for the survival and continuation of our Elk and deer herds. We should cut quotas for lion and bear . Kill as many as our state can!

From: [Steve Jimenez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 3:20:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Don't ban the use of dogs Where they provide a very important role in surveying and population management of predators. And leave open the hunts of moutian lions and bears open not only to leave open but to increase the amount of tags to prevent what happened in Montana with the wolf population with what happened to Colorado with thier lion population and especially with whats happening in California moutian homes as there's increasingly more and more moutian lion attacks

From: [Jeremy Bouvet](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 1:47:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Anti hunters should not be taken seriously in the state of NM. For one anti hunters do not understand conservation and the love a hunter has for the land and the resources. They believe they are supporting the feelings of the animals and put the animals health and habitat at risk fighting for something they don't understand.

Although I do not hunt bear, nor cougar, and would never hunt them with dogs, I do not feel they should be supported because they will take the win as a boost to push for more anti hunting reform and will eventually create strain and non predators, big game, and habitats.

Please vote to not change the rules in support of anti hunters.

R, jeremy bouvet
5756426971

Sent from my iPhone

From: [Matt Trail](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar
Date: Wednesday, August 16, 2023 7:39:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello I am just writing in to express my support for the legal hunting of bear and cougar in the state including the use of dogs. I am also in support of the scientific study of the needs of these animals and will support the game departs decisions on how to manage them. I do not believe the general public should have a say in how game animals are managed those decisions should be left up to professionals.

Thank you, Matthew Trail

Sent from my iPhone

From: [booradvillas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and cougar huning.
Date: Tuesday, August 15, 2023 9:12:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to keep the bear and cougar huning in New Mexico. It dates all the way back to Ben Lilly and the Lee Brothers on the blue. People make a living doing this and also peope do it because of the traditions. If we don't have the huning of these animals than the population is going to shoot up and they will be in the middle of people's back yards. So as a houndsman and fellow houndsmens we need to stick together and try to keep the huning around for the generation comming up and the population control. Keep the hounds keep the traditions.

Sent from my Verizon, Samsung Galaxy smartphone

From: [Diego Jaramillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion changes
Date: Wednesday, August 16, 2023 9:57:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

I also feel that a training season should be opened during the summer months for bear. This would provide more funding for the department by offering the summer training permits for houndmen. It would also aid in keeping bears out of residential areas and maintaining that fear for humans.

Thank you for your time,
Diego Jaramillo

From: [Branden Salas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting
Date: Tuesday, August 15, 2023 6:30:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Keep bear and lion hunting with hounds

Sent from my iPhone

> On Aug 15, 2023, at 5:51 PM, Branden Salas <brandensalas43@gmail.com> wrote:

>

> Stop rule 190 bear hunting and lion hunting with hounds is a huge tradition and the only way to 100% decide if you want to harvest that animal after it's treed. People that hunt bears and lions without hounds have no sure way to sex the animals to help conservation with sow and female lion population for the next generations of hunters
> Houndsmen do care and for most it's a way of life.

>

> Sent from my iPhone

From: [Adam Schwartz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting ban
Date: Wednesday, August 16, 2023 7:25:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Politics and emotions have no place in biology. Manage these animals so they remain in place for generations to come, by following the North American model of conservation. Do not ban managing them through hunting.

Adam Schwartz

From: [Brett Gorman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting
Date: Wednesday, August 16, 2023 2:14:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please continue to manage predator populations based on scientific data and not based on feelings of people that don't participate in wildlife management. Hunters contribute thousands of dollars individually to hunt elk, deer and other wildlife and further restrictions on predator management would further decrease mule deer numbers that are not near what they were 30 years ago. Hunting with hounds is a tradition that has survived for hundreds of years because it is effective, requires great physical stamina and takes years to string together a good string of valuable hounds that are bred and live to hunt.

Please don't turn New Mexico into California.

Brett Gorman

Shallowater, Tx 806-790-5171

(Former NM resident and hunter and current nonresident hunter)

[Sent from AT&T Yahoo Mail for iPhone](#)

From: [Brennen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting.
Date: Wednesday, August 16, 2023 11:57:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I Brennen Heddin am 100% for bear and lion hunting with the use of dogs!!
Sent from my iPhone

From: [JEFF CRANK](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting.
Date: Thursday, August 17, 2023 1:09:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears and lions need to be properly managed and that includes hunting. Responsible conservation is the best way to control populations. Please resist efforts by anti-hunters who know little about wildlife conservation to dictate species management in New Mexico.

You should keep tag numbers where they are - otherwise bears and lions will die from overpopulation and starvation - but I guess some anti-hunters believe that is progress as long as they feel good about themselves.

Jeff
Jeff Crank

Sent from my iPhone

From: [Jacob Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting
Date: Thursday, August 24, 2023 3:34:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello

In 2017 I volunteered to help the USDA-aphis division on the western slope of Colorado on a neonate study.

The study started in 2015, and was a study on new born fawns.

Colorado's deer population is 1/3 of what it should be, and they were trying to figure out why. After 2 years of collaring and tracking their fawns, they discovered they were losing 27% of their fawn population to bears, 17% to lions and another 11% to other predators.

I also helped manage bears in the corn and onion fields in Delta Colorado, that year alone Colorado game and fish removed 47 bears out of Delta alone.

We also removed bears in Durango that were hazing and attacking homeless people in Durango, and removed a lion that attacked a child in Mesa Verde National Park.

Colorado doesn't allow bear hunting with hounds, so game and fish removed over 700 bears in 2017 alone that were causing problems in some form or another.

Bear and lion hunting not only manages numbers in a safe and humanely manner, it brings revenue to the state in all different forms.

For example, I employ 6 guides 8 months out of the year, that buy gas, and ice in order to be able to guide hunters.

The hunters are buying hunting licenses, gas, food, hotel rooms, groceries and other necessities that are needed while they are here.

All that means revenue for the state that is much needed.

That doesn't include the 3% of my gross I pay to the forest service and another 3% to the BLM, plus self employment taxes and business license.

We can also talk about all the revenue lost due to depredation on cattle, sheep and horses if we don't keep the lion and bear numbers in check.

The Lion and bear population is at a healthy number and maybe even to high. Lion zone 1 quota is met normally by the middle of December.

That tells me the lion population is very healthy and could stand for the quota to be raised.

The bear population is very good as well.

The Gila ranchers are struggling to survive due to calf depredation due to bears and wolves.

If the state bans bear and lion hunting it will cripple the states already struggling economy, the deer and elk population will be in danger, people hiking and biking will in danger and the already struggling ranchers will be out of business.

I encourage everyone to look up the neonate study to fact check all my statistics.

Jacob Johnson
Owner Operator Double J Outfitters

From: [Cord Barton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion season
Date: Wednesday, August 16, 2023 8:49:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am for New Mexico lion and bear season. It is the only way to properly manage a population!

Sent from my iPhone

From: [Peter Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion seasons
Date: Wednesday, August 16, 2023 5:44:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear game commission, the August Bear seasons should be reinstated for the Los Alamos zone. We have way too many bears in this town. The quotas should also be raised. Our quota is usually met by mid October. Also the cougar quota needs to be raised as well. Do not remove the use of dogs and a hunting method. The use of hounds is the only good way to properly judge age and sex on these large predators as to limit take of female and adolescent animals.

Thanks,
Peter Walker

Sent from my iPhone

From: [Peter Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion
Date: Wednesday, August 16, 2023 9:38:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

You need to raise the quotas on bears and lion. There are to many bear and lions in 6c. We have bears all over Los Alamos and the lions have moved in too. Several dogs and goats have been killed by lions in Los Alamos in the last year. We need the August bear hunt to be reinstated in this unit as well. Being able to pursue these large predators with dogs is a crucial management tool to keep these predators in check. Do not make use of dogs an illegal method of take.

Thanks
Peter A Walker

From: info@compasswestoutfitters.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion
Date: Wednesday, August 16, 2023 1:58:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please allow common sense management on Lions and Bears in NM as well as hound use. No reduction in Tag numbers please!

Call anytime its often the best way to help!

Chris Guikema
Compass West Outfitters
505-860-3197 cell
505-801-7500 office

From: [Adam Turner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and loin hunting
Date: Tuesday, August 15, 2023 5:06:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and loins need there own tags they should not be able to take with a deer or elk tag taken of bear and loin meat should be taken. Running of hounds is more then just taken of animals hounds man are the best way to harvest the animals that need to be taken and the ones that should be able to continue to be set back free to reproduce and keep a healthy population. Please take into account of the hounds man that spends year long on there hunting and not just a season hunter that wants to shoot the first thing they can from a longer distance. Thanks you Adam Turner

Sent from my iPhone

From: [Yosef Raskin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and mountain lion hunting rules
Date: Wednesday, August 16, 2023 2:14:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello! As NM resident and hunter myself, I support total ban on hunt with hounds. In addition, I support total ban on trapping.

Yosef Raskin, MD.
Sent from my iPhone

From: [Gabe Green](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and mountain lion hunting
Date: Wednesday, August 16, 2023 7:30:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I just want to say for the record that I fully support the North American wildlife management model to include the hunting of all predators including bears and mountain lions by any means deemed ethical and/or traditional use. Any consideration of banning such practices will result in all my tag applications being made elsewhere going forward.

From: jransbarger@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and mountain lions
Date: Wednesday, August 16, 2023 2:35:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone please don't give in to the anti hunters. Hunting is a precious resource in NM. We the hunters support wildlife not the liberals in this state.

From: [Jacob Webb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and mountain lions hunting
Date: Thursday, August 17, 2023 10:09:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear new mexico state game commission I believe that the way bear hunting is regulated right now is absolutely working and is going the way it should be so It should be left alone. I believe the same for mountain lions as well. I think moving hunt start dates for bear back to August would disrupt pre rut elk and other species before archery season would start which leads to alot more problems. Thank you very much but I believe bear and mountain lion hunting should stay the same and we should focus on another subject as a state like bringing trapping and coyote contests back.

From: [Steve J](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and mountain lion rulings
Date: Wednesday, August 16, 2023 3:19:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Being Californian but living here for 10 years have taught me that it is never a good idea to bring the politics of my home state to New Mexico. One of the reasons I left California is the same reason other people want to impose those same laws and restrictions. Being a new hunter I've learned how important my role is to depredation hunting and population management. Where if left unchecked will cause more harm to the people in Raton and other rural towns all over the state

From: [Videos at Random Please](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and predators ruling
Date: Wednesday, August 16, 2023 11:46:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

The bear and predator management needs a reboot. Seeing predators should be RARE. Anymore, you see more predators on a game species hunt than the game species. It's hard enough to draw hunts let alone competing with predators.

1.) I propose allowing the game limits be met regardless of it being a female or not. The zones close within hours of being open anyway because females get hit on the road.. and those count toward the mortality limit..so not only does the hunt close prematurely.. but all the other females are having 2-3 cubs. The population in a 5 year span gets blown out of proportion.

2.) Allow hunters to harvest a predator on a drawn hunt before getting a tag but the tag must be purchased within 24 hours of the kill and inspected.

Or... sell the predator tags at a discount with a fishing license... something along those lines.

Ps don't you dare introduce grizzlies back into NM. OR JAGUARS. Or Canadian grays.

Thank you,

Landon Ryan

From: [pjsranch2003](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear and lion hunting
Date: Wednesday, August 16, 2023 12:02:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear sir or madam

I believe in and support hunting of bear and lion in New Mexico. I live in a rural area of sw nm and have continuous run ins with both bear and lions. I have lost numerous cattle and a horse over the Years and firmly believe that hunting is the only way to keep the numbers down, which in recent Years the numbers in my area are going up steadily. They are becoming more aggressive and care less about humans.

Please keep our hunting of lions and bears as they are and let us protect out livelihoods.

Thank you

Preston johnson

Sent from my Verizon, Samsung Galaxy smartphone

From: [Juan Archuleta](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar Rule
Date: Wednesday, August 16, 2023 9:35:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

If there's not an overpopulation of bear or cougar that's causing an imbalance of our ecosystem then why should hunters be allowed to just kill them? There should be as little to none of those animals killed

Sent from my iPhone

From: [Juan Grajiola](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar and hounds
Date: Thursday, August 17, 2023 12:18:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi this is a very concerning matter. Our predator problem has increased in suburban areas and it would be very smart to leave this matter in the hands of the game and fish department. Hounds does indeed give us an advantage. However is it a MUCH NEEDED advantage to keep our big game, and small game numbers thriving. If we want to keep New Mexico a state of the art area to hunt big game. It would be in our best interest to keep the use of hounds legal.

Sent from my iPhone

From: [Kenyon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar hunting
Date: Wednesday, August 16, 2023 12:13:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear and cougar hunting is not only a generational tradition since my ancestors settled this country but is vital to the economy of many small business owners in New Mexico. These anti hunting groups are detrimental to New Mexicans way of life. I have roots to Fence Lake, Reserve and hunting these species is vital to the towns economy as well as residents. Stop these anti hunting groups!
Kenyon Young

From: [lsharp143](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar hunts
Date: Wednesday, August 16, 2023 2:04:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my Verizon,
These animals should NOT be hunted with dogs. If you have to hunt them, hunt them like you know how to hunt without a crutch.

From: [Ruth Connery](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar numbers
Date: Thursday, August 17, 2023 9:23:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Every year the Department of Game and Fish comes up with how wildlife numbers have increased and the wildlife needs to be exterminated.

It always seems that rather than protect our wildlife the department favors allowing hunters to kill our wildlife.

How often has anyone seen a bear, cougar, deer, coyote, even a rabbit, squirrel or chipmunk when enjoying our open spaces, fields, mountains, lakes etc.

There aren't even birds in the numbers there were once. It's a pretty dismal statement of how we value our wildlife and open spaces.

I am asking that the department NOT increase the number of bears, cougars or any other wildlife to be killed so that we and future generations can enjoy them.

Thank you,

Ruth Connery
1717 Singletary Drive NE
Albuquerque, NM 87112

From: [Justin Jeske](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar rule
Date: Tuesday, August 15, 2023 5:10:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

Hunting bears and cougars should be allowed in your enchanted state! The use of hounds is the epitomy of fair chase and should be used to the fullest extent possible.

Thank you
Justin Jeske

From: [Kate Childress](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar rule
Date: Monday, August 14, 2023 10:38:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a life long hunter and fully understand the need to carefully control both predator and prey populations. However, this rule seems to lack a sophisticated assessment of the real state-wide implications of increasing the quotas on cougar and bear. In particular, it appears not to take into account that such a proposal in the midst of ongoing drought and severe fire damage entails a high degree of scientific uncertainty about the impact on the affected species and the biome. Moreover, there appear to be some extrapolations on state wide numbers based on limited data from limited geographical areas. This is too important a task to proceed with such lacunae and requires a comprehensive data collection if it is to be a credible and appropriate approach.

This proposal needs much more work before being finalized and I hope that the New Mexico Game and Fish Dept will certainly not increase the quotas from their current levels until it conducts such an analysis. Moving forward without better scientific certainty about the implications of this proposed rule would be a mistake. Thank you for considering my comments.

Mark Childress
Santa Fe

Sent from my iPad

From: [Don Fell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar rule
Date: Wednesday, August 16, 2023 5:55:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This is Don Fell from Silver City ,the bear and cougar seasons need to stay in place,as they are,to help to control these predators, When you change or take away from a hunt all you do is increase population wheather it be bear or cougar , The number of bears allowed to to be taken seems high ,but anymore not very many hunt them like they used to in the earlier days, seems tjough that the qutas arfre met ,sometimes early comes last up to the last day of a season.If you put a quota on females such as 100 and you look at how many cubs a female have during the birthing period then you have kept it in check for the amount of females there are Just a example}.do away with it and come time for cubs, say she has three (rare) then the next year she has two thats five added to the population in two years, How many bears in New Mexico?? same with cougars they usually have three the ones i have seen over the years have three kittens, no hunting of cougars, in five years she has had 15 added to the population,then more elk calfs killed, more deer fawns taken out just from cougars and bears will take down elk little ones, same with a deer fawn ,Conservation includes trying to keep numbers in check,so you do not have a complete wipe out of other animals say in ten years, then you have more staliking people when food is short , and more in town sightings need to keep as is .I have a tag for each have seen them but never have tagged one, but to me after a lifetime of hunting i still hope the money i spent is put to good use, and there are alot of differant numbers between Northern New Mexico and Southern New Mexico for both. IN THE END NOT THAT MANY BEARS OR COUGARS ARE BEING TAKEN. .

From: [William Fleming](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar rules
Date: Tuesday, August 8, 2023 11:25:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't implement new bear and cougar quotas. Your information on population numbers is not based on sound science. NM needs all the large predators for ecosystem health.

Sincerely
Bill Fleming
Professor Emeritus
Environmental Planning
UNM
Sent from my iPhone

From: [Justin Flack](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar rules.
Date: Wednesday, August 16, 2023 12:54:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I believe that responsible predator hunting programs and the management proposal submitted by game department biologists will be in the best interest for hunters and the general NM population. Please listen to the game and fish biologists when it comes to the rule set for bear and cougar.

Thank you.

Sent from my iPhone

From: [william.varos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar rules
Date: Wednesday, August 16, 2023 3:59:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is William M. Varos and me and my family are avid outdoors enthusiasts. Both my wife and I have degrees in wildlife life biology from Texas A&M. So when I say that not managing the predators (bears and cougars) is part of a management program that benefits all species, Not to mention the increased loss of livestock and game animals that will inevitably occur. Why can't we learn from states such as California where attacks on people increased. Oh ya don't forget about the revenue that will be lost that is used for all wildlife conservation efforts.

Billy Varos.
Sent from my iPhone

From: [John Harding](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear cougar-Rules
Date: Wednesday, August 16, 2023 4:25:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the Nm biologist proposal for scientific management for bears and cougars. I am in favor of adopting their plan. This plan will allow hunting as a management tool. Please support our biologist.

Thank you

From: [Anthony Chavez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear hunt in august unit 36
Date: Tuesday, August 15, 2023 2:24:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am asking to consider putting a bear hunt in august in GMU 36. As a local resident here in Ruidoso there are way to many bears in the area and I think with an early hunt this would help our bear populations down and keep bears out of the city. They are constantly breaking into homes and raiding trash cans causing problems.

Thank you,

Get [Outlook for iOS](#)

From: [Dee TASA](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear hunt unit 34, 36
Date: Tuesday, August 15, 2023 3:00:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Please take into consideration opening units 34 and 36 for bear on the 16th of August. This would give the bear hunters more opportunities to hunt bear in Southern New Mexico.

Thank you,

Dain Tasa

From: [Douche Bags](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear hunting
Date: Tuesday, August 15, 2023 2:36:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the august bear season.

From: [S.r](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear killing quotas Public Comment
Date: Thursday, July 20, 2023 3:55:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am appalled that in this time of wildlife extinction, you are considering upping the amount of killing allowed of bears and cougars. There is entirely too much leeway given now to hunters and trophy hunters and it needs to be curtailed. My reasons for this include:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can and will impact their populations for a long time.
- Look at history and the senseless slaughter that people engaged in that wiped out whole populations of wildlife.
- Thank you for your time,
- Susan Roberts
-
-

From: [Oscar Benson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear n lion hunting
Date: Thursday, August 17, 2023 1:36:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please dont allow the antis to take control of scientific game managment. The need for hound hunting is real.

Colorado allowed them to take spring bear, bait and hounds at the ballot box and bears have become a real nuisance and danger to rural home owners and campers alike. Hell theyre a problem in town n cities as well. Raiding dumpsters and trash receptacles is far to common along with Attacking pets and livestock. Dont turn your wildlife agency into a tax payer funded killing organization. Generate income to protect and manage ALL game n wildlife through liscense sales, outfitter permits, etc.

Thank you,
Ole babcock

From: wildspiritoutfittersnm@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear rule change gmu 34/36
Date: Tuesday, August 15, 2023 2:25:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, to whom it may concern.

My name is Andrew McWilliams, I am an Outfitter here in NM. I believe in conservation and management of wildlife here in NM.

I support the change of dates for gmu 34 and 36 back to the way it used to be with opening dates of Aug 16th for Bear season. I believe that it will be beneficial to healthy sustainable bear populations in the units, since bear hunters/ hounds men will be spread though out several units.

Please consider making this change as I believe it will allow hunters more opportunity as well as reducing stress on game and over harvesting in any given unit at one time. Allowing future generations healthy Bear Populations though out New Mexico. Thank you.

Respectfully,

Andrew McWilliams/ Wildspirit Outfitters

Sent from my iPhone

From: [joseph](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear rule- GMU 36
Date: Tuesday, August 15, 2023 2:41:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon, I am reaching out today to request GMU 36 and GMU 34 August bear hunts to be put back in place.

Below are my reasons:

- I have personally reached out to every houndsman I know in Lincoln County and each one agreed they would like to see this happen. I spoke to at least 6 houndsmen. As a resident of Ruidoso (GMU 36) I can tell you there are plenty of bears around. I usually see at least one in town every year. I think opening this hunt back up will help with bears in town.
- The pressure of bear hunters/houndsmen in GMU 37 (Capitan Mtns) is overwhelming in August. This is the ONLY open GMU in the entire Southeast Area for bears in August. It creates a cluster of hunters in one area and is not fair to our bear hunters.
- As you know or can see, the quotas of bears being killed in 34 and 36 is usually met or close to being met each year. We have no shortage of bears and I believe this would create more opportunities to hunt.
- The weather in August in 34 and 36 is actually cooler than 37 (Capitan Mtns). This would mean hounds would be fine running this time of year.
- There is also no data to show that the closer of these units has benefited and animal population or outdoorsmen in anyway. As you can see there is more data or at least interest in opening these hunts than there is against it.

I ask you hear the voices of your local Hunters and help us get this goal accomplished for the coming rule cycle.

Thank you!

From: [Joe Troyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear season
Date: Tuesday, August 15, 2023 2:28:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to show support to reopen the Aug 16-31 bear season in the southern units. They were taken away without good reason.

For many of us bear hunters this is the only time that we get to be in the woods without sharing it with other hunters. It has also caused more pressure in other areas because the hunters that live in the south now have to travel and hunt other areas that they normally wouldn't.

August is a great time for family's to bear hunt and continue on our traditions of hound hunting.

Many outfitters depend on this time of year to take hunters that did not draw at tag but still want to hunt.

Joe Troyer
Lil Joes Big Game Hunting
P.O. Box 781
Capitan, NM 88316
(575)707-3727

From: [Amy Lyons](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear season
Date: Wednesday, August 16, 2023 7:13:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the august bear season in the southern zones.

Do not let politics get in the way of wildlife management.

From: [Ryan Younker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear season
Date: Thursday, August 17, 2023 5:46:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the august bear seasons in the southern zones.

From: [Will Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear seasons reinstated
Date: Wednesday, August 16, 2023 7:21:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a sportsman I feel we need to have the August seasons reinstated in the southern units or a spring bear season

Sent from my iPhone

From: [Comcast](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear snd cougar
Date: Wednesday, August 16, 2023 11:23:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please continue to allow us to hunt these animals without hunts they will continue to kill off all the other animals that we hunt also like deer and antelope

Thanks

Ellen Goodson

Sent from my iPhone

From: [Danny Roper](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear tags
Date: Tuesday, August 15, 2023 4:46:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We drew out for deer and elk this year in 34 and 36 and were under the impression we could also harvest a bear if we purchased a tag. Will these units be reinstated so that we can purchase our bear licence ? Such a inconvenience as these are the most hunted units in our area for bear and lion.

Thanks.

[Sent from Yahoo Mail for iPhone](#)

From: [Dusty Tinner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear& cougar rule
Date: Sunday, August 20, 2023 8:20:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I urge you to keep following the recommendation of the Game & Fish to keep hunting as a predator management tool, as it has done for many years. Please follow the science and not the money of the bleeding heart of the Anti's. They've already taken trapping, please don't give them.this

Thank you,

Dustin Luedtke
1597 Clinton Rd, Houston, MN 55943
(507)429-6352

From: [Carlos Piro](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear
Date: Tuesday, August 15, 2023 6:40:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Keep bear and cougar open for hunting with dogs

Sent from my iPhone

From: [ELLERY WORTHEN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear, an cougar seasons
Date: Wednesday, August 16, 2023 4:43:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bear, and cougar need to be managed like all other wildlife. If the biologist see that there is a surplus of a given species, or that food conditions are not sufficient to maintain the the current population, there needs to be a hunt.

Trying to set one or two species away from normal practices is nothing but a ploy by people who want to see all hunting done away with, and do it one or two species at a time. As I understand it there is a group that want to end seasons on the above species. Are you going to limit normal wildlife biology, and game management practices to all except bears, and cougars?. Those animal **MUST** be managed the way all game is managed, not set aside to quiet a vocal minority.

Wildlife management is a science that should be applied to **ALL** game animals. There is no room to make exception for certain animals, and pretend they should be managed differently, or not at all.

The people who make these requests want to end all hunting, and for that matter they would like to make it illegal to eat meat. Bears, and cougars are their subject for the day, next time it will be something else in their quest to end hunting one, or two species at a time.

They did something like this in California, and the cougars started attacking joggers. Thank you for your time.

Ellery E. Worthen
504 Eastview St. SW
Alb., NM 87105

From: [Mike Wegley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear, cougar rules
Date: Wednesday, August 16, 2023 12:01:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Where I live in the Southern Sac's the deer herd has dropped as there are to many Cougars they are everywhere. When I moved here in 04 I would see 5 times the amount of deer that I see today. We need cougar hunting.

The bear are here but not much and they appear to be in decline.

Sincerely
Michael Wegley
Sacramento NM
mhw1954@gmail.com

From: [Brian Stevenson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear- Cougar Rules
Date: Wednesday, August 16, 2023 11:18:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Clay Wallace](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar Hunt comment
Date: Wednesday, August 16, 2023 11:30:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon!

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in the state of New Mexico. We must be able to hunt these predators or they will cause harm to the general public, livestock, and other wildlife in the state.

Thanks for allowing my comment.

Clay Wallace

From: [PAT GREGORY](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar Hunting
Date: Monday, October 16, 2023 8:55:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Gentlemen, I fully support regulated hunting of all predators, including bears and cougars . Please, please do not cave into pressure from anti's who know little to nothing about what goes on in nature.

Pat Gregory
Corrales, NM

From: [Mike Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar Rule proposal.
Date: Wednesday, August 16, 2023 7:22:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state vs continued hunting, which would only open the door for anti-hunters, similar to what happened to outlawing trapping.

Thanks,

Mike
Tijeras NM

Sent from my iPad

From: [M.BELL](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar Rules Comments
Date: Wednesday, October 18, 2023 9:45:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am strongly opposed to and horrified by the Bear and Cougar Trophy Hunting Rules proposed by the NM Department of Game and Fish for the next four years.

These rules are largely not grounded in science and should be reduced by at least 50% given the overkill in previous years due to use of non-existent or flawed science in establishing quotas. In addition, NMDGF proposes to only count legal kills by hunters towards their kill limits, instead of all sources of bear and cougar mortality. Total mortality includes disease, predator-control kills, human conflict kills, road-killed wildlife, and the significant amount of annual poaching. Clearly, NMDGF is taking an easy and ill-informed approach by not taking any of these other causes of mortality into account. NM's cougars, bears and residents who value these precious animals deserve much better from NMDGF.

The Southwest has been experiencing a "megadrought" from 2000-2023. As a result, New Mexico also experienced the most severe wildfires in recent history, destroying habitats, food and wildlife. NMDGF has failed to account for these factors in its habitat or population estimates. Climate trends weigh strongly in favor of lowering kill limits, not increasing them.

New Mexico's bears and cougars are an essential part of a healthy eco-system for all inhabitants of this state. I am horrified at the prospect of increased kill quotas for the benefit of trophy hunters. The American public opposes trophy hunting by 2/3rds majority. NMDGF should consider this broad public opinion, adopt hunting rules that ban the use of dogs in cougar and bear hunting, reduce the proposed hunting kill limits by 50%, and include all human-caused sources of mortality in the kill limits. It is way past time for NMDGF to do the right by our bears, cougars, and environment. Clearly, they are of much greater value than fees from trophy hunters, and NMDGF needs to finally recognize this and respond accordingly, by reducing the proposed kill limits.

Margaret Bell
Albuquerque, NM

From: [Rene Hersey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar Rules –Comments re: Proposed changes to quotas
Date: Thursday, August 24, 2023 12:37:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello New Mexico Department of Game and Fish & Commissioners,

Thank you for this opportunity to speak my thoughts about increasing quotas and extending hunting seasons for Bears and Cougars.

The idea of putting more pressure on both species, particularly females, in this every growing drought (last year alone, 2 fires consumed 666,800 acres of primary wildlife homes and range), which impacts forage and negatively impacts female bears denning sites and slow reproduction rates and losing preferred home ranges makes the idea of increasing quotas a scary proposition. Cougars, particularly mature males, when hunted and killed disrupts the social hierarchy of younger dispersing males, preventing them from learning the boundaries and rules which are established by fully adult males living in their established territories.

According to many scientists your estimated numbers state-wide are inflated population estimates.

How can you justify hounds to chase cougars and bears in the hot weather, particularly bears, who's coats are dense and in a chase they will over heat, and, they are not good climbers anyway, it is just a blood sport and abusive to our wildlife.

Bears and Mtn. Lions are iconic species of New Mexico & in the Southwest, and in the Zuni culture a they are glorified in fetish carvings and their ancient traditions.

Please do not increase your quotas and take a good hard look at what challenging times our wildlife are experiencing.

Thank you for taking the time to read my concerns,

From: [María Elvira Sagarzazu](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar Rules
Date: Friday, October 20, 2023 3:21:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game and Fish Commission

We are very concerned about the plans for bears and cougars aired by NMG&F.

The health of territories depends on biodiversity; animals must be represented in certain numbers, not as just a selected presence. Due to these principles, we suggest

- NMDGF's proposed trophy hunting kill limits for bears and cougars should be reduced by at least 50%. The kill limits are not demonstrably sustainable and have little basis in sound science.
- Trophy hunt must be banned..
- We're afraid that the Commission is not considering that biologists have conducted few scientific studies of New Mexico's bears and cougars, so that the empirical data is limited. Old wisdom states that fools rush to go where angels fear to show, meaning not to act unless scientific data allow us to.
- In the case of black bears, NMDGF uses mostly outdated studies conducted in the best bear habitats and then generalizes the results statewide.
- And in the case of cougars, NMDGF relies on an old, flawed habitat model to set kill limits for the majority of cougar management zones, despite more recent and reliable studies demonstrating that this model produces inaccurately high population estimates.
- NMDGF's kill limits are largely not grounded in sound science and should be reduced by half at least.
- Thank you
- Marina Sagardua
- Boston ,MA

From: [George Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar hunting
Date: Wednesday, August 16, 2023 11:45:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Need to keep the ways that we hunt. The game commission use a scientific method for hunting everyone screams for help when they make their way into towns and cities.

Get [Outlook for iOS](#)

From: [Michael Trujillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar hunting
Date: Wednesday, August 16, 2023 12:27:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I do not support the rule changes for the bear and cougar, most hunters could not do it without the use of dogs. The existing rules help manage game properly.

Michael Trujillo

From: [Bill Brockman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar rules
Date: Thursday, August 17, 2023 6:37:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Department of Game and Fish.

I understand bear and cougar rules are open for change this year. I am a rancher in north eastern NM. I have seen more bear and cougar activity over the last year than I did from 1964 to 2000 combined. Both bear and cougar predation significantly affect my ranching operation. I strongly urge you not to do anything that might decrease the take of bears and cougars in any way.

Thank you

Bill A. Brockman

From: [M&S Salazar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar
Date: Wednesday, August 16, 2023 9:00:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning,

Comments

Open more units for 1st season bear with more and more out of state dog hunters flooding in every year it's making it difficult for us resident hunters & outfitters to hunt our own backyard.

Reduce OTC lion/bear tags to non residents houndsman utilizing dogs.

Thanks



M&S New Mexico Outfitters LLC.
Marcus Salazar-Owner/Operator
P.O Box 743 Gallup, NM 87305
c: (505)-728-7897

From: [JIM W BAUER](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar-Rules
Date: Thursday, August 17, 2023 7:01:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the continued hunting of bear and cougar based on the scientific recommendations of the NMGFD biologists. We need predator management through the use of sport hunting, including hunting bear and cougar with hounds. Thank you.

Jim W. Bauer
P.O. Box 181
Columbus, NM 88029
575-494-4891
jwinbauer@msn.com

From: [herman.gabaldon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-Cougar
Date: Wednesday, August 16, 2023 12:29:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Leave the hunting laws to the hunters

Sent from my iPhone

From: [Senovio Perea](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear-couger
Date: Thursday, August 17, 2023 6:55:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To how it may concern can we still have a hunt for this animals ,they are in the city limits here in silver city both species and surrounding communities they are taking our pets and are not shy of humans. And getting more aggressive.We need to try and keep the population down and in check.

Get [Outlook for Android](#)

From: [john hart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear
Date: Wednesday, August 16, 2023 11:23:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like bear season in NM unit 34 and 36 open in august. It has been a family tradition for years for us to kick off hunting season hunting bears in 36.

John Hart

From: [Stefanie M. Schober](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] BearCougar Rules Comment
Date: Thursday, August 24, 2023 12:47:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Dept of Fish and Wildlife,

I am writing to ask you to significantly reduce the kill quotas for both bears and cougars and reduce the length of the hunting season. Please protect our precious natural resources and respect our wildlife. They have a right to live, too. And their existence (alive!) brings in tourism dollars.

Thank you for your consideration,
Stefanie

From: [Bob Wegner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/ Cougar rules change
Date: Wednesday, August 16, 2023 12:53:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sirs,

I Charles Wegner, support this rule change. Please don't listen to the anti-hunters.

Charles Wegner
bobw6460@gmail.com

Sent from my iPhone

From: [Clint Ezell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/ Cougar
Date: Wednesday, August 16, 2023 12:45:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that hunting is the greatest conservation tool we have to regulate populations of animals, most non hunters do not understand how much hunters put into the conservation efforts in our state, after viewing the proposed changes to the bear/cougar rules I think they are a great idea!!!! This shows how are efforts are increasing the population of both species, and having the biological data to show that, is fantastic!!!!

Sent from my iPhone

From: [Joel Gothard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/ cougar management proposals
Date: Thursday, August 17, 2023 12:49:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern;

As an avid hunter, fisherman, and outdoorsman, I am reaching out today in support of proposed changes to the New Mexico Game and Fish, Bear and Cougar management policies. Some of my most memorable moments in the outdoors over the years have been my close encounters with black bears. I have had several unforgettable encounters with them while bow hunting elk in the San Mateo Mts. They are truly amazing animals and I love to observe their antics and behaviors. Most of my encounters have been benign, but I had a very close call back in 2017 with a big boar that wanted to claim a bull elk I had harvested with my bow and arrow, so I know first hand how aggressive they can be. The biologists and researchers who work diligently to collect accurate population data on Bear and Cougar populations within our state to ensure sustainable, healthy populations of our large predators should be commended for their work. So often, their expertise and advice is undermined, ignored, and overlooked by groups who do not support the hunting sports whom argue against predator hunting based on emotion and feelings instead of hard science. Unfortunately, these groups have been able to use the legislative process to push their agendas through because they have a louder voice, deep pockets, and better organization.

As a human, I love to observe predators in their natural habitat. As a hunter, I want to continue to share the woods with them and do my part in keeping their populations at a healthy level through ethical hunting practices that are carefully regulated and monitored by our Game and Fish experts.

The only way I can ensure that my grandchildren have the opportunities I have had to enjoy the rich tradition that is the North American hunting experience, is to stay vigilant and support legislation that protects my rights as a hunter. Please consider that my thoughts and my opinions are shared by countless others within this state, (a silent majority if you will), who either don't take the time to address you, do not know how to address you, or simply may not be informed.

Sincerely,
Joel Gothard

Sent from my iPhone

From: [Candace Bailey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Hunting Rule
Date: Tuesday, August 15, 2023 6:18:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good evening. I just wanted to voice my opinion on the 2024-2028 New Mexico Bear and Cougar rule changes. I support the research that is being done to manage populations and habitat of bear and Cougar. I've personally seen game wardens and biologists doing exactly what is supposed to be done to ensure the most quality research and management. Therefore, I FULLY support their decisions on the changes.

I am from West Virginia but my husband and I spend a small fortune in your state every year coming to hunt bear and cougar with our hounds, and we stay absolutely as long as we are able. New Mexico is by far our favorite place to hunt and we hunt essentially coast to coast every year.

Rick Winslow, bear biologist, has been an incredible help from the first time we started hunting in NM. We've met several game wardens, Ariel Perraglio, Kirt Defenbaugh, Kayla Brauer, to name a few, who have been so professional, knowledgeable, and supportive. We fully support the NMDGF and are looking forward to being back in just a few weeks!

Candace M. Bailey
Rock, WV
304.920.4100
c2m2b@outlook.com

Sent from my iPhone

From: patxarano@frontiernet.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Management In New Mexico
Date: Wednesday, August 23, 2023 9:48:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commission,

With regards to proposals to eliminate or greatly restrict bear and cougar hunting in New Mexico, I must express my opposition to any such changes to existing game laws in New Mexico. Big game, to include predators, must be managed with science and not emotion. I fully support the continuation of current hunt strategies for bear and cougar in New Mexico. The New Mexico Department of Game and Fish is fully capable of prescribing hunt strategies to manage bear and cougar, to maintain sustainable and healthy populations of these game animals into the future. Thank you for your consideration.

Respectfully,
Jeff Rivera

From: [David Gonzalez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Rule In Development
Date: Thursday, August 17, 2023 7:07:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

--

David L Gonzalez

From: [Jake Baulch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Rule
Date: Wednesday, August 16, 2023 11:30:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support legal bear/cougar hunting. The proposed changes to the rule are based on science-based data from studies conducted by department biologists. Therefore, I respectfully request the State Game Commission prioritize the opinions of the biologists which were developed based on science.

Sincerely,

Jake Baulch

From: [Jace Cussins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Rule
Date: Thursday, August 17, 2023 8:58:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,

How are you doing?

I would like to express my deep concern with the potential loss of bear and cougar hunting with hounds in New Mexico. The use of hounds has deep cultural and ecological importance. The use of dogs to pursue game goes back many centuries and taking this opportunity away not only destroys generational knowledge and education but also creates a loss of identity for many men, women, and children who love the sport. It is a way of life.

Something that many people overlook is the ecological importance and ability to use very selective harvest when hunting with hounds. Having the opportunity to really evaluate an animal while treed or cornered allows the hunter and hounds man to be selective in their harvest. By selective, I mean it the hunter or hounds man can take the time to look at the animal and determine the sex and maturity so that mature animals are harvested and no females with young are killed.

I urge you to protect this sport, this ecological management tool, and many people's way of life.

If you have any follow up questions and concern please follow up with an email.

Best,

Jace Cussins

--

Jace Cussins
B.S. Wildlife Biology and Management, May 2017
Double Major Environment and Natural Resource, May 2017
M.S. Ecology, May 2022
[\(307\)286-8697](tel:(307)286-8697)
jacecussins@gmail.com

From: [Jack Dyson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Rules
Date: Wednesday, August 16, 2023 5:32:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Please don't pass any changes to the current predator rules.

From: [Jim Corcoran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar Rules
Date: Friday, July 21, 2023 9:37:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the

public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Sent from [Mail](#) for Windows

From: [Erramouspe, Jimmy A. \(El Paso, TX\)](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar hunting in NM
Date: Wednesday, August 16, 2023 11:28:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings NM State Game and Fish Commission,

As always, appreciate your leadership and commitment to New Mexico residents to manage our wildlife population based on scientific methods lead by our state biologists.

Common sense application of the scientific research eliminates the rhetoric that is often communicated when the Commission needs to make a ruling.

Please continue to utilize the scientific predator management programs that have been very effective in the past, specifically for bear and cougar.

Thank you for your time and commitment to NM wildlife management.

Jimmy Erramouspe
PO Box 463
Santa Teresa, NM 88008
915-525-2089

From: [Patt Gressman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar hunting with hounds
Date: Thursday, August 17, 2023 8:30:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting rules/laws should be written by Hunters for Hunters. Too many people who make the rules/laws are writing them due to sentimentality or ignorance. Most hunters do so to put meat on the table or monies in their pockets to buy food, etc for their families. Another example is no Doe hunts. This should be an option in the draw (another issue..) New Mexico is overrun with does who are weak and dropping weak fawns due to the bucks being younger and attempting to cover 150 does each.

From: [JAMES BUCHANAN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar hunting
Date: Thursday, August 17, 2023 9:47:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs:

I am in full agreement with bear/cougar hunting, with dogs and over bait. At the present time, on my property east of hwy 84 in unit 4 we have an abundance of cougars who seem to be driving the elk and deer population away. We have never benn lacking in bear numbers. These predators need controlled removal best accomplished by regulated hunting but licensed.

James R. Buchanan MD

From: [Mario Ramirez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar hunting
Date: Thursday, August 17, 2023 6:47:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Stephen Puntch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar proposal
Date: Thursday, August 24, 2023 1:19:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commission,

The North American Model defines fish and wildlife resources as the property of the people, to be managed by wildlife agencies on behalf of the people. This model is the foundation of SCIENCE-BASED fish and wildlife management, and I encourage legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that represent New Mexican traditions and are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures. Please avoid letting emotions guide your policy making and continue to keep New Mexico at the top of the list as an example of sound and balanced land use.

Sincerely,

Stephen Puntch

Sent from my iPhone

From: risfawnsr@tvn.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar proposed killing quotas
Date: Sunday, July 23, 2023 2:33:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm 73 years old and grew up in a fishing, hunting, trapping family. It was a way of life for us, and my grandfather impressed upon us that you eat what you kill. I have eaten squirrel, rabbit, dove, quail, turtle, possum, rattlesnake, deer, bison, and the beef, pork, and chicken we raised and processed on his farm.

Over the past 30 years I have read a lot about habitat loss, climate change, and the extinction crisis. My wife and I began turning our property into a mini nature preserve, planting native pollinator plants and trees, as well as water features for frogs and birds.

I have always admired Fish and Wildlife Services, and bought my share of hunting and fishing licenses. I decided to attend the Las Cruces meeting on bear and cougar management proposals. I read the proposed plan and was surprised to learn that the NMFW used the term 'harvest' to describe the proposed slaughter of New Mexico's bears and cougars because of a model that determined how many could be slaughtered without affecting the population.

I was struck by the number of times the word harvest was used, referring to the number of bears and cougars which are considered keystone species, could be slaughtered. It was pretty shocking, and I began to realize how naive I had been to actually believe the mission statement of NMFW. As the presentation continued, I realized that these animals, which create opportunities for other species to survive and thrive, were simply a commodity to be auctioned off to the highest bidder, who is willing to pay for the joy of killing an animal that has lost over 50 percent of its original habitat in the last 100 years, is being threatened by wildfires, climate change, vehicle mortality, poaching, and the notorious Wildlife Services.

In the face of all this, NMFW continues to do the same thing it has done for years, the classic definition of insanity.

I continue to believe that most of the people working for NMFW started working there because of their love of the outdoors and nature itself, and a desire to make a difference for wildlife. Maybe it's time to rethink everything the department stands for in the face of all the challenges we're facing. I think we can and must do better than this.

Sincerely,
David Patterson

Sent from my iPhone

From: [Fowler Brothers Inc](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar rule
Date: Wednesday, August 16, 2023 12:13:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Rules for game management should be based on best science and sustainability for population management, not feelings or how it fits into an agenda. Therefore I am against any rule that would curtail the legal hunting or seasons for bear or cougar in New Mexico. To do so endangers the stability of the populations, increases the likelihood of animal/human confrontation and negates a revenue source that is needed to manage and maintain the viability of the populations. A ban on hunting these species should not be considered by this commission.

Randy Teague
Hanover, NM

From: koons134@hotmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar
Date: Wednesday, August 16, 2023 8:14:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings,

Use science based data to make decisions that effect our hunting in NM! Don't let the anti hunters ruin our hunting in our state!

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not

Thank You,

James Koons

From: [D.Braman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar
Date: Thursday, August 17, 2023 1:15:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It seems preposterous to me that any ban on hound hunting even be considered. There is a balance that must be maintained among all animals. Hounds provide the ultimate way to take what needs taking and release what needs releasing. Furthermore, hunting in general brings incredible revenue to areas that otherwise doesn't have it. Regulations should of course be in place, but a ban on something that provides for families both involved with hunting and not involved is something that should never happen.

Dan Braman

WildLifers TV, Mellon Creek Outfitters, Bridle Iron South

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From: [Rosemary Lowe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Cougar
Date: Friday, October 13, 2023 5:15:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We attended your meeting a few months ago in Albuquerque, regarding the "Bear/Cougar Rule." Proposal.

Most people attending did not support your Rule, which unfortunately reflects the antiquated, out-of-touch ideas on "management of wildlife." Hunting and Trapping of wild animals appears to be your main objective.

Those who truly care about the future of wild animals will continue to monitor your proposals, and speak/act accordingly. We do not remember any discussions on Climate Change in N.M., at this meeting which leaves many of us to doubt your ability to "manage:" wildlife issues in the coming decade, let alone, sooner.

Climate Change is already upon New Mexico, and it will have far-reaching ramifications for wild animals, their dwindling habitat-- and their survival. Game Depts. which continue to remain mired in old management scenarios will not be relevant, and will be a further detriment to wild animals' survival in New Mexico's changing climate: This is why the whole idea of "wildlife management" will have to change to philosophy of Preservation instead of Management.

Rosemary Lowe, M.A., RN
Santa Fe, NM

From: [Chase Higgs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/Mountain Lion Rules
Date: Wednesday, August 23, 2023 3:41:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Born and raised in California, and now residing in Colorado, I have now lived in two of the most mismanaged predator states in the country. California in particular as an out of control lion and black bear population, and this is one of the main factors in a deer population that has tanked for decades. Not only is it bad for ungulate populations/contributing to unbalanced ecosystems, it takes away experiences and livelihoods from sportsman, and demonizes these awesome creatures. A booming population of predators leads to a decline in ungulates, and leads to more direct human-predator conflicts, both of which cast predators in a negative light, and widen the rift between the public and the misunderstood animals.

As a wildlife/fisheries biologist myself, it pains me to see what has happened to a lot of the natural resources and hunting culture/public perception in my home state, and some of these same policies are starting to take hold of Colorado. I do a lot of work these days in New Mexico, and it would be a shame to see the trend continue down there. Please let the professionals and science be in charge of managing the wildlife, and not the general public whose entire outdoor lifestyle generally consists of couple small park hikes a year, and will likely never even get close to actually seeing a mountain lion or bear.

Please protect these resources, people's livelihoods and cultures, and help prevent worsening the public image of these predators.

Thank you.

-Chase Higgs

From: [Joel Gay](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar comments
Date: Wednesday, August 16, 2023 12:08:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Chairman Lopez and members of the State Game Commission,

I want to add my voice to those who support wildlife management that is based on science rather than political pressure, conjecture and emotion. I urge you to approve the proposed Bear/Cougar Rule as written for the 2024-28 cycle.

Having followed the bear/cougar debates for numerous four-year cycles, I don't think the underlying science has changed. NMDGF has consistently managed both populations in a way that has kept bears and cougars at healthy numbers. Over the years biologists have honed their statistical modeling to yield increasingly accurate population estimates, and managed harvest levels accordingly. Judging by this year's proposed Bear/Cougar Rule, it appears NMDGF has been right on the mark the last four years. The new rule calls for minor harvest increases in just two (of 14) Bear Management Zones, and a slight but overall decrease in cougar harvests. That's the result of science based management rather bending to the will of special interest groups -- some of whom would decimate both populations while others would allow them to expand to nuisance levels.

New Mexico should continue to manage predator populations based on good science, which includes regulated public hunting. Please adopt the proposed changes in bear and cougar regulations as proposed by NMDGF.

Thank you.

--

Joel Gay
(505) 573-4191

From: [Stephanie Fuchs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar game rules
Date: Thursday, July 20, 2023 7:42:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sir/ma'am,

I have a number of concerns regarding the new rules that are being considered to hunt bears and cougars for the next 4 years in New Mexico. My concerns include but are not limited to the below:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- New Mexico has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Thank you for your consideration of my concerns.

Very respectfully,

Stephanie Fuchs

Albuquerque, NM

Sent from [Mail](#) for Windows

From: [David Keene](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar hound hunting
Date: Friday, August 25, 2023 4:40:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please continue to use sound scientific data to determine game management and hunting seasons for all wild game including bear and cougar . Hunting bear and cougar with dogs is a long-standing tradition in New Mexico and if done legally should be allowed to continue as neither specie is endangered.

Thank you,
David Keene

From: [cshudd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar hunting
Date: Wednesday, August 16, 2023 11:38:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting is conservation. I urge the DGF to continue to manage these populations by maintaining hunting and harvest of bear and cougar species. Thank you.
Sent from my iPad

From: [Dorothy chism](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar hunting
Date: Thursday, August 17, 2023 6:34:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We must continue predator hunting in our state! We need to reduce cougar and bear populations as this is critical in managing our wildlife populations! These predators can and will become more dangerous to all New Mexicans if we don't control them by maintaining hunting seasons.

Sent from my iPhone

Bruce Chism

From: [Kb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar hunting
Date: Wednesday, August 16, 2023 6:46:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a farmer, hunter, and conservationist, we NEED bear and mountain lion hunting to stay in New Mexico.
We need to reinstate the August season as well.
Thank you,
Katie Berry

Sent from my iPhone

From: [Brian Forsline](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar
Date: Wednesday, August 16, 2023 4:24:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Nothing but bear problems here in Colorado since being outlawed with dogs and the spring hunt. Lions, especially in (peoples republic of Boulder)Gilpin & Boulder Counties are a huge problem also. Let the wildlife researchers & terrestrial pros do their job and make these decisions! From a former houndsman here in the high country of Edwards, Co.

From: [S. ANTHONY SAFI](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bear/cougar/predator hunting rules
Date: Wednesday, August 16, 2023 6:46:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't curtail hunting of bears, cougars, or other predators. Hunting here animals is critical to avoiding their overpopulation, protection of reasonable numbers of their pray, and protection of humans. Thank you,

S. Anthony Safi, nonresident

Sent from my iPad

From: [virgene link](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears & Cougars are vital to the ecosystem
Date: Friday, July 14, 2023 11:23:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- Too Whom it Concerns:
-
- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these

species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Thank you,

Virgene Link-New

From: [Helgeson, Richard M@DOT](mailto:Helgeson_Richard_M@DOT)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougar regulation proposals
Date: Wednesday, August 16, 2023 12:06:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning New Mexico DFG representatives,

I am writing to support annual Bear and Cougar hunting.

New Mexico Department of Game and Fish biologists and Department management establish annual quota for hunting of Bears and Cougars and this practice needs to continue uninhibited by outside influences that are not supported by biologists, field studies, and NMDGF staff. Hunting is a natural part of all wildlife management and is proven to benefit species when conducted in association with wildlife studies and biologist evaluation of specie population and health.

Many hunters do not hunt Bear and Cougar with dogs, but I completely support the opportunity for hunters to use dogs while legally hunting for bear and cougar.

Thank you!

Richard Helgeson

From: [Claudia Haas](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars kill quotas
Date: Friday, July 14, 2023 2:37:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- A respectful hello, please do not increase whatever your math shows that we can lose more bears and cougars. I think a few points that were brought up to me are valid and I hope you take a good look at these two points thank you
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
-
-
- Finally the following point is one that is absolutely one that is hideous horrendous appalling and there is no way that this can be considered a sport: having dogs that have a better scent than a human, who is the one in the sport of hunting, the poor dogs don't know any better, treeing a poor animal and then shooting it at point blank. The poor bear or cougar didn't have a

fighting chance!!! This practice is just as disturbing as canned hunts. Please do not allow hunting of bears and cougars anymore only if a bear or cougar has been shown to be harmful to humans in the past. Thank you!

- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Thank you for your time and consideration.

Claudia Haas

[Sent from Yahoo Mail on Android](#)

From: [Lux](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars
Date: Thursday, August 24, 2023 2:26:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

At this point in the earth's trajectory, bears and cougars constitute keystone species (not that any species are expendable) that must be protected to support the balance of a healthy ecology. Therefore the current quota proposals and potentially extended hunting seasons are inappropriate and must be reviewed by a team of qualified professionals.

How sad that the so-called recreation of humans is considered more important than the health of our ecosystem as a whole. We would do well to remember that we are as vulnerable as any other part of this system.

Sincerely,

Nodiah Brent

From: [cindy kreiman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars
Date: Thursday, August 24, 2023 1:28:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern

I am asking that you please lower the kill quotas for the Bears and Cougars and also to reduce the times for hunting seasons.

Animals have a right to be heard and people have a right to defend and have a say for animals. Bears and Cougars are self-

regulating, habitat loss and climate change has also not been counted as having any affects on them.

Conflicts happen between animals and people are due to the ignorance and stupidity of people. Killing for recreation and trophies just creates more issues.

I am also asking that you don't start the hunting seasons earlier and reduce the numbers as we need to also take into account the effects of draughts and wildfires in their populations.

The Department needs to be more transparent and truthful and protect the animals they are supposed to be out there protecting instead of doing the opposite...

Thank you for your time

Cindy Kreiman

4828 Stonewall Jackson Hwy

Bentonville Va 22610

703-507-4648

fatiesnoop@gmail.com

From: [Peter G. Wilson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars
Date: Monday, July 24, 2023 2:00:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Re: Proposals for changing rules governing the hunting of bears and cougars

In support of the pertinent points brought forth by "Animal Protection New Mexico", I'll add that I look forward to a day when the Game Commission pursues a course of protection of this precious iconic wildlife of our state, which are just getting by against formidable odds, rather than selling them off.

Sincerely,

Peter G. Wilson

PO Box 2137
Santa Cruz, NM 87567

From: [Glynis Simmons](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars
Date: Friday, July 14, 2023 2:31:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Decision Makers,
Please stop the assault on our wildlife.
Humans are directly responsible issues
between wildlife and humans.
Please address the root cause instead of
decimating our precious non human animals.
Below is some information please to consider
and reevaluate your uninformed, unhelpful
plans to murder Bears and Cougars.
*Please excuse clerical mistakes.

•

*Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.

- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic.

Killing too many can impact their populations for a long time.

- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding

more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no

indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar

beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

- ***The Game and Fish has not provided sufficient or coherent information about bear or cougar populations that allows the public or even wildlife biologists to judge whether their recommendations are sound.***
- ***Respectfully, G.Simmons***
- ***tkochamp417@yahoo.com***

From: [gia.almeida](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars
Date: Friday, July 14, 2023 1:25:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

Thank you
Amy Dozier

From: [Jeff Huser](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and Cougars
Date: Saturday, October 14, 2023 8:56:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I do not support raising the limits on cougars and bears. These and most wild animals in NM are suffering from extended draught conditions, loss of habitat and should be better protected as a vital part of the ecosystem.

Regards

Jeff Huser, MD

905 El Alhambra NW Los Ranchos, NM

From: [Steve Jimenez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and cougar rules
Date: Wednesday, August 16, 2023 3:24:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Marcia Walton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and cougars need protection.
Date: Thursday, August 24, 2023 11:00:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [antoINETte.armijo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and cougars
Date: Monday, October 9, 2023 6:24:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I cannot believe that the NM Game and Fish continues to not only continue the hunts on our majestic wildlife, but is still proposing increasing those numbers. I'm just sitting here like what the hell is wrong here??? This department should be preserving and protecting our wildlife, not exploiting them. This is unjust, immoral, unethical, unacceptable, and definitely ignorance at its finest. Why are you selling out our wildlife to out of state hunters? To jerks who hunt with dogs? To anyone at all when MOST NM TAXPAYERS ARE AGAINST THIS AND you are not relying on accurate science and data. This is going to cause a huge uproar if this is adopted. PLEASE do the right thing for the majority of New Mexicans, for future generations, for our ecosystem, and for our beautiful wildlife. We need to evolve and do better to protect and respect our wildlife. We need to lead the way. We need to consider the philosophy of the first stewards of these lands. I'm a multi-generational New Mexican. There's not one single person that I know that supports your proposal on any level. Listen to the majority of NM taxpayers as well as true wildlife biologists and environmental scientists.

Thanks,
Antoinette

Sent from my Verizon, Samsung Galaxy smartphone
Get [Outlook for Android](#)

From: [Edith Tsacle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and cougars
Date: Tuesday, August 8, 2023 5:38:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am appalled to hear of the proposed increased number of hunting quotas for bears and cougars. Haven't we evolved at all as a society to respect the life of these animals more than the bloodthirsty psychopaths called "hunters"? Please follow the true science and not inflated numbers.

This is shameful and I am embarrassed to be part of this human race.

Edith Tsacle
Sent from my iPhone

From: [Janet](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and cougars
Date: Thursday, August 24, 2023 5:13:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it may Concern,

Thank you for this opportunity to speak out. We live in a rural area where there are bears and cougars. We would like to see the result of a study on the necessity of killing both and to hear what some alternatives might be. So far there have not been any insurmountable difficulties in living with bears and cougars in our area.

Janet Greenwald
Box 485
Dixon, NM
87527

From: [Tito Meyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and cougars
Date: Saturday, July 15, 2023 8:15:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both bears and cougars should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophies’ and recreation. NM Game and Fish should consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Thank you for considering my input. Robert (Tito) Meyer

From: [John Ryan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears and lions
Date: Thursday, August 17, 2023 8:55:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please keep running hounds on bears and lions I enjoy it and it's the only reason I come to spend money in your state. Keep maintaining your back country don't listen to the city people. Thanks hope to be in your great state again haveing the best time in the world. Have a good day
Sent from my iPhone

From: [aj.S.](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears
Date: Friday, July 7, 2023 5:44:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please increase the beer tag limits around Los Alamos. The bear population density is out of control in town and around the near area. They are constantly on school property. It is only a matter of time before we have a not so good experience between a bear and a child and it is 100% avoidable.

Thank you,
Andrew Saunders

Get [Outlook for iOS](#)

From: [susie.rossmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bears/Cougars
Date: Thursday, August 3, 2023 10:41:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Incredibly NM Fish & Game Dept. wants more dead bears and more dead cougars, in spite of persistent drought and forest fire destruction. Selling off wildlife as "products" is plain wrong. Hunter desires are ruling again. When will this stop? Now the agency wants to start the bear season in mid-August again. Huh? The dept. wants to kill up to a quarter of NM bears and cougars every year without any reason except to please hunters and in spite of not knowing how many of these animals actually exist in our state. Recreational killing for fun and trophies of the wildlife that belongs on NM landscapes is backward thinking. Soon there will be no more bears and cougars to kill.

The Fish and Game Dept. does not own our state's wildlife, but the majority of non-hunting New Mexicans have no real say in its wildlife policies. How about protecting bears and cougars for a change instead of allowing hunters to come first. The majority of New Mexicans appreciate our wildlife ALIVE. I oppose the current proposed rule changes.

Susan Rossmann
1575 E. Griggs Ave.
Las Cruces NM 88001

From: [Mark Reinhard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Beat and Cougar Hunting
Date: Wednesday, August 16, 2023 5:03:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am pro beat and cougar hunting!
Mark Reinhard

Sent from my iPhone

From: [michael bency](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Bency Outfitters & Guides
Date: Thursday, August 17, 2023 5:08:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern...

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Mike.

From: [James Sciacca](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Beyond Economics: The Real Value of Hunting
Date: Wednesday, August 23, 2023 6:42:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
James Sciacca

From: [Dale Guillory](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Beyond Economics: The Real Value of Hunting
Date: Monday, August 21, 2023 9:51:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm writing in support of the cougar and bear hunts. The intricate web of ecosystem balance is maintained through various tools, with wildlife management being a crucial one. This isn't about favoring one group over another, but about understanding the symbiotic relationship between hunters, the game, and the larger ecosystem. The investment, both monetary and in terms of conservation efforts by hunters, has played a significant role in maintaining flourishing game populations. The challenge is to ensure that these efforts are recognized and not undermined by misconceptions or unscientific arguments.

Sincerely,
Dale Guillory

From: [Kyle Stangel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Beyond Economics: The Real Value of Hunting
Date: Monday, August 21, 2023 8:51:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Kyle Stangel

From: [Michael Embrey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Beyond Economics: The Real Value of Hunting
Date: Thursday, August 24, 2023 8:27:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Michael Embrey

From: [Brad Nickelson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Biologist Expertise Over Emotional Outcry
Date: Sunday, August 20, 2023 7:58:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Brad Nickelson

From: [Baun Jordan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Biologist Expertise Over Emotional Outcry
Date: Sunday, August 20, 2023 7:17:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Baun Jordan

From: [Glenn Steele](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Biologist Expertise Over Emotional Outcry
Date: Sunday, August 20, 2023 7:08:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Glenn Steele

From: [Joseph williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Biologist Expertise Over Emotional Outcry
Date: Sunday, August 20, 2023 6:55:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Joseph williams

From: [Trevor Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Biologist Expertise Over Emotional Outcry
Date: Sunday, August 20, 2023 4:54:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Trevor Moore

From: [Christina Mims](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Black Bears
Date: Sunday, August 20, 2023 12:12:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I love the state of New Mexico and have stayed for months in Los Lunas and camped in the mountains that are right there. We had coyote visit our camp while we were sleeping and a black bear watched us from the other side of the creek for a couple of days. It was magical. The bears are sacred and need to be protected. But aside from my spiritual beliefs and sentiment, The Black Bear Bureau has kindly provided logical reasons not to expand the hunting season.

*Forest fires devastated thousands of acres and killed many bears and countless cubs who could not outrun the flames. With those deaths, combined with others such as;

* NMDGF kills, incidental kills (such as vehicle strikes, and predation kills where ranchers and others shoot bear on their land)

*Trophy hunting AKA "harvest" kills

The bear population, which is already in decline, will plummet further and faster.

- Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.
- Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Please do the right thing.

With utmost sincerity,

Christina Mims.

From: [PAT GREGORY](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Californication of Wildlife Management
Date: Monday, October 16, 2023 9:04:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I suggest New Mexico start managing wildlife based on science and not silly emotion. The use of hounds is an essential part of predator control, and make no mistake bears and cougars are apex predators.

Pat Gregory
Corrales, NM

From: [Clint Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Thursday, August 24, 2023 3:27:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Clint Wood

From: [David Childers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 11:10:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
David Childers

From: [Ryan Price](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 10:54:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Ryan Price

From: [Neil Pugliese](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 10:03:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Throughout the globe, traditional hunting practices have been crucial for maintaining ecological balance. New Mexico's proposed bear and cougar rule adjustments are in line with this worldwide perspective. Prioritizing expert recommendations is imperative for the preservation of the state's rich biodiversity. Protect the hunts!

Sincerely,
Neil Pugliese

From: [Benjamin Roggie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 9:23:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Throughout the globe, traditional hunting practices have been crucial for maintaining ecological balance. New Mexico's proposed bear and cougar rule adjustments are in line with this worldwide perspective. Prioritizing expert recommendations is imperative for the preservation of the state's rich biodiversity. Protect the hunts!

Sincerely,
Benjamin Roggie

From: [Jon Campbell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 9:05:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Jon Campbell

From: [Ryan Nicholas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 9:02:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Ryan Nicholas

From: [Jerrid Custer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 7:25:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Jerrid Custer

From: [Ben Hart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 7:05:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
Ben Hart

From: [Matthew Trail](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 6:54:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Matthew Trail

From: [Calvin Bueltel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Monday, August 21, 2023 6:15:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

To be frank, I've never been to NM. That said, it's been one of the states I've looked at for multiple years for potential hunting and recreation options.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
Calvin Bueltel

From: [Troy Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Thursday, August 24, 2023 2:56:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Troy Wood

From: [Bryan Chapman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Thursday, August 24, 2023 2:28:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Bryan Chapman

From: [Jordy Clark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Wednesday, August 23, 2023 4:45:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Jordy Clark

From: [Robert Garcia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Tuesday, August 22, 2023 6:55:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Robert Garcia

From: [Joshua Whitaker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Monday, August 21, 2023 3:51:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Joshua Whitaker

From: [Abran Briseno](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Monday, August 21, 2023 8:25:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Abran Briseno

From: [Kevin Peltier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 5:25:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Kevin Peltier

From: [Walker Hammond](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Sunday, August 20, 2023 11:13:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Walker Hammond

From: [Jeff Witmer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunters: Our Conservation Champions
Date: Thursday, August 24, 2023 5:23:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Jeff Witmer

From: [Brad Bagent](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Wednesday, August 23, 2023 11:04:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
Brad Bagent

From: [Colin Friday](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Wednesday, August 23, 2023 9:38:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Colin Friday

From: [Blake Byrum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Wednesday, August 23, 2023 5:39:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Blake Byrum

From: [Harrie Dennison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Monday, August 21, 2023 7:14:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Harrie Dennison

From: [Kelly Forney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Monday, August 21, 2023 6:35:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Kelly Forney

From: [Bill Ritchey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Monday, August 21, 2023 3:57:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Bill Ritchey

From: [Joseph Grigoli](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Sunday, August 20, 2023 1:25:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts!

Sincerely,
Joseph Grigoli

From: [Thomas Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Sunday, August 20, 2023 12:59:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Thomas Miller

From: [Tyler Pike](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Sunday, August 20, 2023 8:15:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Tyler Pike

From: [Reed Burres](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating Hunting as a Bridge for Families
Date: Friday, August 25, 2023 9:59:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Reed Burres

From: [Todd Healy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating the Achievements of Game Biologists
Date: Sunday, August 20, 2023 9:14:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Todd Healy

From: [Joshua Stringfellow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating the Achievements of Game Biologists
Date: Sunday, August 20, 2023 8:28:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Joshua Stringfellow

From: [Aaron Barnhart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating the Achievements of Game Biologists
Date: Sunday, August 20, 2023 7:16:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Aaron Barnhart

From: [Kaitlyn Rossing](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating the Achievements of Game Biologists
Date: Sunday, August 20, 2023 6:59:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Kaitlyn Rossing

From: [Timothy Watson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating the Achievements of Game Biologists
Date: Sunday, August 20, 2023 4:49:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Timothy Watson

From: [Tyler Sarjeant](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Celebrating the Achievements of Game Biologists
Date: Sunday, August 20, 2023 6:21:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Tyler Sarjeant

From: [Jennifer Jung](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Changes in Hunting Bears and Cougars
Date: Friday, July 14, 2023 1:31:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

I understand that this department/organization is meeting to discuss raising the number of bears and perhaps "adjusting" the number of cougars that can be hunted each season. With everything going on in this world at this point in time, I have to think that this is not a good idea. Within the recent past years, developers and other industries have and are discovering and building upon New Mexican land at a rapidly increasing pace, thus taking much needed habitat away from these animals. Along with this loss of habitat, the rising temperatures and uncertain water levels from year to year due to climate change, all creatures are stressed and under constant threat. They do not, nor do they deserve, to be under increased pressure from hunters that are only killing for their own ego. Please leave these animals alone to live their lives. We must respect bears, cougars and all the living creatures of New Mexico and not treat them like they are ours for the taking.

Sincerely,
Jennifer Jung
Albuquerque, New Mexico

From: [Danielle Berd](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: danceb@cox.net
Subject: [EXTERNAL] Changes to bear and cougar limits
Date: Friday, July 21, 2023 9:48:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is Danielle Berd. I live in Rio Rancho. I do not want the bear or cougar tags to increase in any way. I believe that the populations will adjust themselves as their game is abundant or not. With all of the wildfires and heat we have been having, they are having a hard enough time finding food.

I am not a hunter but have worked in many hunting camps as wrangler and cook. 90% of them have a deep respect for wildlife, but there are those who do not. They are only thinking of themselves. I have witnessed a hunter in full camouflage using his pickup to sight over right off a paved road. I was walking my Mom's dog on that road and we often climb around that exact area. He had no qualms about shooting around so much private property.

I appreciate your time and hope you will guide your policies to take care of our natural wildlife first and the wishes of the hunting population 2nd..

Sincerely ,

Danielle Berd, Rio Rancho NM

From: [Ashley White](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Changes to bear/cougar hunting
Date: Wednesday, August 16, 2023 11:04:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. Please do not compromise.

Thank you,
Ashley White

From: [Hank Kimbell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Changes to cougar and bear kill quotas
Date: Monday, July 17, 2023 1:22:26 PM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am firmly against raising the kill quotas for bears, extending the bear hunting season, and “adjusting” kill quotas for cougars.

Game and Fish has not provided sufficient or coherent information about bear or cougar populations that allows the public or even wildlife biologists to judge whether their recommendations are sound.

Not only are these recommended changes ungrounded in science, they are destructive to the ecosystems in question. We need more apex predators like cougars and bears in order to maintain healthy and balanced ecosystems.

Please do not support these changes.

Regards,

Henry S. Kimbell
5409 Pikes Peak Loop NE
Rio Rancho, NM 87144

From: [vpsmith77](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Changes to hunting newmexico
Date: Wednesday, August 16, 2023 11:31:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please allow new Mexicans to be able to hunt. This is a family traditions that have always been here in nm. The game and fish manage the levels to help keep healthy numbers for the state. Thanks, Vernon Smith

Sent from my Verizon, Samsung Galaxy smartphone

From: dmvoutfittersllc@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Changes
Date: Wednesday, July 19, 2023 8:54:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello unfortunately we had the date mixed up and did not attend the Albuquerque meeting. What I think need to happen here in NM is have non residents draw bear and Mt lion tags instead of them just showing up and being all over the place like they are now. We need to implement the rules like Utah has on the bear and lion hunts because during our opening days here in Northern New Mexico we are running into a lot of non residents doing pretty much whatever they please and we can't just let them roam around like they do now if they want to hunt bears and lions they need to draw a tag instead of over the counter like it is now.

Thank you
David

Sent from my iPhone

From: [Steven Frankfurt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Changes
Date: Tuesday, August 15, 2023 9:50:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the proposed changes.

Sent from my iPhone

From: [Crafts Outdoor Obsession](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Come on New Mexico!
Date: Wednesday, August 16, 2023 1:50:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I always thought Public land is such a beautiful feature of New Mexico. Until I realized control of the public land can get controlled by the wrong hands. It's such a privilege to have land for everyone to hunt and enjoy. I never thought in my lifetime I would have to worry about not hunting or trapping on state and blm that I have paid taxes and license for my entire life. You need to realize who is paying for all this land and who actually spends their time taking care of the New Mexico Animals. You're gonna to banned these hunts and people will simply move out of your state and go to place where hunting is allowed. Then you will have to increase taxes to make up for all the lost revenue created by hunters. This place will soon look like California. Be nothing but homeless and crooks. It's all starts right here by making one thing illegal at a time. I highly suggest you come to your senses and do not make bear and cougar hunting illegal because next year it will be elk and the next the year will be deer. It's a never ending battle and I'm so sad to see this beautiful land that has been shepherd by the hunters for many generations go to waste for your bleeding heart animal lovers whom doesn't donate a single penny to these animals life's. These people have never installed a water hole or rescued a baby animal from a fence. And these are the people you're choosing to side with simply because of politics and money. Please come to your senses before New Mexico has turned into California and all your good people move off and start their business and invest their money into a state who doesn't outcast the hunters.

Sincerely

Trey Craft

Sent from my iPhone

From: [Lezlie Ziegenfuss](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment
Date: Wednesday, August 16, 2023 1:03:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am fully in favor of predator hunting programs. I have seen the devastation they can do to the deer and elk populations.

I love our New Mexico wildlife, all of them, but just as we need to manage our forests we need to do the same for wildlife. To much of a good thing always has unexpected consequences.

Sincerely,
Lezlie Ziegenfuss

Sent from my iPhone

From: [Robert Offutt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment
Date: Thursday, August 17, 2023 8:29:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support NMGF proposal for responsible predator control and scientific game management policies.

Sent from my iPhone

From: [David Qualler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment IN FAVOR OF the current Bear and Cougar rule
Date: Wednesday, August 16, 2023 6:02:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whomever is collecting public comment on the proposed Bear and Cougar rule.

I would like it to be known that I am in favor of the responsible predator hunt programs and the scientific management proposal submitted by game department biologists in our state.

I believe that these programs help to support 1) a healthy wildlife population in our state and 2) a wave of life and recreation in our state that has been enjoyed for generations.

Thank you for considering my opinion!

V/r
David Qualler

From: [Riley Egan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment in favor of proposed limits
Date: Wednesday, August 16, 2023 2:47:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I wanted to write in and voice my support for the slightly expanded limits for Bear and Lion hunting opportunities. With sound data showing sustainable populations, allowing for potentially a slight increase in hunter harvest - this will help ensure populations do not move into less habitable areas. If hunting opportunity were to decrease - bears and lions would still need to be removed at the expense of the agency rather than hunter dollars being put into the agency. I would love to have the opportunity some day to come to New Mexico and hunt either/both a lion and a bear.

Please trust and listen to your biologists and people deeply vested into these species.

Thank you for your time.

Riley Egan |

From: [Star Castle](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Louis Gallegos](#)
Subject: [EXTERNAL] Comment on Bear and Cougar hunting and conservation rules
Date: Sunday, August 20, 2023 4:17:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Establishment of rules and regulations regarding hunting and management of bears and cougars (and all wildlife species) in New Mexico should be based on sound scientific and biological research and principles. To establish regulations and restrictions based on a few people's feelings and emotions is ridiculous and detrimental to the well-being of our wildlife. The New Mexico Department of Game and Fish is a professional and highly regarded entity and should not bow to political pressures and nonsensical voices.

In 1990 the state of California banned all mountain lion hunting thanks to the rabid efforts of animal rights activists. The primary food source for cougars is deer. A *single* mountain lion will kill and consume one deer every week on average. According to the Washington Department of Fish and Game an adult female with kittens can kill one deer size prey every 4 days. Without being controlled, mountain lions can decimate an entire deer herd in a matter of months. The California Department of Fish and Game has estimated that statewide deer populations dropped from 850,000 in 1990 to a population of 445,000 in 2011. Of course, these activists don't like to think about the details of how mountain lions (and wolves, and bears) obtain their food. The deer, often young fawns, run in terror as they are chased down, then feel the sharp claws of the cat penetrate their hide into the back. As they are toppled to the ground, the cougar then tears their throat open with fangs backed by vice-like jaws. Not a pretty sight. But the activists are all high fives for they have saved all the mountain lions. A better approach is to let biology and science, not emotion, direct how wild animals are conserved. Let the experts determine, through studies, education, and science, how wildlife (both predators and prey) and their habitat are managed, and state policies developed. Hunting plays a vital role in conservation and is an essential tool for wildlife agencies and biologists to ensure healthy herds and to maintain a balance so that overpopulation doesn't result in disease and starvation.

Sincerely,

David Sprague
10120 Maya Ct. NE
Albuquerque, NM 87111

From: [Jack Newman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on Proposed Changes to Bear & Cougar Management
Date: Wednesday, August 23, 2023 9:34:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Louis J. Newman

From: [edgisela](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on Proposed Rule Changes
Date: Monday, August 7, 2023 6:21:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello!

I am totally opposed to the new rule changes to increase the killing of cougars and bears in New Mexico. A reading of your own summary document indicates you have no actual data to support the increase. Instead, you base the changes on "research studies and statistical modelling efforts" that will be posted at some unannounced date once the research is completed. In other words, you plan on increasing the number of kills based on what you hope the research finds - not on any actual research already available.

My wife and I hike often in the mountains around our home in Los Alamos and we see large numbers of deer and elk. We also see the negative effects of these large numbers. Apparently, there are not enough natural predators (cougars and bears) to keep them in check. Reducing the number of predators will only make the problems worse. Please reconsider this misguided attempt to alter the natural balance of nature in our wonderful state.

Thank you,

Ed Gunderson

Los Alamos, New Mexico

From: [M.BELL](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on Proposed Rules for Hunting Bears and Cougars
Date: Wednesday, July 19, 2023 11:07:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Members of the NM Game and Fish Commission, I am writing today to provide comment on your proposed rules for the next four years of killing New Mexico's bears and cougars.

These proposals are not based on sound data regarding habitat or population estimates for either of these species. The increase or adjustment in quotas and lengthening of the killing season for bears appears to be based solely on the desire to see these animals as trophies on someone's wall. Sound wildlife management would have a detailed management plan detailing measurable objectives for these species based on scientific data subject to rigorous review by outside independent experts and the public. These are the hallmarks of protecting our precious wildlife, none of which form the basis of your proposals to increase quotas or lengthen killing seasons. Loss of apex predators adversely affects the health of our ecosystems. Given the many climate crises we now face, preserving and protecting wildlife is key to protecting and improving the sustainability of our overall environment. Increasing killing quotas and lengthening hunting seasons is at best short sighted and at worst totally out of step with the environmental challenges facing our state. Protecting these animals will help us face these challenges based on sound science and competent wildlife management. Do not increase any quotas or lengthen any killing seasons. Reducing these quotas is what is needed to protect these animals which are essential to protecting our precious ecosystems. These animals are not trophies for someone's wall!!

Margaret Bell
Albuquerque

From: [MARY ANN WALZ](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on bear and cougar hunting
Date: Wednesday, August 16, 2023 11:42:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am not opposed to all hunting but I think bears and cougars are preyed upon unfairly through the use of dogs. How sportsmanlike is it to shoot a bear or cougar in a tree? I am totally against the use of dogs when hunting bears or cougars.

Thanks for accepting my comment.

Mary Ann Walz

Amalia, NM

[Sent from AOL on Android](#)

From: [Karen Boehler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on bear/cougar rules
Date: Thursday, July 20, 2023 6:44:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I only speak for myself, but as an environmentalist, I would like lower kill quotas not higher for a number of reasons.

- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. We do not know the effect of current hunting levels. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.
- It's too hot in August to pursue bears with dogs. The season should not be pushed

back in the southern part of the state and in fact should be pushed forward everywhere because it's only going to get hotter. The same is true for cougar hunting. Dogs for cougars should not be allowed year round. (if they have to be allowed at all it should only be in cooler months.) More broadly speaking, given the fires, the drought and erratic weather going forward caution is in order. It all points to lowering the quotas, not raising them.

- Counting bears and cougars is very difficult. They have density studies But to get a number for the entire population on which the kill quotas are based, they have to apply that density to a land area. How do they decide what land area to use? And what density to use in areas where no studies have been done? Given the uncertainty, the quotas should be more conservative than they are.

[Sent from Yahoo Mail for iPhone](#)

From: [Andres Gomez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on new proposed rules.
Date: Thursday, August 24, 2023 5:27:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMDGF,

I am writing this in support of our biologists who have recommended or showed that our bear and cougar populations are doing well and can handle and maintain a modest tag increase without any harm to the overall population. I believe it is very important to maintain healthy levels of said predators so that all animals in our beautiful habitats can prosper. We have seen the negative impacts of outlawing or total bans on predator control and what it does to animal populations and increased risk with rising interactions between them and people. It is in the best interest of the state public lands and the people that we continue these common sense practices in maintaining a sustainable and healthy population of any and all species in the state of NM. Thank you for your time.

Andres Gomez

From: [Thea Lynn Gondek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on new rule in the hunting of bears and cougars in new mexico
Date: Friday, July 14, 2023 1:35:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a senior Santa Fe resident who enjoys hiking and the outdoors. Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for bears and cougars should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers in the wild. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

Thea Gondek
Santa Fe

Sent from my iPhone

From: [Zoë Havlena](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on proposed Bear and Cougar Management
Date: Wednesday, August 16, 2023 3:57:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. I would like to voice my agreement with the current proposed changes to the bear and cougar rule.

As both a research scientist professionally, and a hunter, I strongly support the use of science-based population management strategies. In fact, I was not raised a hunter and only became one in part after meeting colleagues (professionals with graduate degrees in biology and related fields) who hunted and explained the benefit that hunting can have to an ecosystem, and its value as an ethical and sustainable source of meat. However, I realize that there are voices from people that oppose the use of hunting for game management. Many of these people often likely vote similarly to myself, yet these are positions that come from a place of emotion and conjecture, rather than science and data.

My purpose in writing is to express a voice of support for using non-politicized, scientific information to shape our game management in New Mexico. I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,
Zoë

From: [Matt Walsh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on proposed rules
Date: Sunday, July 30, 2023 10:30:37 AM

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1. At this date reading the proposed changes shows that no specific percentages of harvested animals are mentioned. This is an important issue which should be clear in the proposal and final rule.
2. It is not clear if the aim is to increase or decrease the total populations of the mentioned animals. This should be clear.
3. It would be helpful if commenters got any revised or additional proposal information sent to them by email (or at least a note of posted changes that they can view.)
4. Just for statistical purposes I will mention I am a regular elk and deer hunter in NM since 1975.

Thank you for your consideration.

--

Matt Walsh
Shootin' & Computin' in the dust.....
Rio Rancho, NM

From: [Michael Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on rules
Date: Tuesday, August 15, 2023 10:53:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I would like to comment on rule changes for bear and cougar.

I'll start off with commenting on both animals (seasons ,rules, and quotas). As a New Mexico resident guide, houndsman and son of a outfitter we have seen plenty of changes occur throughout the years in this state for bear and lion hunting. Some rules good for us some rules not as good for us being residents. One huge problem we constantly see every year in New Mexico is the amount of out of state outfitters and hunters that come here every season to hunt. The biggest thing we see is for bear season when a outfitter from out of state brings in 5-10 other guides or (friends) with them to NM to help them for the bear season tag out on all their hunters which is fine I understand they are trying to tag out their hunters but what about us residents? It is hard for us residents to even compete with these guys when they have a total of 5-10 other trucks helping them. I think if non resident outfitters come to New Mexico they need to be regulated and not even just outfitters but regular hunters as well. There has been numerous times while hunt both bears and cats where no resident hunters come to New Mexico to hunt since it's pretty much a free for all for them all they need is a valid license to hunt here. The main issue I see with that is they come into NM catch a lion or bear and kill the first thing they catch male female small or big who knows with cats if that female has kittens sometimes they don't always have the kittens with them. I also think one rule the department should think about changing such as our neighbor state like Utah has done is make bear hunting a draw for no residents if NM did that maybe it will help with the outrageous amounts of no residents coming into this state and killing anything they catch. The rule should be if your contracted with a outfitter you can come to hunt lion or bear no problem but if your coming by yourself just catch and kill stuff make it a draw. It sometimes seems as if NMGF just wants more revenue then anything. Something needs to be done on out of state houndsman/outfitters. But knowing NMGF they will not do anything about this, New Mexico will ban hound hunting before anything positive happens for New Mexico houndsman.

Thank you,
Michael Martinez

From: abqq@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment on the bear and cougar rule
Date: Thursday, August 17, 2023 12:51:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am an avid responsible hunter of most all big game and waterfowl species in New Mexico. I strongly oppose the Anti-hunting groups that are flooding the New Mexico State Game Commission with comments opposing all bear and cougar hunting. I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. Thanks for your continued support of all New Mexico hunters.

Quasar

Retired
Home: 505-822-0552
Cell: 505-453-0904

From: [Ryland Hutchins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment supporting revised bear and Cougar rules
Date: Thursday, August 17, 2023 12:32:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to express my support for the revised bear and cougar rules. I spend a lot of time outside and have found there to be more bears than ever. If they are not adequately managed by ethical hunters there will be adverse interactions with the general public and they will end up being trapped and killed in ways that are less ethical and more expensive to the public. Bear hunting opportunities in particular should be increased where appropriate. I would like to see an otc spring bear season implemented or at least greatly increased spring draw opportunities in the future. Thank you.

From: [Mike Barker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment
Date: Wednesday, August 16, 2023 9:09:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

In the state of New Mexico, the public trust doctrine of the North American model of conservation define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Michael Barker

From: [Marvin MacAuley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment
Date: Thursday, August 17, 2023 9:14:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I firmly believe that maintaining a scientifically grounded approach to the harvesting of cougar and bears in New Mexico, which includes the ethical use of dogs, is essential. The current framework in place has demonstrated its effectiveness, and it's crucial not to impede or excessively regulate these game animals. Responsible management not only preserves the balance of our ecosystem but also ensures public safety. Let's continue to support a well-reasoned strategy that upholds both conservation and the well-being of our community.

Thank you

Marvin MacAuley

From: [evanstrimdoor \(null\)](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment
Date: Wednesday, August 16, 2023 12:51:44 PM

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Save cougar and bear hunting as it exists now

Sent from my iPhone

From: [Matthew](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comment
Date: Thursday, August 24, 2023 9:01:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to oppose any proposed rule for increasing bear and cougar hunting quotas. Both animals are self-regulating, and they are both facing extreme drought and heat conditions that threatens the population. Additional reductions in their numbers via hunting will endanger their ability to maintain a healthy population and genetic diversity needed for survival.

Sincerely,

Matthew Henderson
Albuquerque

From: [CindyR](#)
To: [DGF-Bear-Cougar-Rules](#); [Clemente, Fernando, DGF](#); [Garcia, Edward, DGF](#); [Hickey, Sharon, DGF](#); [Fulfer, Gregg, DGF](#); [Lopez, Tirzlo, DGF](#)
Cc: [CindyR](#)
Subject: [EXTERNAL] Comment: Bear/Cougar Rule
Date: Wednesday, August 23, 2023 6:27:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game Commissioners,

I fully oppose this proposed rule and believe every effort should be made to enhance protections of NM's bears and cougars.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced or eliminated, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year "megadrought" and a record heat wave this summer. **Additionally, New Mexico's two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat.** These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut (or eliminate!), not increase, hunting quotas and seasons to ensure bear

and cougar populations are not negatively affected.

Respectfully,

Cindy Roper

Santa Fe, NM

Citizen advocate for wild places & wildlife / voter / tax payer / US Army Veteran

From: [Bruce Sedloff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments Regarding the PROPOSED BEAR/COUGAR RULE
Date: Wednesday, August 2, 2023 1:44:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is my understanding that science plays no part in wildlife management in the state of New Mexico.

The proof of this claim is that the proposed rule on bear and cougar populations will allow the taking of 10% of the population. What bothers the hell out of me is this:

Without knowing what the population of these animals in the state is, how can you define what TEN PERCENT is? That is, **10% of what?**

Let me fill you in on what's happening in Wisconsin regarding wolf management, because I think you need to know some of the parallels and relatedness of these issues in another state's management of its wildlife.

Wisconsin, I'll admit, is a little unusual in its approach to managing Timber wolves. According to state statute if wolves are on the federal Endangered Species list, they fall under the protection of the ESA. However if at any time the population rises above a certain number (I don't exactly know what that number is) then they lose their protection under the ESA. Not only that, but state statute also requires the Wisconsin Department of Natural Resources to enact a hunting season to reduce the wolf population.

The reason I want you to know about this is that the Wisconsin legislature, in requiring a hunting season on wolves when they are not protected under the ESA, is pretending to know how to manage wolves. They claim to have a better idea than the DNR, which is the agency charged with the task of managing Wisconsin wildlife. They claim that they are using science, but there is no science involved in arbitrarily pulling a number out of a hat and saying "We want 407 wolves killed". I would ask these statesmen what science did they use to determine that number? Fact is, there were no howl surveys that they cited, no transects did they run or use any of DNR's data to determine population levels. None of that.

The Wisconsin DNR in the past couple years has put together a SCIENCE-BASED wolf management plan. The final draft of this plan, in fact, was made public in the last week of July.

Back to New Mexico. The Department of Game and Fish is charged with the responsibility of managing New Mexico's wildlife, which is a PUBLIC resource. Bears and cougars and deer don't belong to the DGF, they belong to the people. And as far as I, myself, am concerned, it is put upon you, DGF, to demonstrate that you are the people and agency best equipped to carry out that mandate. So if you are telling me that you don't need science to census the populations, if you don't need science to figure out what the carrying capacity of their range is, if you don't need science to figure out migration/emigration patterns and movements, if you don't need science to figure out what they are eating, if you don't need science to establish kill goals for hunting seasons, then I AM DEEPLY WORRIED that New Mexico sanctions incompetence in the management of its wildlife.

Put another way, by not letting science guide your management, you're telling me that you have no clearer idea of what's going on "out there" than the Wisconsin legislature knows about the state's wolves. To wit, according to the article in the Albuquerque Journal, July 30, C3, *"This policy is highly questionable, but now the game department wants to kill up to a quarter of our bears and cougars every year without any coherent reason. This is a reckless and destructive proposal lacking SCIENTIFIC RIGOR (my emphasis) and ethical competence."*

That is the end of my comment.

BRUCE SEDLOFF (bsedloff55@gmail.com)

From: [Erica Elliott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments about kill quotas for bears and cougars
Date: Thursday, August 24, 2023 6:19:47 PM

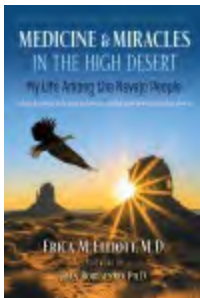
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The proposed kill quotas for both bears and cougars cannot be scientifically justified. How the quotas were determined is murky at best. No consideration has been made for rising temperatures, extreme drought, or habitat loss from catastrophic fire. Bears and cougars both evolved to be self regulating. There are not too many. But over-hunting can cause them serious harm and damage.

I strongly oppose raising the kill quota! I find it very disturbing that the issue to raise the quota even came up.

Erica M. Elliott, MD

Erica Elliott, MD
Family Practice & Environmental Medicine
www.musingsmemoirandmedicine.com
www.ericelliottmd.com



[Buy on Amazon](#)

From: [Emiliano Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on Bear and Cougar rules
Date: Wednesday, August 16, 2023 1:15:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am an avid hunter and fisherman in New Mexico. Born and raised here, my family has resided in this state for countless generations. With the changes being proposed, I will continue to purchase licenses for bear and cougar annually to support the conservation initiatives of the NMDGF. It appears to me that the proposed changes represent judicious tweaks, grounded in the expertise and scientific understanding of individuals within the NMDGF. I earnestly hope that these measures endure and are not influenced by external entities that don't financially support NMDGF. Instead, they funnel their money into political pockets to back their ideological stances on hunting.

Our traditions as New Mexicans must be preserved. Hunting and fishing are deeply embedded in not just my family's lineage, but also in the lives of many families throughout our state. Regrettably, trapping was eliminated due to political influences and supposed experts who, in reality, were merely lobbyists for anti-hunting/trapping organizations. This loss was deeply felt, affecting many individuals I know who considered trapping a valuable conservation tool.

We should staunchly adhere to the North American Model and the Public Trust Doctrine. It's disheartening that hunters, despite our substantial contributions to conservation, rarely receive the recognition we deserve. Conversely, anti-hunting groups, while often proclaiming themselves as conservationists, contribute minimally, if at all, to conservation efforts. In my experience, I've yet to see any anti-hunting individuals participate in essential undertakings such as fence projects or water tank projects, which are vital for sustaining healthy wildlife populations.

I implore the State Game Commission to place significant value on the perspectives of those of us who genuinely support conservation and actively assist our wildlife in New Mexico. Furthermore, I hope that the insights and science-driven conclusions of NMDGF biologists and other staff members are given top priority during rule changes, rather than being overshadowed by external influences or politicians who lack genuine commitment to conservation.

Thank you for your time,
Emiliano Martinez

From: [Charles Fox](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Nina Eydelman](#)
Subject: [EXTERNAL] Comments on Proposed Bear and Cougar Rules
Date: Monday, July 24, 2023 1:59:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to submit the following comments on the proposed Bear and Cougar Rules:

The DGF proposal to increase the killing of New Mexico's bears and cougars without knowing how many of these animals exist is poorly supported and reckless. Both bears and cougars are native to New Mexico and belong on the landscape in ecologically significant numbers. These species manage their own populations quite effectively without the need for lethal management.

State wildlife policy should reflect our values as a society. Social attitudes towards wildlife have evolved enormously over the past century. We are largely a mutualistic society now, which means live and let live in some manner of respectful coexistence.

The Game department has not demonstrated what constructive purpose the mass killing of our bears and cougars actually serves. Scientific shortcomings aside, proposals like this demonstrate Game department values that are substantially misaligned with modern society.

The continued recreational killing of wildlife is difficult to justify in an age of mass extinctions, mega-fires, and persistent drought. I believe this proposal is misguided and destructive, and should be dropped.

Charles Fox
Santa Fe, New Mexico

From: [Michelle Frost-Maynard](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Liley, Stewart, DGF](#)
Subject: [EXTERNAL] Comments on Proposed Changes to the Bear and Cougar Rule
Date: Thursday, August 24, 2023 8:07:54 AM
Attachments: [image001.png](#)
[23_NMCGA_comments_on_proposed_bear_and_cougar_rule.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

August 24, 2023

by email — DGF-Bear-Cougar-Rules@state.nm.us

Mr. Michael Sloane, Director
New Mexico Department of Game & Fish
1 Wildlife Way
Santa Fe, New Mexico 87507

Re: Comments on Proposed Changes to the Bear and Cougar Rule

Dear Director Sloane:

The New Mexico Cattle Growers' Association provides the following comments on the above- referenced proposed changes to the bear and cougar rule.

The New Mexico Cattle Growers' Association's mission is "to advance and protect the cattle industry of New Mexico, work toward solutions of cattle industry problems, promote the wellbeing of the industry, provide an official and united voice on issues of importance to the cattle producers and feeders, and to create and maintain an economic climate that will provide members of the Association the opportunity to obtain optimum return on their investments within the free enterprise system." We have members in 32 of the state's 33 counties as well as in 18 other states.

NMCGA requested input from our members on the proposed changes to the Bear and Cougar Rule. Our members report particular concern with bear and cougar populations and presence in Catron, Colfax, Dona Ana, Grant, Lincoln, Otero and Sierra Counties.

Ranchers report relatively more human encounters with both bear and cougar. That is a significant safety issue for them and their families as well as for the hikers, campers, fishermen and hunters who frequent our rural areas. Those encounters are not limited to the woods. We have had multiple reports of bears near dwellings in rural as well as urban areas.

Ranchers further report that bear and cougar depredations on livestock have become even more prevalent. As we experience long-term drought, these depredations are likely to increase at watering locations.

The Department's proposed rule generally addresses the increase in bear activity in certain hot spots. Respectfully, however, the proposed rule does not appear to sufficiently acknowledge bear activity in Otero County. Nor does the rule address the relative increase in cougar activity in the counties noted above, which gives us pause, particularly in CMZ Q where the Department proposes to essentially cut the limit by half despite reports of relatively more cougar activity in the area. NMCGA urges your consideration of these modifications and if made, NMCGA supports the proposed rule and would urge its adoption.

Sincerely,



Loren Patterson, President

cc: Mr. Stewart Liley, Chief, New Mexico Department of Game & Fish,
Stewart.Liley@state.nm.us

New Mexico Cattle Growers Association
PO Box 850
Moriarty, NM 87035
Office: 505-247-0584



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From: [Sara Norton-Sanner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on bear & cougar game rules
Date: Wednesday, July 19, 2023 1:07:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon,

I would like to share the following comments on the bear and cougar game rules:

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Please do not raise the kill quotas for bears, extend bear season, or raise kill quotas for cougars in New Mexico.

Thank you,

- Sara

From: [Debbie Hughes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on bear and cougar rule
Date: Saturday, August 19, 2023 9:26:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a rancher/hunter, we would like to comment on the bear and cougar rule. Our family has ranched in the Guadalupe Mountains for over 100 years. We have documented hundreds of losses to our livestock and wildlife by cougar. The NM Game & Fish collared 13 or 14 lions and several have been killed by other lions which shows over population. The deer population has been destroyed by the lion population. We support the biologists at NM G & F that know hunting with dogs is critical to helping manage the lion population.

Thanks, Hughes Brothers Ranch
Sent from my iPhone

From: [Charmeine Wait](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on changes to Bear and Cougar limits
Date: Saturday, July 15, 2023 2:24:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing in opposition to raising the limits of bear and cougar hunting.
The quotas for both should be reduced, not raised.

There is no certain inventory of population and habitat continues to decrease. Unless a study is done with conclusive proof of the population and viable habitat, no increase should be done. Climate change is already affecting all wildlife and to ignore this with no actual population count is poor management.

Additionally, hunting with dogs is cruel. The dogs tree the cougar or bear and the hunter just comes up and shoots the exhausted animal.

New Mexicans deserve to have our tax dollars, that pay your staff, do scientific, transparent and peer reviewed studies of the populations and effect of climate change on the populations.

Sincerely,
Charmeine Wait

From: [RecumbentTrike13](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on hunting of Bears and Cougars
Date: Saturday, July 15, 2023 5:43:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'd like to submit comments about the hunting of bears and cougars, and more broadly, all animals. Wildlife species and individuals are under more pressures than ever before, as humans encroach on wildlands more and more, disrupting many species that act as food for others. Trophy hunting serves no legitimate purpose, and harkens back to crueler times. The killing of animals as "sport" is a revolting idea. Centuries ago, when survival was a motive, it may have been a more realistic concern. In modern times, it is a self aggrandizing behaviour that should be discouraged.

Hunting in general cultivates a heartless attitude towards animals that often carries over to how hunters treat other people. Treating animals as objects does much harm to society. I have met two hunters in my life with similar stories. After years of hunting, both suddenly encountered the realization that they were causing stress and harm to their prey; that the animals were living, feeling, thinking beings. Both hunters chose to no longer use a gun on hunts, instead using a camera.

Personally, I've never understood how a person could simultaneously appreciate the beauty of an animal and then want to kill it. This appears to be much like the thought process of a stereotypical "serial killer" of humans

There is much discussion of how the ability to kill animals with impunity is intrinsic to those individuals that develop into those classified as "serial killers".

In summation, the rules and quotas allowing hunting predators and non-food animals should be replaced entirely with rules that prohibit the hunting of these animals. I urge you to please make it unlawful to kill bears, cougars, bobcats, lynx, wolves, coyotes, foxes, raccoons, weasels, etc.

--

Please go in
peace.

From: [ken.logan](#)
To: [DGF-Bear-Cougar-Rules](#); [Linda Sweanor](#)
Subject: [EXTERNAL] Comments on proposed Cougar Rule
Date: Sunday, July 16, 2023 1:17:14 PM
Attachments: [Comments on the NM Cougar Rule July2023 KLogan LSweanor.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Department of Game and Fish,

Please see our attached 2 page comments on the proposed Cougar Rule.

Thank you,

Ken

cc.: Commissioners Tirzio Lopez, Gregg Fulfer, Sharon Hickey, Edward Garcia, Fernando Clemente, Jr., Linda Sweanor.

From: [ken.logan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on proposed Cougar Rule
Date: Thursday, September 21, 2023 1:30:21 PM
Attachments: [Comments on the NM Cougar Rule August2023.pdf](#)
[Comments on the NM Cougar Rule July2023 KLogan LSweanor.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Department of Game & Fish person,
Attached are our comments on the proposed Cougar Rule as presented by the Department at the State Game Commission meeting in August 2023. We also attached the comments we submitted in July 2023 so you can consider our previous comments on the Cougar Rule. If you have any questions, please contact me.
Thanks,
Ken Logan

From: [Eric Jantz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on proposed changes to Bear and Cougar rule (19.31.11 NMAC)
Date: Sunday, July 30, 2023 12:38:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Thank you for the opportunity to comment on the Department of Game and Fish's proposed changes to 19.31.11 NMAC, the bear and cougar rule. I am opposed to the proposed changes. Nothing on the DGF's website pertaining to this rule discloses the reasons why the proposed rule is needed. DGF presents no data that increasing the number of bears and cougars killed in certain "management zones" will protect ecosystems, other wildlife populations, bear and cougar populations or any other rational reason. In other words, the DGF's proposed decision appears entirely arbitrary. DGF should not go forward with the proposed changes unless and until it can present reasons, using the best available scientific data, why increasing the number of bears and cougars that hunters can kill is necessary, and make such data - and the methods used to gather and analyze the data - available to the public on the DGF website.

Sincerely,

Eric Jantz

From: [Zach Lovelady](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments on proposed increase in bear and cougar limits
Date: Sunday, July 30, 2023 7:31:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to share my opinion that I strongly oppose increasing the current limit regarding the authorized killing of bears and cougars. As a New Mexico resident with a love of our shared outdoors and our native wildlife, I find the proposed change ethically and scientifically unjustifiable.

While I don't oppose hunting in general, in this case, the proposed change to limits seems to be giving far too much weight to the interests of a relatively small population of recreational hunters, and not nearly enough weight to our shared duty as New Mexicans to protect the wildlife in our state.

Thanks for your consideration.

Respectfully,
Zach Lovelady
(505) 270-4044
zlovelady@gmail.com

From: [bradyklovelady](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments
Date: Sunday, July 30, 2023 2:29:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I strongly oppose increasing the current limit regarding the authorized killing of bears and cougars. In fact, I question whether the current authorized limit should be reduced if not eliminated entirely.

Respectfully,

Brady K. Lovelady
505-379-2552

Sent from my Verizon, Samsung Galaxy smartphone

From: [Fred Weinhausen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comments
Date: Monday, July 31, 2023 8:44:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I recently left New Mexico but I lived there for 18 years. I have always been concerned about wildlife and the health of our ecosystems.

Without adequate science, the planned increase in taking of bears and cougars is, quite simply, outrageous. Please listen to your scientists and specialists. Hunting is not the answer to everything.

Dianne Maughan
Inverness, FL

From: [Becky Campbell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Commit
Date: Saturday, August 19, 2023 1:04:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom This Concerns, The management of all NM game animals and predators must remain in the hands of qualified NMG&F biologists. Big game animal populations are managed through public hunting and hunting of bear and cougar populations. It has been proved that hound hunting is the most efficient way to kill targeted sex and age groups. If there is no bear or cougar hunting and there gets to be too large of any one or more predator populations we would/could lose our elk, pronghorn, sheep and /or deer herds. We already had one elk population go extinct in the Gila. Flip side is when the pray species of any predator gets too low than there is a loss of the predator populations. The loss of trapping small predators, bob cat, fox, coyotes, etc. is going to greatly reduce the small mammal and bird pray species including wild turkey. The cougar also eats (small game) rabbits, skunk etc. So the whole system gets out of whack.

Legislative management is no management at all!!!!

Becky Campbell
Gila Hot Springs Ranch
Phone: (575) 536-9314
<http://gilahotsprings.com/>

From: [Katherine Baker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Comply to New Mexico's Statutory Directives
Date: Tuesday, August 22, 2023 10:40:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a wonderful example of guiding actions and decisions towards a sustainable future. The North American conservation model is a true success story and benefits all wildlife. By adhering strictly to these guidelines and incorporating science, not emotion, in conservation strategies, we not only protect our wildlife but also protect a lasting legacy for future generations. Mountain lion and bear hunting must be kept for it to continue to work!

Sincerely,
Katherine Baker

From: [Non-Pub Eye Four Design](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Concerning Increased BEAR and COUGAR Kill Limits
Date: Thursday, October 19, 2023 9:18:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it May Concern:

I am reaching out in protest of the new ruling which allows for an increased number of BEAR and COUGAR kills, in addition to lengthening the hunting season.

I am a horse-boarding client of a property that partially borders the hunting range for these animals. During hunting season we often witness the inhumane tracking and killing of these animals by hunters and their dogs. A couple of years ago hunters were tracking a mama bear and cub, and entered this private property to finalize their hunt and were asked to leave. Despite leaving the property, they still managed to claim the life of the mother bear, leaving the cub to fend for itself. The cub managed to hibernate for the winter but came out of this state in very poor shape, and ended up starving to death on this property with no mother to show him the ropes to survival. He died on the property. This story was all but duplicated for a young cougar cub who was left motherless and alone through this selfish and inhumane process.

These animals harm no one as long as they and their habitat are shown respect by the human counterparts who choose to live in their habitat. These creatures do their part in the ecosystem, much better than the majority of their human neighbors. What is the purpose of this inequitable activity? Way of life? Compensation for a lack of self-worth? Machismo, girl power, bravado? Then it's time for a change, in my opinion.

Please allow the natural world to regulate itself, the way it was always intended.

Thank you for your consideration.

Respectfully,

Allen Griffith
Concerned Taos Resident

From: [Jeffrey Stone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Concerning proposed hunting rule on bears and cougars
Date: Sunday, July 30, 2023 10:22:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a resident of New Mexico I am completely opposed to the proposed rule to allow up to 25% of bears and cougars in the state. It is not like there are too many of them. It is not like we use them for food. Hunting these predators is an outdated and foolish behavior on the part of we humans, and we need it to stop. Animals have enough to deal with in a time of climate change and destruction of natural habitat. Leave them alone. Even the current 10% limit is too much.

Jeffrey Stone
7300 Sidewinder Dr NE
Albuquerque 87113

From: [Heidi Goodman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Concerns About Mountain Lion Hunting Proposal
Date: Monday, October 16, 2023 5:31:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I write to express my grave concerns regarding the proposed extension of hunting limits on mountain lions in New Mexico. The current hunting practices, where mountain lions are pitted against well-equipped hunters, appear neither ethical nor humane. This approach is particularly troubling considering that known mountain lion deaths have already reached around 10% of the estimated population due to hunting alone. The proposed limits could potentially result in an even greater impact on our iconic mountain lion population.

New Mexico's wildlife, including mountain lions, holds a special place in the hearts of residents and visitors alike. Mountain lions are more than mere targets; they play a vital role as keystone species in our ecosystem. I implore the New Mexico Department of Game & Fish to reconsider these high hunting limits, as they pose a significant threat to the sustainability of our mountain lion population and the enchanting charm of our state. I urge you to take into account the concerns of those who oppose this plan and seek a more sustainable and ethical approach to wildlife management.

Sincerely,
Heidi Goodman

From: ["S. Libby"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Condemning the Heritage and Toxicity of Hunting Today
Date: Sunday, August 20, 2023 5:13:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. We DO NOT support the continued bear and cougar hunting thinly disguised as "Managment". Most of these struggling predator populations are self-managing. Disease vehicle strikes, habitat loss, drought, lack of survival resources and HUNTING all serve to diminish our magnificent wildlife while not doing a darn thing to help. But we sure are doing everything in our power to make sure that we continue to support millions of cattle on our public lands, when all evidence to for good health and longevity point to a strong reversal of these anachronistic pioneer policies.

Sincerely,
S. Libby

From: [Todd Boelter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation First
Date: Thursday, August 17, 2023 9:00:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern, I want to express the facts that only hound hunters can and do selective take on bears and lions. Any other form of population control will include a huge percentages of undesirable takes. Bears that are still lactating or very young and the same goes with lions. hound hunting is by far the best and most conservational way to harvest these predators. To keep there numbers in check.

Thank You

Todd Boelter

From: [Megan Hough](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Wednesday, August 23, 2023 10:08:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Megan Hough

From: [Wyatt Eggli](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 10:15:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Wyatt Eggli

From: [Terry Heaton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 10:14:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Terry Heaton

From: [Stephan Weber](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 9:21:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Stephan Weber

From: [Zachariah Like](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 9:10:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Zachariah Like

From: [Merrily Darnell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 7:08:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Merrily Darnell

From: [Colton Weatherford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 6:55:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Colton Weatherford

From: [Ed Dakin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 6:54:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Ed Dakin

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Tuesday, August 22, 2023 11:01:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Brian Carson

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Tuesday, August 22, 2023 10:02:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Brian Carson

From: [Stephen Gabbard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Tuesday, August 22, 2023 5:40:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Stephen Gabbard

From: [Carl Abrams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Monday, August 21, 2023 11:22:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In reviewing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue hunting bears and lions in New Mexico based on biology and science, not based on politics or unsound feelings.

Sincerely,
Carl Abrams

From: [Brent Varriale](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 5:17:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Brent Varriale

From: [Bryan Burkhardt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 4:26:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Bryan Burkhardt

From: [Bryan Burkhardt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 4:24:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Bryan Burkhardt

From: [Wesley Craddock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Sunday, August 20, 2023 4:00:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Wesley Craddock

From: [Cody Sandri](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation Success in Bear and Cougar Numbers
Date: Wednesday, August 23, 2023 3:17:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Cody Sandri

From: [Marco diGrazia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Conservation>Preservation
Date: Wednesday, August 16, 2023 11:07:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a lifelong New Mexican, hunter and conservationist I strongly support regulated bear and cougar hunting in addition to the changes being proposed by the NMDGF in the current 2023 rule making session.

It's imperative to put the resource first and use the best available science to make management decisions rather than conjecture and emotion. The methodology used by NMDGF in determining the data used to make these decisions is sound. Current population estimates and on-the-ground depredation reports point to an increasing population, more human wildlife conflict, and the unnecessary expenditure of conservation officer resources that would be better spent protecting our shared wildlife resources. It's important that New Mexico continue to manage predator populations through regulated public hunting and the purchase of licenses that generate rather than diminish revenue for the department and it's critical mission.

Thank you for your consideration,

Marco diGrazia

Sent from my iPhone

From: [Dale Chepulis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Continue hunting
Date: Wednesday, August 16, 2023 11:59:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Cougar and bear hunting is necessary to maintain healthy populations. Please oppose any take over by the anti hunting lobby. They do not help our game population in any way.

Thanks,

Dale Chepulis

New mexico property owner.

Sent from my Verizon, Samsung Galaxy smartphone
Get [Outlook for Android](#)

From: [Greg Graves](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Continue responsible lion and bear hunting
Date: Wednesday, August 16, 2023 1:22:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Responsible cougar and bear hunting is critical in New Mexico for management of other game species!! Please don't cave in to Special groups wanting to change a long legacy of hunting in my home State of New Mexico
Thank you

From: [Ashley Twitty](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Continue scientific management if predators
Date: Wednesday, August 16, 2023 1:52:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am reaching out to voice my support for predator hunting programs and the scientific management proposal submitted by game department biologists. It is imperative that game species, including predators, continue to be managed by biologists and that predator hunting continue for species conservation and preservation of our deeply values hunting heritage. Furthermore, critical management opportunities should not be limited by disallowing use of hounds for predator management.

Sincerely,
Ashley Twitty

From: [barbara.judy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Continuing opposition to increasing hunting opportunities for bears in New Mexico
Date: Friday, September 15, 2023 4:02:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM DGF;

This message is in response to a notice of rulemaking on the topic of bear hunting in New Mexico.

I continue to object to acceleration of bear hunting in the state, for the same reason expressed in my prior message.

DGF has not provided an ecosystem health argument in favor of increased take. Wildlife in New Mexico is a resource for the entire state and should be managed from that framework. While I don't dismiss the interests of the hunting community, those interests need to be considered in balance with other interests.

DGF has not bothered to provide a broader argument for increased take, rather the agency has made the assumption that any take that can be justified based on population count is a net good. That is insufficient rationale, and I cannot support it.

In my role as a citizen, I will be looking for opportunities to advocate for restructuring the mission of DGF to adopt a whole ecosystem frame of reference for wildlife management decisions.

Sincerely, Barbara Judy

From: [Martha Roberts](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar & Bear Harvests
Date: Thursday, October 19, 2023 9:44:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it May Concern,

My horses has lived on the border of RCCLA land for several years and we have had no impact by cougars or bears. An increase in hunting kills and lengthening the hunting season would appear to be an arbitrary and unnecessary disturbance of the natural balance of this area (Amalia, New Mexico). As an example, when the coyote limits were not regulated we saw a significant increase in rabbits, rodents, and rattlesnakes on our land.

Thank you for your consideration.

With respect,

Martha R. Roberts

From: [Brooklin Funk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar & Bear Rule
Date: Wednesday, August 16, 2023 6:04:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support of Houndsmen and Hunting with hounds

From: [Steve Wilson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar & Bear hunting in New Mexico
Date: Wednesday, August 16, 2023 4:17:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please let this letter serve as my "vote" to keep regulated Bear and Cougar harvesting active in New Mexico. I do support the scientific management proposal submitted by NM game department biologists and the continuation of scientific predator management programs in New Mexico. Lets keep sustainable bear and cougar populations and hunting opportunities throughout New Mexico using bear and cougar biology, modern monitoring and analytical methods including harvest data to keep hunting opportunities available.

The program is good for ranchers and their livestock, its good our residents and its good for New Mexico.

Thank you,
Steve Wilson
Native New Mexican

From: [Gwen Peterson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Hunting
Date: Sunday, October 15, 2023 8:53:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want to let you know that I am opposed to extending hunting limits to more cougars. We need to protect the wonderful wildlife in our wild areas. Wildlife will control itself for the most part without man's intervention. One species keeps other species in check and things work out in nature the way they should without man's intervention. Please do NOT increase hunting limits...rather decrease them! Thank you.

Gwen Peterson, Albuquerque

From: [Karly Chavez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Hunting
Date: Thursday, October 19, 2023 9:47:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi, I am voting against stopping cougar hunting in New Mexico.

Thank you for your time.

From: [Joe Cairns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Kills
Date: Monday, October 16, 2023 8:17:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Why allow more mountain lion hunts? As an apex predator let them take care of the complaints of farmers regarding elk damage to crops.

Trying to micromanage individual species is what nature has already figured out! Let her do what she knows how to do. We just need just need to butt out.

Joe Cairns

From: [Joe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Limits
Date: Saturday, October 7, 2023 9:26:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is very hard to believe that you would even consider increasing the destruction of a living treasure such as our NM cougar population. Why? What possible benefit can there be beyond trying to appease some special interest group? Let Mother Nature determine the amount of cougars any area in the state can support. Don't we have enough of the state to our human population? No matter your politics on indigenous rights, it is hard to imagine any creature, human or otherwise, who is more "indigenous" to our state than the cougars. I hope someday to see one in the wild. Please do not reduce my chances by this proposed change. I would happily donate to a fund to reimburse any rancher who claims he lost a cow or any other such claim used as an excuse to kill these animals. Just like I hope I don't have to contribute to some activist lawyer group to fight you about it, but I will if necessary. Think about the future of our state and those who will come after us and do not kill any more cougars! While you are at it, why don't you stop killing them altogether? Do what is right, not what is expedient. Thank you.

Joe L. McClaugherty
Santa Fe, NM

From: [Dustin Farnsworth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Quota
Date: Thursday, August 17, 2023 10:05:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to voice my opposition to some of the the proposed changes to the cougar rules. Particularly the reduction of the quota in CMZ Q. While I'm an active outdoorsman and and spend many days a year coyote hunting, I find the study conducted to be flawed in its result. From my observations, I have observed 8 separate cougars in 2023 alone in Zone Q. While a coyote hunter is out and to see 8 lions in units 30 and 34 with only 98-134 lions in the area per the study, this seems far fetched. The populations appear to be much higher than the study shows based solely on practical observations.

I urge the commission to reject to lowering of the quote in CMZ Q.

Dustin Farnsworth

From: [Mark Mattaini](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Rule
Date: Wednesday, October 25, 2023 7:16:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

An analysis from the *Wildlife Society Technical Review states*:

“State management programs for carnivores enable wildlife managers to pursue a variety of objectives in the public interest, including conservation, hunting opportunity, human safety, reducing predation on wild ungulates, and mitigating damage to private property, including livestock. Moreover, big game hunting opportunities generate revenue from the sale of hunting licenses and taxes on hunting equipment, which help finance law enforcement, habitat improvements, monitoring, and research. Together, public involvement, associated revenue, and professional management are key components of a process known as The North American Model of Wildlife Conservation” (Organ et al. 2012).

All of these factors are important in wildlife management efforts provided by the NMDGF. To examine that work, I met with Nickolas Forman, the [Carnivore and Small Mammal Program Manager for the New Mexico Department of Game and Fish](#) on October 11, 2023, to discuss questions raised by some of our members related to the state management of cougars. State management in different regions of the country often vary, with goals ranging from reduction, stabilization, or increase of independent cougars over time. Mr. Forman clarified that the established goal of the New Mexico state game commission is maintaining stable healthy populations of game statewide; this is therefore also the stated goal of the NMDGF staff.

A central factor contributing to determinations of numbers of tags for each game unit is the availability of adequate cougar habitat. Statewide, there are approximately 2 cougars per 100 km², but this is significantly variable depending on geographic elements and human populations. Population estimates are localized primarily based on the harvest matrices collected annually. Appropriate harvest rates may increase or decrease over time, given changes in harvests and characteristics of land and populations within regions and game units. The state also considers all of the considerations noted in the Organ quotation above, including shifts that local people may indicate as desirable, by reviews of harvest and other data across multiple years, changing human and geographic changes, issues of excessive predation, or lack of opportunities for involvement for residents and visitors. (In the case of cougars, there are nearly always available tags, so predation can often be handled by those affected, ranchers for example.)

GPS tracking collars, trail cameras, and advanced Spatial Mark-Resight models contribute to the available data used to determine harvest limits in ways consistent with current research. Additional critical data about populations within, across, and among game units including age, sex, and elements of health and parturition for harvested cougars are also provided by the conservation officers and other NMDGF staff. The NMDGF has recently initiated additional statistical analyses identifying more advanced bayesian inferences for constructing the best models for understanding data, adjusted for time. All of these data sources inform and support the new Integrated Population Model recently adopted by the NMDGF, potentially allowing data integration across up to 20 years, and will also be helpful in clarifying the impact of climate change over time.^[1] More research and collaborations with university programs would of course be useful, but the combination of methods and analyses currently used appears to be consistent with current science and provides considerable high quality information and breadth useful for game management.

Over the past five years, given the state's estimated total population of 3494 independent cougars, the number of tags available has averaged 620; the number harvested has averaged 338 (10% per annum of a population of 3494). The average annual number of female tags available has been 174; the average actual female harvest has been 88 (26% of the harvest but only 3% of the indicated 3494 total state population). Given these numbers, current harvests and the minor changes prop do not seem excessive.

References

Organ, J. F., V. Geist, S. P. Mahoney, S. Williams, P. R. Krausman, G. R. Batcheller, T. A. Decker, R. Carmichael, P. Nanjappa, R. Regan, et al. 2012. The North American Model of Wildlife Conservation. The Wildlife Society Technical Review 12-04. The Wildlife Society, Bethesda, Maryland, USA.

NMDGF, 2023: Bear and Cougar Rule – Proposed Changes

Summary. https://www.wildlife.state.nm.us/download/commission/rule-development/BEAR-AND-COUGAR-RULE-PROPOSED-CHANGES-SUMMARY_2nEd_08032023.pdf

NMDGF: Research Summary 2018-2021 Estimating Cougar Density and Population Size in New Mexico using Spatial Mark-Resight Models. <https://www.wildlife.state.nm.us/download/publications/wildlife/Cougar-SMR-Research-Summary-2018-2021.pdf>

Considerable other data and information are available through the NMDGF website.

Prepared by Dr. Mark Mattaini
Northwest Regional Representative
New Mexico Backcountry Hunters and Anglers

^[1] In an example provided by Mr. Forman indicating where collecting data over time can be important, many have worried that recent severe forest fires would dramatically reduce the presence of wildlife in those regions. Over a period of just one or two years however, many types of wildlife have returned due to the extremely rich growth that is emerging in those areas.

Mark Mattaini, DSW
(mattaini@uic.edu)



From: [Kristen Holtvoigt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Rule
Date: Monday, October 16, 2023 1:49:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good Afternoon,

I am writing to express my disagreement with the proposed rule change increasing the permissible hunting allotment for mountain lions. Please do not increase this amount—it proposes that 16% of the mountain lion population could rightfully be killed. Please, do not increase this number.

Best,

Kristen Holtvoigt
Resident of Las Vegas, NM

From: [Frank Vigil](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Rules
Date: Thursday, October 19, 2023 11:49:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to state my support of the Game & Fish Department's plan to increase cougar harvest rates. In the last few years, I have seen the deer herds (also elk, but mostly deer) plummet in several game management units. It is a known fact that one cougar will kill one deer PER WEEK. Increasing the number of cougars harvested will undoubtedly have an effect on the overall populations in the State of New Mexico. I know there are many so-called "environmentalists" and anti-hunters pushing to lower cougar harvest. I consider myself an environmentalist, as do most hunters. We care about the environment and the wildlife in this state and believe in utilizing science and following the recommendations of educated and trained biologists, who are in the best position to make this type of decisions! The last thing we need are knee-jerk reactions because someone thinks the cougars are cute little kittens. They are not. They are efficient killing machines and are doing a great deal of damage to our game herds.

Thank you for the opportunity to comment. I hope you will do the right thing.

Frank Vigil

3532 Singapore Circle NE

Albuquerque, NM 87111

505-323-1494

From: [CLAUDIA FISHER](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar Trapping
Date: Friday, July 7, 2023 6:19:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from [Mail](#) I successfully trapped Cougars when we had a legal season and there were no problems with the legal traps that I used. I see no reason why we are not allowed to legally use this tool to take Cougars, they contributed to my winter meat and the challenge of pursuing a very challenging animal. I consistently see evidence of Cougars, on cameras and toilet locations. I believe the population is increasing and I can release any Cougar that I would be legally and ethically required to do.

Sincerely

Tom Fisher

From: [David Hankins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar an bear
Date: Wednesday, August 16, 2023 11:57:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

There doesn't need to be a hunting season on either of these predators as they're a vital part of our state's ecosystem!

[Sent from Yahoo Mail on Android](#)

From: [Ed Ludwig](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear
Date: Thursday, August 17, 2023 12:51:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to take these people and move them to Colorado, California
Are these the same people that made the rules about the black power scope?

Sent from my iPad

From: [Jon Gutierrez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear Harvests
Date: Monday, August 21, 2023 7:44:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I think the increases are important to help maintain deer and small game populations
I feel like cougars are very hard on the deer population and have noticed decreases in deer in the last several years
Thank you

Sent from my iPhone

From: [Chaz Sartin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear Hunting
Date: Wednesday, August 16, 2023 11:24:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Cougar and Bear hunting are needed to have healthy big game populations! Cougars are everywhere in southeast NM! Legal hunts are the only way to manage wildlife populations!

From: [Candi Ausman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear Hunting
Date: Friday, July 14, 2023 2:19:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Thank you,
Candi Ausman
crausman@yahoo.com

From: [Bud Keenom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear hunting
Date: Wednesday, August 16, 2023 1:03:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As an avid hunter and outdoorsman I know and understand population control. And in order to maintain comfortable bear and lion populations the use of dogs will always be needed to meet and maintain quotas. Even the most experienced hunters would have a hard time harvesting mature animals without the use of hounds. So please keep the use of hounds available and possibly consider baiting for bear. Thanks for your time. Sincerely Clarence Keenom.

Sent from my iPhone

From: rjohnston@tsiaz.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear hunting
Date: Wednesday, August 16, 2023 9:31:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm writing to give my support to the existing rules and regulations for cougar and Bear hunting. Please do not give in to the Anti hunters.

Thank you,
Robert Johnston

Get [Outlook for Android](#)

From: gilly1949@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and Bear hunting in New Mexico
Date: Thursday, August 17, 2023 7:22:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I can not agree to stopping or drastically limiting Cougar and Bear hunting in New Mexico.

The rural population of our state depends on the production of domesticated farm animals. Cattle, Sheep and Horses and others. They are the back bone of the nonurban population of our state.

These family businesses are also the stewards of our private lands. The loss of livestock due to predation is very financially burdensome. Additionally without the funds they derive from allowing hunting on their lands their very existence would be in jeopardy.

Please put your common sense on and think this thought without being influenced by the overly emotional pleadings of a very minor segment of people, most of whom are not even residents of our state.

M. Gillihan

Sportsman and voter

From: [Seth Heath](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear Hunting
Date: Sunday, October 15, 2023 3:54:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I support a science-based wildlife management strategy. Not a strategy based on city dwellers' emotional attachment to charismatic megafauna.

I just returned from hunting for elk in 6A outside Cuba, NM, and AFTER the unit closed to hunting saw 3 bears. It's obvious to me that sufficient resources exist to support a viable population.

Some people want to scream and huff about predator hunting when they have zero experience with it. They rely on emotions and feelings instead of sound science and a realistic understanding of effective ways to manage predators.

The real agenda is to get rid of hunting; period. The approach is to incrementally erode hunters' opportunities until we no longer get to experience the outdoors and engage in an activity tied to our human origins.

Please allow the responsible hunting of bears and cougars by hunters and hounds.

Seth Heath
Tijeras, NM.

From: [Bill Foote](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear hunting regulations
Date: Tuesday, August 8, 2023 1:09:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi NM Game and Fish

As a NM citizen who has held an NM fish and game license for most of my life, I wanted to urge you not to increase the hunting limit for bears and cougars. There are many reasons for maintaining strict and low bag limits on these predators. First, they fill an essential niche in the NM ecosystem, and increasing the number taken by hunters would limit their role as cullers of deer and other species. Second, these creatures have been under great stress by global warming and changes in habitat wrought by expansion of humans into what used to be their homes. Third, the chance to encounter both of these majestic creatures is a joy I have had on many occasions hiking around mountains in our beautiful state. Those opportunities are a draw for tourists, who bring relatively low carbon income into our state.

Thank you for your consideration.

Bill Foote

From: [Charles Marsh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear hunting should maintained
Date: Wednesday, August 16, 2023 2:02:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am strongly in favor of continued responsible Bear and Cougar hunting, with and without dogs, in New Mexico.

Thank you,

Charles Marsh
Marsh Ranch

Sent from my iPhone

From: [Billie Norman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear hunting
Date: Friday, August 18, 2023 5:25:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I encourage you to continue to support hunting as a successful and logical method of game conservation. Please do NOT be influenced by emotional rhetoric from anti hunting groups without any fact-based evidence.

Sent via the Samsung Galaxy A32 5G, an AT&T 5G smartphone
Get [Outlook for Android](#)

From: [Patrick Gjorven](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear hunting
Date: Wednesday, August 16, 2023 11:47:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear recipient,

For hunting bears and cougars, the only change I would make is to reduce the number of tags per application for hunting cougars is one tag given instead of two tags.

Do not take away people's ability to hunt in New Mexico!

Sincerely,

Patrick Gjorven
Albuquerque, New Mexico

From: [Mike Hostetler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear hunting
Date: Monday, August 21, 2023 5:54:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am an avid deer and upland game hunter. I am concerned that a very small group of people will take bear and cougar hunting rules away from NMDGF. I am available to comment in person to legislators if this is helpful to you.

Sincerely,

Mike Hostetler

Albuquerque

From: [Jan Niclas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar and bear hunts
Date: Thursday, August 17, 2023 7:20:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please vote in favor of continued hunting of predators including the cougars and bears. The state of Washington adopted a program to stop hunting cougars and bears. Within a few short years, the cats had lost all fear of man. Cougars attacked runners and hikers. I do not want to see people needlessly maimed and crippled.

Thank you for your support of hunting.

Have a great day!

Jan

--

*Jan Niclas
Niclas Designs, LLC
10 Mills Lane NE
Los Lunas, New Mexico 87031
505.803.2281*

From: [Gail Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar hunting
Date: Friday, October 20, 2023 2:11:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Just because we humans are at the top of the food chain, doesn't mean we are gods. Hunting these beautiful animals is unconscionable. Nature takes care of a species if there are too many...we do not need to cull the predators.

These are my thoughts...for whatever they are worth.

Gail Smith

Sent from my iPad

From: [Kcisna](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar hunting
Date: Thursday, August 17, 2023 7:37:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hound hunting for bears and mountain lions in New Mexico is crucial for population management and the overall well-being of the state. By carefully regulating these populations, we can maintain a healthy balance in the ecosystem. Banning hound hunting could lead to overpopulation, which can have detrimental effects on both wildlife and the state of New Mexico.

Hound hunting allows for selective harvesting, targeting specific bears and mountain lions that may pose a threat to human safety or livestock. This helps prevent conflicts and ensures the safety of communities. Additionally, hound hunting provides valuable data for wildlife management, allowing researchers to gather information about population size, health, and behavior. This data is essential for making informed decisions and implementing effective conservation strategies.

If hound hunting were banned, the bear and mountain lion populations could increase unchecked, leading to overpopulation. This would result in a strain on their natural food sources and potential damage to the ecosystem. Overpopulation can also increase the risk of human-wildlife conflicts, as bears and mountain lions may encroach on human settlements in search of food. This could impact the safety and well-being of both residents and animals.

In summary, hound hunting plays a crucial role in population management for bears and mountain lions in New Mexico. It helps maintain a balanced ecosystem, prevents conflicts, and provides valuable data for conservation efforts. Banning hound hunting could lead to overpopulation and negative consequences for both wildlife and the state. Responsible and regulated hunting practices are necessary to ensure the long-term sustainability of these populations and the overall health of New Mexico's natural environment.

Yours in sport

Kris Cisna

From: [Marta Handey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar kills
Date: Wednesday, October 11, 2023 11:27:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game & Fish:

We are very much against higher kill rates for cougars. This is merely trophy hunting, with no good purpose, other than to increase fees for New Mexico Game & Fish.

Sincerely,
Jack and Marta Handey

From: [Rudy Garrison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar management
Date: Friday, August 18, 2023 7:59:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider retaining hound hunting of cougars as a best method of cougar management. Whether sport hunting or depredation, a specific cougar can be targeted with use of hounds unlike indiscriminately shooting one across a canyon while elk or deer hunting

Sent from my iPhone

From: [Perry Peckham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar quota reduction
Date: Friday, October 6, 2023 3:54:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The science you are relying on to justify that high a harvest quota seems to be tailored to fit that end.

Please make the top priority to kill the absolute minimum (ideally 0) to best serve the interests of our wildlife.

Those are the priorities we New Mexicans put you there to work towards, not to push expensive hunting permits for Texans

Thank you,
Perry Peckham

From: [Pat Galligan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar rule changes
Date: Sunday, October 15, 2023 7:51:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to express my concerns about increasing the number of cougar permits allocated per year. This new number represents too much of the percentage of the current population to be sustainable. I live on a ranch in northern NM and we are trying increase and enhance all forms of wildlife and therefore OPPOSE the new proposed rule changes. Thank you for you consideration of this request. Patrick Galligan, Montezuma, NM.
Sent from my iPad

From: [J.R. Burge](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar rules
Date: Sunday, October 15, 2023 8:57:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The department needs to do MORE to manage mountain lion numbers. I support the current allocation of tags or an increase. Cougars are in no danger whatsoever from being extirpated due to tag allocations, or any other factor, for that matter.

John Burge

Sent from my iPhone

From: [dennis.estrada](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar rules
Date: Sunday, October 15, 2023 10:38:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In the shortest term I can express DO NOT increase permits for cougars. You should not put these animals at risk because some rich person from out of state wants a rug or mount in his home. You already do this with our deer and elk populations. The NM Game And Fish is funded by licence sales in large part when does this stop? The folks that have the most to gain are ranchers and guides. In the bootheel we have the Diamond A ranch they proclaim themselves a nature conservancy yet they make many thousands from these permits. This is not right don't do it.

From: [Mike Dame](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar, bear rules
Date: Friday, August 18, 2023 2:59:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This is unconstitutional. Allowing for people that don't hunt, or even understand how much of an impact of not having game management like there has been. This will allow more bears and cougars to get into towns and neighborhoods and overrun populations of these animals.
We need to fight for our rights.

You have my vote to protect our rights!

Michael Dame

Sent from my iPhone

From: [Leah](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar
Date: Sunday, October 15, 2023 11:48:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I feel there should be greater protection for NM cougars. The number of permits should be more limited. A healthy population will keep elk and deer in check. Ranchers complain about too many elk. If we have more cougars the problem will be fixed. Please protect the cougars!

From: [Nathen Thomas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar/Bear position
Date: Monday, October 16, 2023 8:39:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Game and Fish Council,

I am writing to express my support for opening the harvest numbers for both Cougar and Bear, here in the state of New Mexico, especially Cougar.

In spending time in the forest, I see Cougar (*Puma concolor*) sign far more readily than in the past 18 years. This apex predator needs to be managed from a Scientific/Biological basis, not an emotional one. While I do not own hounds, I understand how hounds are the best and most humane way to harvest this elusive predator. Most importantly, hound hunting allows select age harvest, and the select harvest of excess Male cats, with a side bonus of training a predator to be wary of humans.

I support Mr. Winslow (I hope all of you do too) in his years-long study of the Black Bear (*Ursus americanus*) population, showing that this population too, is larger than previously believed. Empirical data should be the basis of harvest--not anthropomorphised emotion. And I would encourage the Council of G&F to open, select spring bear hunts. If done properly and at the appropriate time, these spring hunts could be a great management tool for slowing down elk calf and mule deer fawn mortality.

Sincerely and with regard,

Nathen Thomas
Santa Fe, New Mexico.

From: [Clayton sheen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar/bear hunt
Date: Friday, August 18, 2023 12:07:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Kind regards,
Clay Sheen

From: [Ruth Connery](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar/bear numbers
Date: Tuesday, October 24, 2023 6:23:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to ask that the department DOES NOT increase the number of cougars or any other wildlife species to be hunted within our state.

It seems if there was an overabundance of these animals that we would see them. The wildlife in New Mexico belongs to all of us. I believe that ranchers are compensated for any livestock killed as well as given funds to erect fences etc.

I don't understand why we need to continue to deplete the numbers of wildlife we have in our state.

We need to work harder to protect our landscapes, our environment and our wildlife so that we and future generations can enjoy them.

Sincerely,

Ruth Connery
505-294-4446

From: [Titan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars
Date: Sunday, October 15, 2023 8:01:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello Department,

As a resident of NM please keep hunting of cougars open and at the same limits as today for the future. Please do not limit or restrict hunting of mountain lions.

As a resident of Catron County we need to ensure adequate levels to protect the elk herd and diminishing deer heard. Let alone the threat to cattle and horses.

Thank you,
Ed Saucerman
The Titan Group PI
PI #26242
626.890.9148

Sent via iPhone 14 ProMax

From: [January Harper](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars and Bears
Date: Friday, August 25, 2023 8:59:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please vote no to kill Bears and Cougars. They are no different than you and I. They want food, water and safe place for them and their children. Bears and Cougars should not be killed for trying to survive due to changes in conditions. They are trying to find food and water and due to extreme heat, floods and loss of habitats. Bears and Cougars don't want to harm us or come into populated areas, but due to these extreme conditions they do looking for food. They should not be punished for trying to survive.

Build Wildlife bridges.

Thanks,

January Harper
505-867-6135 home
Camino del Oso
Placitas NM

From: [Betsy Holdsworth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars and bears hunting quota
Date: Thursday, August 24, 2023 10:33:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the Commission:

Congratulations to our great state of New Mexico to make the time and effort to protect and understand our wildlife populations. My husband and I live in Gila Hot Springs, New Mexico where we witness the effects and practice of the open season hunting on bears and cougars.

Now that this Wilderness area is no longer designated for livestock and respect for the native predators and their important place in the ecosystem is understood, it is certainly a welcome and important time to better understand how to protect these animals.

The positive of hunting seems to be as humans we rarely see bears and cougars. They are wary of humans and don't come to camp or to our homes as they do in places like California. But the rise in senseless game trophy hunting has increased. Hunters are less skilled and wounded animals and killing of female bears has given rise to orphaned bears. They do come starving near camp and our ranch. Hunters with poor marksmanship skills wound and don't differentiate the sex and age of their prey.

Hunters get a thrill from hunting with their dogs, and in moderation there is much skill in this partnership. Yet the advantage they maintain is overwhelming. I have witnessed one local report 10 lions in a season. The claim is cougars are decimating the elk population. There is not a clear understanding of this idea and seems more a convenient excuse to allow uncontrolled hunting than an understood fact.

We no longer live in a society that is at the mercy of large game like bear and cougars. Humans now are responsible for their protection to maintain healthy populations. Hunters always are a loud voice at the table in these discussions, but I think they maintain a denial to hearing the complex truth of their role in reducing these animals to the point of extinction.

The last Gila grizzly was killed near our ranch some decades ago. Once shot and never again seen in these parts, then there came nostalgia and regret. We are now in a position to use technology, biologists and good planning to ensure we are not heading to a point in time of the last bear and cougar in the Gila.

I hope for the best outcome for these voiceless members of our wilderness in the outcome of this discussion.

Thank you for your time and your forward thinking efforts today.

Sincerely,

Betsy & Sam Holdsworth

102 East Fork Rd.

Mimbres, New Mexico 88049

From: [Anna Br-An](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars and bears, New Mexico
Date: Tuesday, August 8, 2023 11:04:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sir,

To whom it concerns:

Please change the policies of the NM Department of Game and Fish and protect cougar and Black bear populations in your state.

Given the uncertainty of habitat and population estimates of both cougars and bears, the quotas for both should be reduced, NOT raised.

Second, both animals are now known to be extremely important to the integrity of our ecosystems, and each species can self-regulate their own numbers.

Furthermore, New Mexico has recently experienced severe drought, extreme heat, and wildfires, all of which will almost certainly continue and intensify into the coming years making survival very difficult.

Our climate trends weigh in favor of lowering kill quotas, not raising them!

If we want to continue to see cougars and bears roam our mountains and canyons then it is imperative to protect cougars and bears, instead of hunting, trapping, wounding and killing them.

Sincerely:

Anna Brewer,
Albuquerque,
NM

From: amaziah.jul15@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars and bears
Date: Thursday, August 24, 2023 6:44:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon,

I am writing in regards to rule changes for cougars and bears. In unit 2, the four corners area and many other areas of the state we are seeing a sharp increase in lion activity and growth. Just a few weeks ago a lion was trapped and relocated in Rio Rancho. I'm asking that the board bring back lion trapping on private land to manage the population and be able to fill the quota. With changing weather cycles and less moisture lion and bear encounters are increasing in urban areas, houndsman are unable to run dogs and be successful. Bear management and rules should stay the same. Thank you for your time.

From: [LaDonna Williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars are not for sale
Date: Sunday, October 15, 2023 8:45:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I strongly oppose selling our Cougars to trophy hunters. They are being killed simply for the thrill of killing them. I thought the purpose of NMDGF was to support and protect our wildlife in a manner that perpetuates the species, not destroy it for amusement. These animals are already struggling to survive in a harsh environment.

Please cancel any plans to extend Cougar hunting. They need our help to maintain a sustainable population.

LaDonna Williams

Sent from my iPhone

From: [mjhaynes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars
Date: Sunday, October 15, 2023 8:56:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

**STOP THE HUNTING OF A KEYSTONE, MAJESTIC, INCREDIBLE ANIMALS
COUGARS AND ALL WILDLIFE HAVE A RIGHT TO EXIST.**

Sent from my Galaxy

From: dkeithhiggins@icloud.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars
Date: Friday, October 6, 2023 1:00:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Yes, stop the hunting altogether of any and all cougars in New Mexico forever starting now, today and in the future. We don't need to shoot, trap or otherwise eliminate any wildlife we do a sufficient enough job of that with "progress" by building, burning and deforesting their environment with no consideration of impact on all species of wildlife. Leave them alone. Yes we've destroyed the balance of nature over the last 200 yrs. just let it be. There's no threat to humans of any wildlife let alone cougars. Stop the hunting!!!!

From: [dstark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars, Bears and the animals in general
Date: Thursday, October 19, 2023 10:50:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern;

While hunting remains a popular activity in our state, increasing the number of animals that may be hunted and killed is an abomination.

We would be taking much better care of the land and the beauty of our state by rather restricting the number of animals that can be hunted. Every species of animal serves a purpose in Nature.

Please do not increase the number of bears and cougars that can be hunted and killed. The present numbers are more than enough already.

Sincerely,
Debra Stark
Tesuque

stark
agbartholomew@icloud.com
www.eulogytheextinctionproject.com

From: [Robert Prickett](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: huskerbobb@q.com
Subject: [EXTERNAL] Cougars.
Date: Monday, October 16, 2023 7:40:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Folks, I cannot believe you are planning to kill more of these majestic animals. Please do not. after all, they were living here before us.

Thank you.

Robert G. Prickett

From: dkeithhiggins@icloud.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars
Date: Tuesday, October 24, 2023 3:19:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Yes, stop the hunting altogether of any and all cougars in New Mexico forever starting now, today and in the future. We don't need to shoot, trap or otherwise eliminate any wildlife we do a sufficient enough job of that with "progress" by building, burning and deforesting their environment with no consideration of impact on all species of wildlife. Leave them alone. Yes we've destroyed the balance of nature over the last 200 yrs. just let it be. There's no threat to humans of any wildlife let alone cougars. Stop the hunting!!!!

From: [michael A hendrick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougars: Another New Mexico Natural Wonder
Date: Saturday, October 7, 2023 7:00:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Game and Fish has a difficult job, and I appreciate all that you do. However, I oppose extending hunting limits on cougars in New Mexico which was the subject of Richard Brown's *My View* column in the Friday, October 6th 2023 *Santa Fe New Mexican*. I've lived in Illinois, New York, Virginia, Georgia, and now New Mexico which unlike them is one of the few unspoiled places left in America. People visit, vacation, and in my case choose to live here because of that. It is not sport to use high tech gear to shoot a cougar out of a tree as is usually the outcome. Not as bad as coyote killing contests resulting in mounds of rotting animals or seeing who can shoot the most prairie dogs in an afternoon I suppose. Still not good. My father's rule was don't hunt it or fish it unless you plan to eat it. That makes sense. Killing an incredible animal like a mountain lion for bragging rights does not. Yes, go into the mountains, do the hard work of looking for sign and tracking, find your quarry, but take its picture not its life.

Michael Hendrick
Santa Fe, New Mexico

From: [Rusty Frost](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Cougar hunting
Date: Monday, October 16, 2023 7:19:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

As an active outdoorsman please do not cut the number of lion tags you are selling. Me personally think there should be more sold. Thank you Rusty Frost.

Sent from my Verizon, Samsung Galaxy smartphone

From: [Charles Karaian](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Culling Beard
Date: Sunday, July 30, 2023 12:46:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings. I am against culling of New Mexico black bears and cougars. If an individual animals are a hazard to human through its behavior then euthanasia would be approach. Killing animals using a broad based approach is wrong.

Thank you,

Charles Karaian
Albuquerque

Charles Karaian via iPad

From: [Elizabeth Ziers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Culling
Date: Sunday, July 30, 2023 1:19:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The wildlife

From: [Nick Kufalk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] DEFEND SCIENCE-BASED BEAR & COUGAR MANAGEMENT
Date: Friday, August 18, 2023 11:56:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Nick Kufalk

From: tonilwood@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] DGF-Bear-Cougar Rules proposed
Date: Saturday, August 5, 2023 1:10:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I disagree with the proposed NM Game & Fish authorization of increasing hunting limits allowing the killing of more of New Mexico's bear & cougars.

This is an unconscionable decision to promote hunting of these two species when:

- * there is lack of actual population data of black bears & cougars in New Mexico

- * both species self regulate population growth of bear & cougar secondary to food, water, & habitat

- * former is naturally intensified by the drought conditions with in our & bordering states

- * NM Game & Fish is to work for, conserve, and respect the wildlife of NM, not foster the inappropriate recreational hunting of these species for monetary gain

As a New Mexican who has lived here since the 1960's I have witnessed the dwindling of the wildlife in our state. I strongly encourage NM Game & Fish to be honorable, fulfill the mission it was established for, "To conserve, regulate, propagate and protect the wildlife and fish within the state of New Mexico..." & work with groups such as Animal Protection New Mexico, Sandia Mountain Bear Watch, etc. to address the needs of these bears and cougars [and other species] as they struggle to co-habitate in NM with ever encroaching humans.

Sincerely,

Toni Wood

505-280-4483

From: [clint.king](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] DGF-Bear-Cougar-Rules
Date: Friday, August 11, 2023 9:55:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I specifically dislike Zone closures happening before the actual female quota is reached. Multiple years I have had to switch areas due to closures, that the female quota was close within 10+ Sows left on the quota yet the Zone gets closed anyway.

For Cougar, most of us never see them without the aid of dogs. I think not enough of these apex predators are removed and the elk, deer, and the rest end up paying for it.

I really don't see the harm in baiting these animals if there are quotas in place to regulate the amount that are taken. Or why did we just ban trapping from public land? Trappers could solve a lot of issues if regulated properly. I believe that is why the federal government has had trappers employed for a long time.

From: [Anita Pedersen Warren](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] DO NOT KILL COUGARS!!!!
Date: Friday, October 6, 2023 10:54:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Let them coexist with us. They are necessary to keep nature in balance.

Anita Warren

Santa Fe

From: [Paul Hicks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Department of Game and Fish Bear and Cougar Rules
Date: Wednesday, August 16, 2023 11:31:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a cattle producer and hunter, I strongly support continued bear and cougar hunting in NM based on the scientific management proposal submitted by game department biologists.

Paul Hicks
817-917-2523
phicks@swbell.net

From: [Miguel Mory](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disagree with proposed extension of hunting limits
Date: Tuesday, October 17, 2023 3:54:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I disagree with your proposed extension of hunting limits for cougars. Also there should be guidelines as to how to actual hunt these animals. The lack of regulations about trophy slaughter is akin to shooting fish in a barrel. I don't believe that it is ethical to tree a mountain lion with sophisticated gadgets, dogs, etc. until the "hunter" arrives and shoots the defenseless animal. This is not sport. This is slaughter. If ranchers complain about the loss of their herd, they should check with African 3rd World Countries that have solved that problem to everyone's satisfaction. The cougars were here first and humans are impinging in their territory.

Please consider more humane and ethical solutions to this situation.

Sincerely,

Miguel Mory
Rio Rancho, NM

From: [Forrest Shrader](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disagree
Date: Friday, October 20, 2023 7:15:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

All predators should be controlled as much as possible. The deer population loss will never regain without controlling the predators.

From: [Shannon McKinney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disband Zone 7
Date: Wednesday, August 16, 2023 2:10:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Department of Game and Fish,

As a resident of New Mexico, I understand the importance of Hound Hunting Lions and Bears in New Mexico. It is vital in helping to control populations, including going to the limit on female sub-limit. Hound Hunting provides an opportunity to harvest meat from both lions and bears, with a continued opportunity to purchase tags for the animals. The system that New Mexico has established to keep these things in place has been working wonderfully. We don't need Elk and Deer tags to go towards harvesting Lions and Bears, they need to be purchased separately.

Thank you so much for all you do,

Shannon McKinney
Veterinary Technician
Patient Care Coordinator
Mesa Grande Animal Clinic
(505)550-6484

From: [Kara Eaton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Wednesday, August 23, 2023 11:47:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Kara Eaton

From: [Robert Palma](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Sunday, August 20, 2023 7:30:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Robert Palma

From: [Noah Curry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Sunday, August 20, 2023 10:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Also the banning of trapping on public land already killed much western culture. This would be further cultural death to the Wild West.

Sincerely,
Noah Curry

From: [Matthew McElheny](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Wednesday, August 23, 2023 11:46:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Matthew McElheny

From: [Justin Miles](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Wednesday, August 23, 2023 9:30:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Justin Miles

From: [Jacob Cheek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Monday, August 21, 2023 1:25:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Jacob Cheek

From: [Michael Vlahadamis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Monday, August 21, 2023 11:25:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Michael Vlahadamis

From: [David Collins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Monday, August 21, 2023 10:49:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
David Collins

From: [Mike Street](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Sunday, August 20, 2023 9:35:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Mike Street

From: [Jeff Proctor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Sunday, August 20, 2023 6:24:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Jeff Proctor

From: [James Bane](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Sunday, August 20, 2023 11:09:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
James Bane

From: [Timothy Keate](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Disregarding Popularity, Focusing on Responsibility
Date: Wednesday, August 23, 2023 8:39:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Timothy Keate

From: pamneely@everyactioncustom.com on behalf of [Pamella Neely](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do NOT increase the quotas - Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:26:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I vehemently oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Extending hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars. No. Just NO.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety. I'm a hiker. I hear gun shots outside of hunting season. If you're going to do something, start enforcing the rules.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) REDUCING the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you. I appreciate the work you do. But we can't hunt these creatures any harder. Their habitats and food sources are becoming more and more limited. We lost a historic amount of land to fires last year. The populations need time to rebound. Increasing quotas - especially now - is not acceptable.

Sincerely,
Pamella Neely
Santa Fe, NM 87508
pamneely@gmail.com

From: [Blake Byrum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do Not Ban Hounds Bear or Cougar Hunting
Date: Thursday, August 17, 2023 1:04:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the banning of hunting with hounds, bear hunting, and cougar hunting. Hounds are an essential tool in the management of both of these predator. As well as the predators need managed just the same as other game species. Please do not try and compromise with the anti hunting groups. Please keep hunting with hounds, bear hunting, cougar hunting, and the hunting of those species with hounds legal.

Thank You,
Blake Byrum

Sent from my iPhone

From: [Blake Gardiner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do not abolish hound hunting..
Date: Thursday, August 17, 2023 11:55:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise

[Sent from Yahoo Mail on Android](#)

From: [Gideon McClure](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do not increase hunting quotas for bears or cougars!
Date: Saturday, July 15, 2023 6:24:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

1) Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

2) Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.

3) Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

4) The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

5) NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

6) Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in each area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the public also show opposition to killing bears and cougars using these methods for 'trophies and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Respectfully,

Gideon McClure

From: [molly.mcgrath](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do not kill bears or cougars
Date: Thursday, August 24, 2023 5:01:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Do not hunt bears or cougars
Thank you
Molly McGrath
Albuquerque New Mexico

Sent from my iPad

From: [Cindy Beaver](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do not raise kill quotas!!!
Date: Saturday, July 15, 2023 11:15:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Sent from my iPhone

From: [Nanci Cairns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do not raise limits for bear and cougar hunting in NM
Date: Sunday, July 30, 2023 2:48:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Please do not raise limits for bear and cougar hunting in New Mexico. Our diverse and numerous wildlife is what makes New Mexico great!

There are no statistics that show increasing hunting on these species will be beneficial to the ecosystem.

Thank you,
Nanci Cairns

From: [Nancy Mory](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Do not sell out mountain lions
Date: Tuesday, October 17, 2023 3:28:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a citizen of NM I respectfully request that our mountain lions be protected. The plan proposed does not protect the balance of nature. We need the mountain lions protected. Please reconsider the proposed plan, it is cruel and unnecessary.

Sincerely,
Nancy Mory

From: [joseph](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't Outlaw Our Hunting Tradition
Date: Wednesday, August 16, 2023 1:29:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Unlike some of the folks who have recently moved to NM, I have been in the state for my entire life, just like my Hispanic and Native American ancestors. Hunting is a way of life for many of us. It's how we connect with our heritage, our family, and the world around us. Please do not outlaw the hunting of bear or mountain lion. If you do, the pro-hunting voters will mobilize to remove you from your position at the next voting opportunity!

Respectfully,

Joe Sandoval

From: [Gary Kowalski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't Raise Hunting Limits
Date: Wednesday, July 19, 2023 4:00:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear DGF,

As a New Mexico taxpayer, citizen and voter I strongly oppose the idea of extending the hunting season and raising kill quotas for bears and cougars.

These populations self-regulate and are already stressed by human encroachment into the urban wildland interface.

A recent report from the Weizman Institute titled ["The Global Biomass of Wild Mammals"](#) published in the Proceedings of the National Academy of Science, researchers found that beef cattle and other livestock cultivated for meat and dairy outweigh the sum total of all non-domestic mammals (including not just bears and cougars but whales, elephants, wildebeest, etc.) by a factor of thirty-fold.

Clearly, nature's scales are out of balance. We have an oversupply of people, not an excessive number of wild animals.

Thank you for voting to reduce hunting limits of these creatures.

Reverend Gary Kowalski
60 Camino Quien Sabe
Santa Fe, NM 87505

From: [TERESA C. TRUJILLO](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't Raise Limits
Date: Tuesday, July 18, 2023 10:11:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Enough said with the subject. Wildlife is already threatened by humans in all respects including the spread of urbanization, climate change, toxicity in the environment and hunting. In my own backyard, I have noted the absence of lizards, bees, and horned toads that were abundant when I bought my house in the '90's. We must all do our part to preserve what little is left of wildlife. Let New Mexico set the example for other states. PLEASE DON'T RAISE THE LIMITS FOR BEARS AND COUGARS. They have had to co-exist with us to survive; it is our turn to learn to co-exist with nature.

From: [David Thompson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't be afraid to stand up for Bear and Cougar hunting!
Date: Wednesday, August 16, 2023 3:23:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [Jacob Gurule](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't give in to the anti-hunters
Date: Wednesday, August 16, 2023 5:32:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to use our game biologist's recommendations for bear and cougar hunting in New Mexico. Anti-hunters want to shut down all hunting, don't let them speak for us who don't necessarily hunt bears and cougars but still want them managed with intelligence, not emotion.

Jacob Gurule
505-440-6197



Virus-free. www.avast.com

From: [Dana Skaar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't kill cougars and bears
Date: Sunday, July 30, 2023 10:27:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir or Madame,

I strongly oppose increasing the current limit regarding the authorized killing of bears and cougars. In fact, I question whether the current authorized limit should be reduced if not eliminated entirely.

Respectfully,

Dana Skaar

From: [Christopher Allison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't Waste Our Game
Date: Thursday, August 24, 2023 6:49:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Christopher Allison

From: [Lucas Babler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't ban hunting in nm
Date: Tuesday, August 15, 2023 8:25:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

Don't ban bear and lion hunting in nm it will have terrible effects

From: [Caden Gingerich](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't stop keep doing want you are doing
Date: Thursday, August 17, 2023 9:44:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Don't let the hater stop you keep doing what you are doing us that hunt do way more for the animals then them that don't

From: [killer bro](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Don't take our hunting rights
Date: Thursday, August 17, 2023 9:52:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We expect the current bear and cougar rule making period to generate lots interest from the public. For this reason, we encourage all of our members and supporters to submit a comment and/or attend the next game commission meeting. To enter your comments into the official rule-making record, please email them to: DGF-BearCougar-Rules@state.nm.us The next state game commission meeting is Friday, August 25 in Raton (meeting location TBA - <https://www.wildlife.state.nm.us/commission/meeting-agendas/>) starting at 9 am. Attend in-person or virtually and sign-up to provide comments on the proposed bear and cougar rule. Read the Proposed Rule Here: https://www.wildlife.state.nm.us/download/commission/rule-development/BEAR-AND-COUGAR-RULE-PROPOSED-CHANGES-SUMMARY_2nEd_08032023.pdf Comments on the proposed changes can be provided by mail: New Mexico Department of Game and Fish, Attn: Bear and Cougar Rule Development, 1 Wildlife Way, Santa Fe, NM 87507; by email, DGF-Bear-Cougar-Rules@state.nm.us, or in person at one of the meetings listed. Here's a template to copy and paste to your email in support of Bear/Cougar hunting & the use of Hounds to NMDGF. Thank you for your continued support. I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Richard Eustace](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Thursday, August 24, 2023 12:13:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Richard Eustace

From: [Mikael Lindvall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 11:35:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Mikael Lindvall

From: [Mike Cope](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 11:21:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Mike Cope

From: [Jay Worm](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 8:21:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Jay Worm

From: [Lewis Chaloner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 7:12:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Lewis Chaloner

From: [Alex Beck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 7:08:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Alex Beck

From: [Philip West](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Saturday, August 19, 2023 10:34:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Philip West

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Saturday, August 19, 2023 9:49:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
John C

From: [Brian George](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 12:03:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It is imperative that wildlife management for Big Game, Small Game, Non-Game species be managed on scientific principles and not raw emotion as espoused by typical big city urbanites that are in love with the notion of wilderness and the balance of nature but yet know little to nothing about any of these issues, much less actually getting out and doing something to improve the environment. I have never seen them on a Big Horn Sheep Water Hole project, a fence modification for Pronghorn Antelope or an erosion project to protect a trout streams, and so on, but yet they profess to know what is needed and when. These are the same people that want to build solar & wind farms on winter range for mule deer and fawning habitat for antelope. Typically the only thing that is amazing about these folks is how dumb they really are and I strongly urge you to not let them destroy the North American Model that has worked so well in all 50 states in the last 100 years.

Please keep Bear & Lion management based on biological data and not emotions. Your time and consideration in this matter is greatly appreciated!

Sincerely,
Brian George

From: [Braden Tethal](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Wednesday, August 23, 2023 1:14:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Braden Tethal

From: [Luke Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Tuesday, August 22, 2023 11:22:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Luke Smith

From: [Nels Arneson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 10:23:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The law is clear in its directive: New Mexico's wildlife must be managed scientifically to ensure both recreation and sustenance for its people. The proposed changes to bear and cougar management are in line with this directive. It's not merely a matter of tradition but of legal and ethical responsibility. Cat and bear hunts must continue!

Sincerely,
Nels Arneson

From: [Trever Knighton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 6:28:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Trever Knighton

From: [Robert Deitz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 4:46:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting, with personal knowledge of what happened in California after one was banned and the other restricted. Bear-Human conflicts are exploding in California, and there have been more deaths and attacks by cougars in the last 20 years than the 100 before that. Managing wildlife is critical to health populations, let the biologist do their job.

Sincerely,
Robert Deitz

From: [STEPHEN WINSLOW](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 12:38:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
STEPHEN WINSLOW

From: [Debbie Maurer Baca](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 11:47:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Debbie Maurer Baca

From: [JR Strand](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Sunday, August 20, 2023 11:44:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
JR Strand

From: [Blayne St James](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Echoing the Need for Hound Hunting in Predator Control
Date: Thursday, August 24, 2023 12:35:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as we the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Blayne St James

From: [Zach Manning](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 3:35:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Zach Manning

From: [Gunnar Allen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 1:50:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Gunnar Allen

From: [Cody Barnes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 1:14:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Cody Barnes

From: [Shane Maycock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 1:10:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Shane Maycock

From: [Kristopher Wnek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 12:38:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Kristopher Wnek

From: [Chuck McCall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 9:48:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Chuck McCall

From: [Alex Helms](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Sunday, August 20, 2023 7:11:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Alex Helms

From: [Ryan Stokes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Edible Game Harvest: Bridging Understanding with Non-Hunters
Date: Tuesday, August 22, 2023 11:30:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

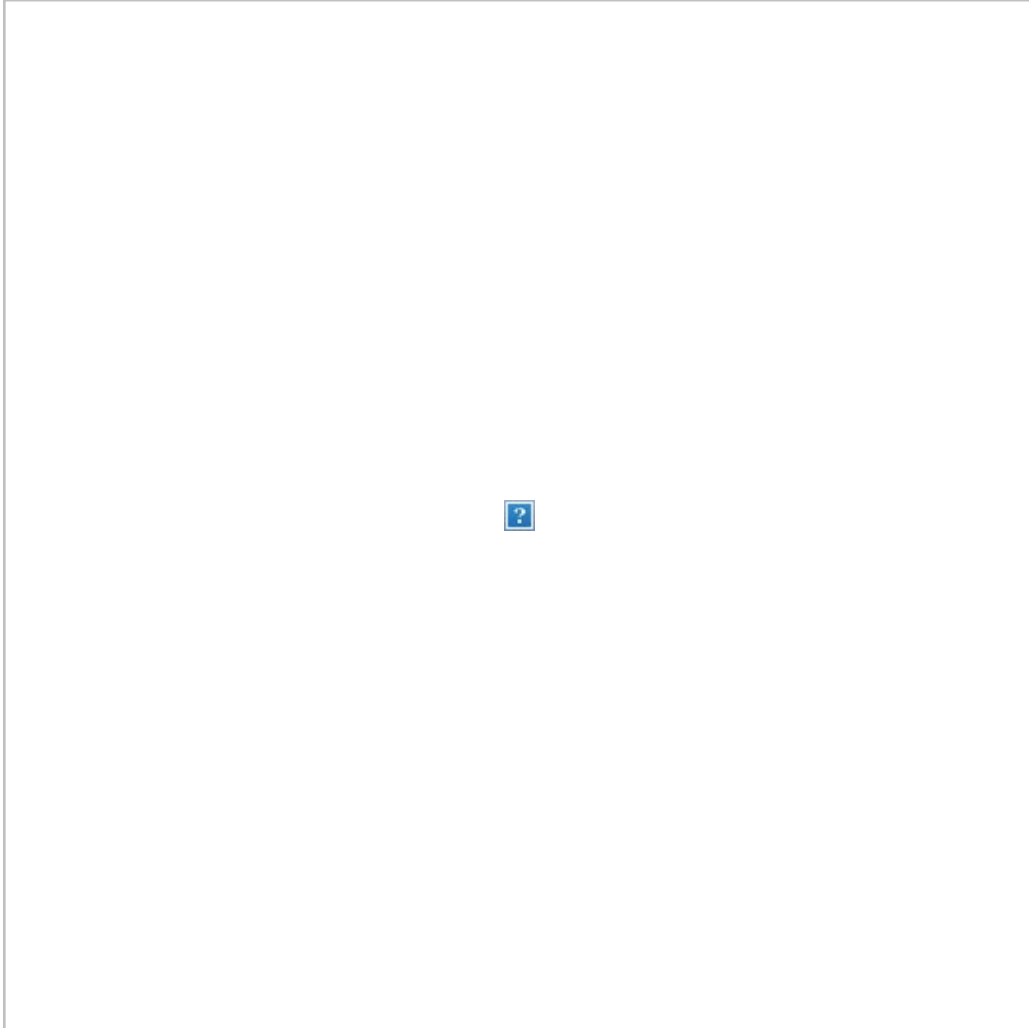
Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Ryan Stokes

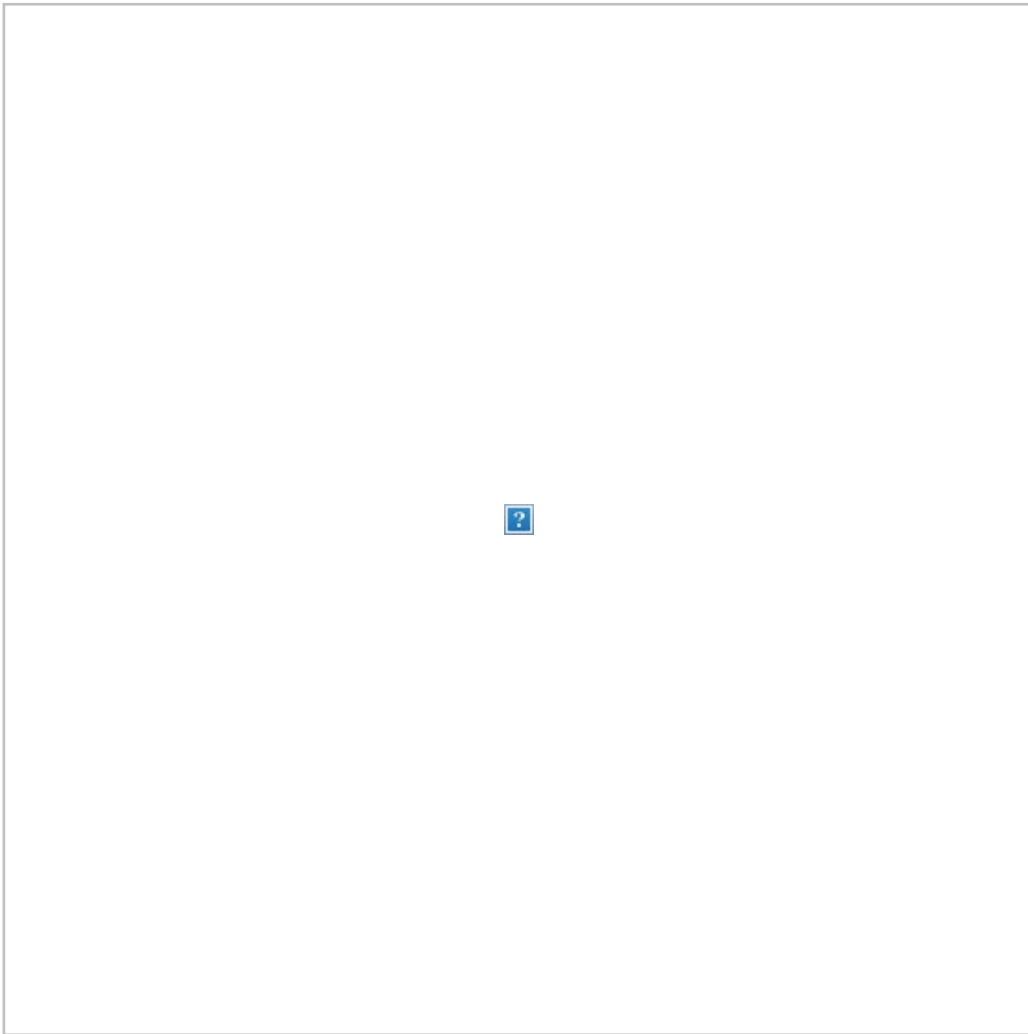
From: [Elite Crete Systems](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Education Surfaces & Flooring
Date: Wednesday, October 18, 2023 11:05:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.



A HERMETIC™ Flake Floor was specified in this cafeteria for slip resistance and a hygienic finish. Adjustable levels of slight texture add interest and dimension to the surface.

MORE PROJECTS



This classroom had a specialty REFLECTOR™ Enhancer Floor installed for a seamless finish that is completely customizable and long-lasting.

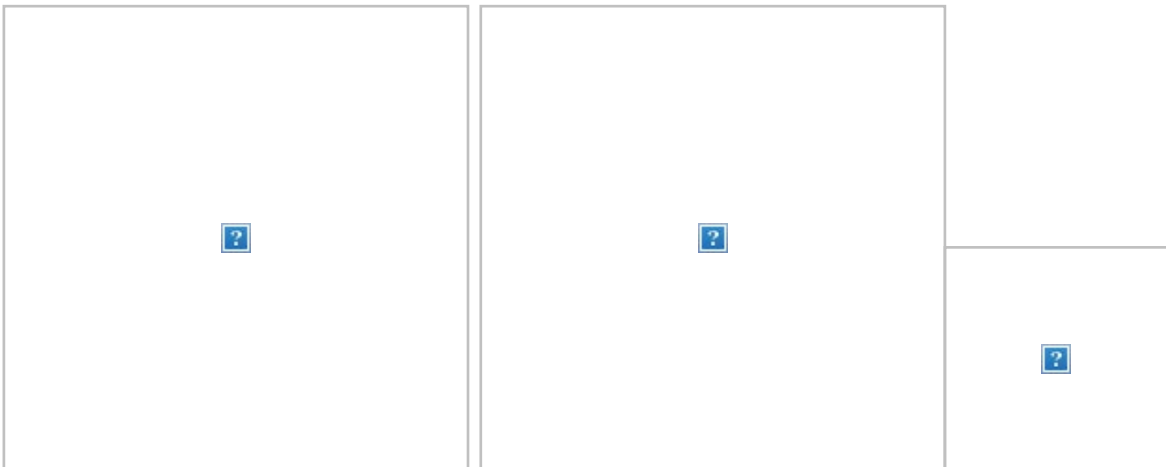


HERMETIC™ Neat Floors are engineered to withstand high levels of traffic and provide abrasion resistance. These resinous coatings are available in a variety of colors and can have a satin or gloss finish.



Fluid-applied REFLECTOR™ Enhancer Floors are low maintenance, antimicrobial and available in fast set for a quick turnaround time.

Visualization Tool





Info Catalog

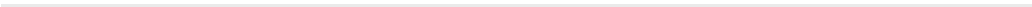
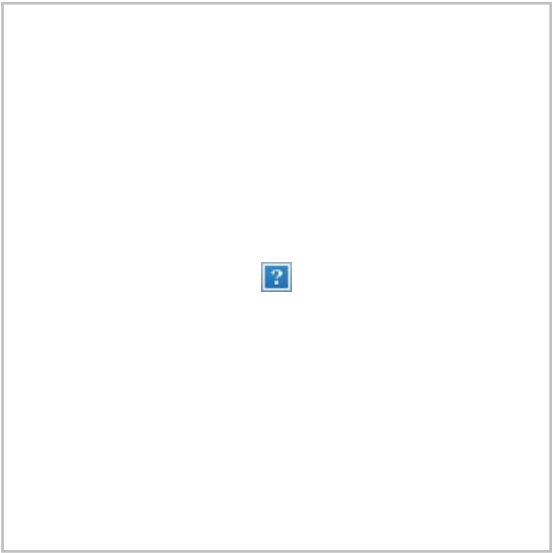
If you would like more information on our products or a free catalog.

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Architects reach out to schedule a lunch and learn.





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[elitecrete.com](#) | Click to [unsubscribe](#)



From: [Robert Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Wednesday, August 23, 2023 10:10:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Robert Johnson

From: [Mikel Laws](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Sunday, August 20, 2023 7:00:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Mikel Laws

From: [Loren Schrag](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Wednesday, August 23, 2023 4:38:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Loren Schrag

From: [Loren Schrag](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Wednesday, August 23, 2023 4:37:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Loren Schrag

From: [Mike Poth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Tuesday, August 22, 2023 10:47:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Mike Poth

From: [Jarrett Talley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Tuesday, August 22, 2023 10:36:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Jarrett Talley

From: [Kim Siegler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Monday, August 21, 2023 11:08:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Kim Siegler

From: [GERALD FREY](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Sunday, August 20, 2023 3:38:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
GERALD FREY

From: [Keaton Kvanduch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Sunday, August 20, 2023 10:21:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
Keaton Kvanduch

From: [Mitch Kendall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Sunday, August 20, 2023 7:42:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please keep the bear and cougar hunts. Short-sighted decisions in wildlife management can lead to unintended consequences. By using the scientific expertise of trained biologists and relying on historical data, we ensure that our actions today won't harm our wildlife tomorrow. I urge the commission to continue prioritizing a long-term vision for New Mexico's wildlife.

Sincerely,
Mitch Kendall

From: [Carl Barner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Embracing Science-Based Wildlife Stewardship
Date: Thursday, August 24, 2023 10:20:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Carl Barner

From: [Cody Reid](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Wednesday, August 23, 2023 9:20:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Cody Reid

From: [Bruce Williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 8:22:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am writing as a former resident of New Mexico and an avid hunter. I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Bruce Williams

From: [Scott Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Monday, August 21, 2023 3:59:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Scott Young

From: [Anthony Fresquez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Monday, August 21, 2023 10:51:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Anthony Fresquez

From: [Damon Bramel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 8:10:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Damon Bramel

From: [Kayla Brauer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 3:05:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Kayla Brauer

From: [Dusty Castor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 2:51:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Dusty Castor

From: [Ian Wargo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 8:25:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Ian Wargo

From: [Charles Keyes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 7:23:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Charles Keyes

From: [Steven Stuart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Sunday, August 20, 2023 7:02:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Steven Stuart

From: [Cristina Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Emphasizing Ethical Hunting Practices
Date: Friday, August 25, 2023 5:57:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Cristina Jones

From: [Dav Safaris](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Encounter Mountain Gorillas in Uganda & Rwanda , Wildebeest migration in Kenya and Tanzania, Victoria Falls in Zimbabwe and Botswana
Date: Saturday, September 2, 2023 2:20:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.



Gorilla Trekking in Uganda & Rwanda , Wildebeest migration in Kenya and Tanzania, Victoria Falls in Zimbabwe and Botswana

Email: info@davsafaris.com **Company:** [Dav Safaris](#) **Tel:** +256757795781

Gorilla trekking in Uganda and Rwanda is a once-in-a-lifetime opportunity to observe the amazing mountain gorillas of central Africa's rainforests on the slopes of the Virunga Mountains and in Bwindi Impenetrable National Park. Those who have experienced this Uganda and Rwanda safari give it great praise. Spending time with Uganda's and Rwanda's' wild gorillas in their native habitat is said to be the best wildlife encounter in all of Africa.



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Tanzania and Kenya Wildlife Safari -Serengeti National Park & Masai Mara

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From: [Marc](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] End mountain lion hunting
Date: Wednesday, August 23, 2023 3:59:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mountain lions are not bears. Mountain lions should not be lumped in with bears in a "bear-cougar" rule for several reasons.

- While some advances have been made in counting bears, it is difficult, if not impossible, to come up with a reliable mountain lion count. The Game Department has no idea how many mountain lions are in New Mexico and where they live.
- Some people eat bear meat (although no one depends on bear meat to feed their families), but no one eats mountain lion meat.
- Other states protect mountain lions, notably California where they are viewed as celebrities.

Marc Bedner

1 Caliente Pl

Santa Fe, NM 87508

From: [Conrad Baker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Wednesday, August 23, 2023 9:35:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Conrad Baker

From: [Heinz Kalkhoff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 8:54:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Heinz Kalkhoff

From: [BRIAN CILLESSEN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 8:52:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
BRIAN CILLESSEN

From: [Jeff Beasley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 8:00:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I commend the New Mexico Department of Game and Fish biologists for their work on the bear and cougar rule. I support their proposed changes. The proposed changes in many instances reflect the success of game department management practices and resulting increased populations.

Thank you again for the opportunity to comment on this rule. I appreciate this commission's commitment to securing the future of hunting and conservation in New Mexico.

Sincerely,
Jeff Beasley

From: [Mia Anstine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 7:36:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Even if you don't live in New Mexico, YOUR VOICE NEEDS TO BE HEARD. When hounds are used for hunting they are an integral tool, which allows us to bay an animal, assess and even release it without a fatal shot. Hound hunting of bears in Colorado was removed via ballot initiative, and now the bruin populations have skyrocketed; Residents have been bitten, scratched and attacked. Don't let anti-hunters remove this management tool from New Mexico too!

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Mia Anstine

From: [David Strickland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 7:17:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
David Strickland

From: [CALEB MASSIE](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 7:09:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
CALEB MASSIE

From: [Justin Skelton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 6:52:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Justin Skelton

From: [Josh Caple](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Saturday, August 19, 2023 9:28:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Josh Caple

From: [Travis France](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 4:12:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Travis France

From: [Todd Boswell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Tuesday, August 22, 2023 9:11:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
Todd Boswell

From: [Bradley Joyce](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Monday, August 21, 2023 12:47:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place! While I may be a non-resident, New Mexico holds a special place and I always look forward to hunting in the state!

Sincerely,
Bradley Joyce

From: [David Breeden](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 2:02:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
David Breeden

From: [Teddy Carpenter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 12:48:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Teddy Carpenter

From: [Zachary Dawe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 10:02:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Zachary Dawe

From: [Jason Carr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 9:57:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Jason Carr

From: [Tom Parker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 9:40:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Tom Parker

From: [Todd Reichert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Sunday, August 20, 2023 9:12:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Todd Reichert

From: [Gerald Hunter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Endorsing Practical Approaches for Wildlife Conservation
Date: Thursday, August 24, 2023 5:48:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

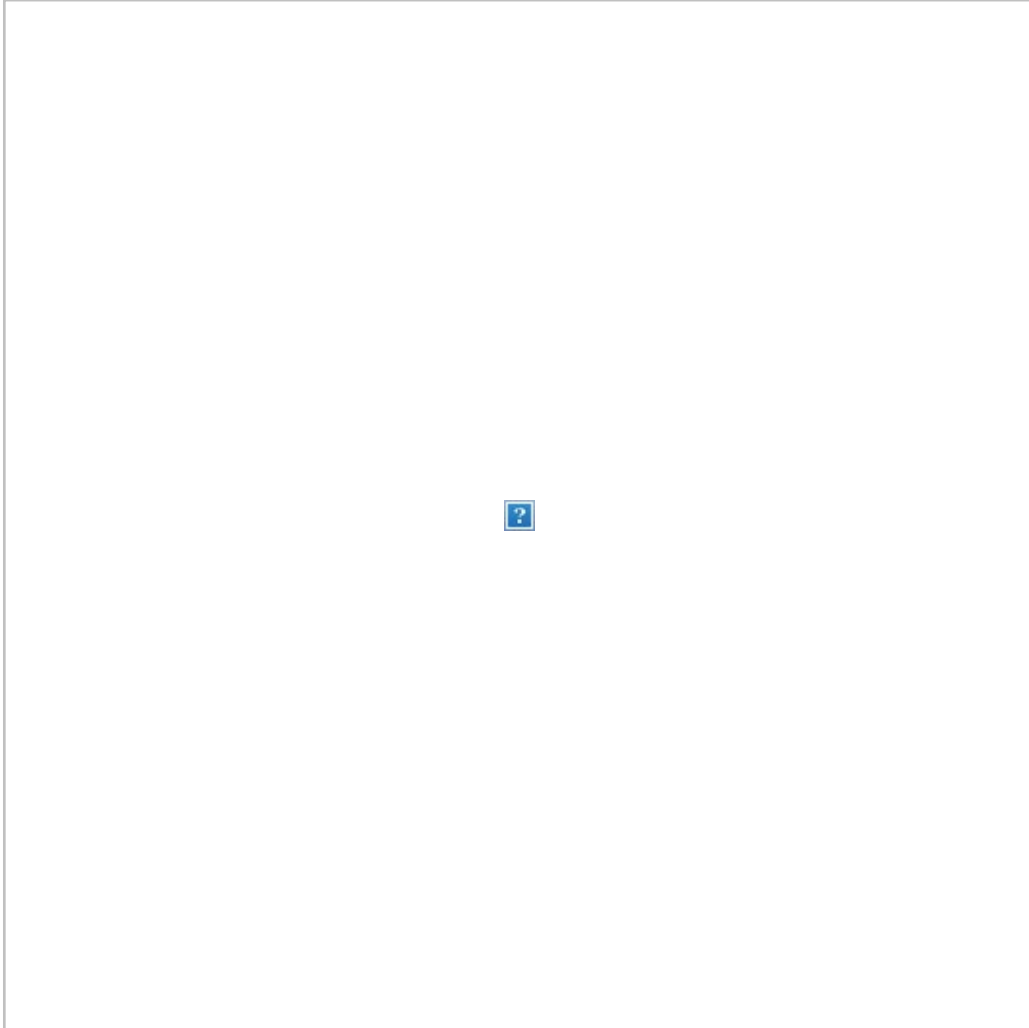
Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Gerald Hunter

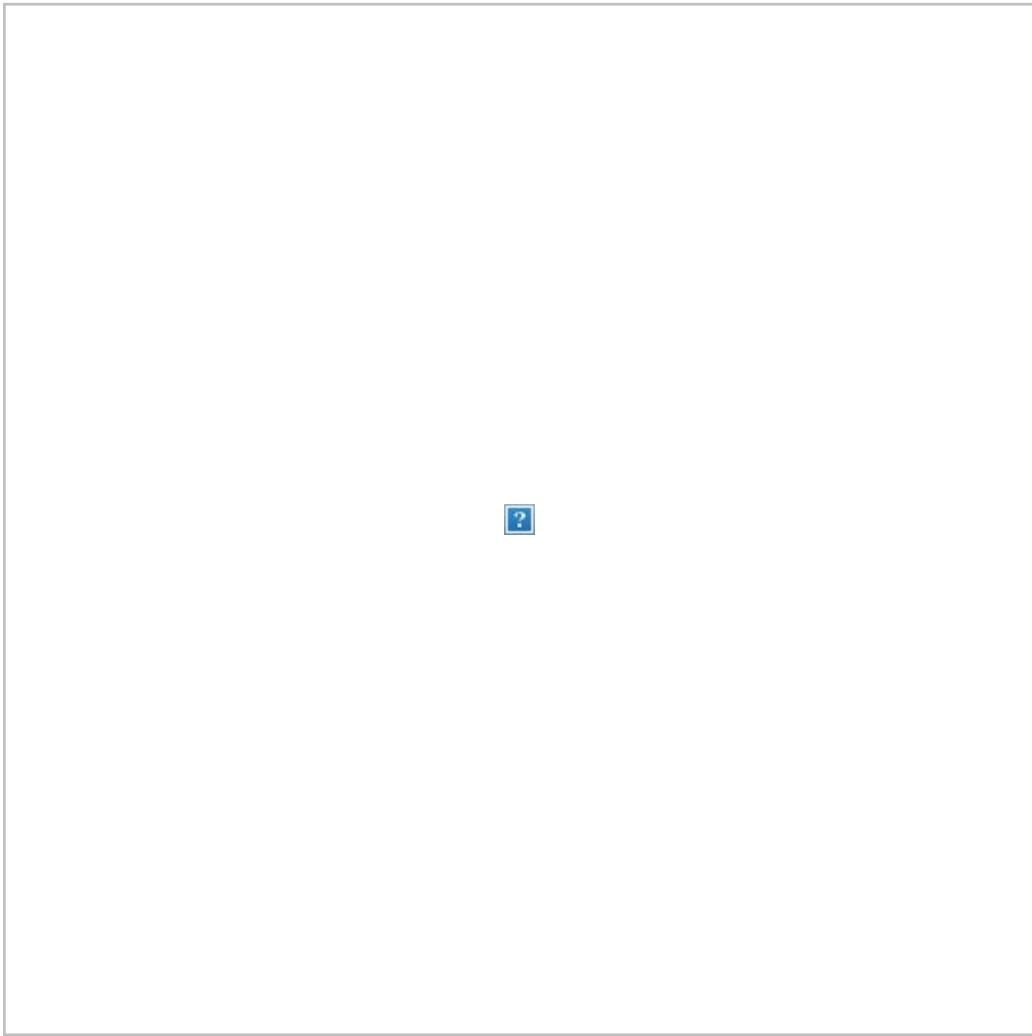
From: [Elite Crete Systems](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Entertainment Surfaces & Flooring
Date: Wednesday, October 4, 2023 11:05:10 AM

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This THIN-FINISH™ decorative concrete overlay was specified in this museum to provide a durable unique surface. Offering virtually unlimited design, pattern, texture and color options, these finishes add dimension to any space.

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A HERMETIC™ Neat Floor, with a custom graphic, was specified for this sports hall of fame, providing a durable easy to maintain surface.



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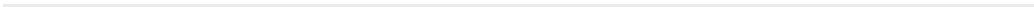
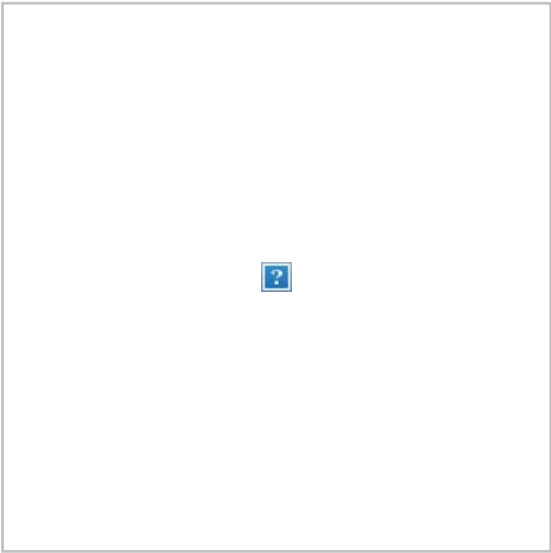
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From: [Austin Bodily](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Thursday, August 24, 2023 4:23:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Austin Bodily

From: [Harrie Dennison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Monday, August 21, 2023 2:38:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Harrie Dennison

From: [Terrence Benallie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Monday, August 21, 2023 11:04:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Terrence Benallie

From: [James Winters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Monday, August 21, 2023 11:02:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please don't let the politics of anti hunter groups dictate the research based data, for bear and cougar harvest, dictate if they continue the traditions of hunting with hounds.

Sincerely,
James Winters

From: [Scott Munkres](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Monday, August 21, 2023 10:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Scott Munkres

From: [Clint Wirth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Monday, August 21, 2023 10:51:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Clint Wirth

From: [Kevin Holland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Sunday, August 20, 2023 8:00:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Kevin Holland

From: [Chase Duncan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Sunday, August 20, 2023 6:55:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Chase Duncan

From: [John Pezzin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Monday, August 21, 2023 7:20:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I woke to a bear in my house last Friday, he had been going from door to door trying to break into my neighbors before he got to me. We have been given rubber bullets and CPW is issuing an add a bear tag to elk and deer tags in high conflict areas to reduce population but even with all this were unable to establish proper management after losing hound hunting and spring bear hunting with bait. The population has skyrocketed and we're seeing more "problem Bears" increased encounters in neighborhoods and campgrounds. This is a management problem. Not a problem bear problem. Observing the repercussions of hound bans in places like Colorado has been alarming. Predator populations must be managed responsibly for the health of the ecosystem. Let's learn from others' mistakes and maintain the balance here in New Mexico. Continue with cougar/bear hunting!

Sincerely,
John Pezzin

From: [Michael McDonald](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Essential Steps for Preserving Hunting in NM
Date: Friday, August 25, 2023 6:40:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Michael McDonald

From: [MARK CERF](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Extend opportunities for bear and cougar hunting
Date: Monday, October 16, 2023 9:08:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As an avid conservationist we need to extend opportunities to hunt the apex predators of NM. It is our responsibility to ensure that we have healthy ungulate herds and healthy amounts of predators. To neglect or limit predator hunting will ultimately hurt those animals in the long run and have a severe negative impact on ungulate populations as well especially mule deer who are already struggling throughout the west!

Sincerely,
Mark

Sent from my iPhone

From: [james.rubow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Extended trophy hunting time for cougars
Date: Friday, October 6, 2023 9:35:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the extension of time for the hunting of cougars. Trophy hunting is immoral in its nature but is popular among some groups.

The least we can do is minimize the impact on the environment and the species by limiting the amount of time allocated to such practices.

Cougars are an integral part of the natural landscape and as such have an impact on the entire ecosystem.

Please do not extend the time allocated for trophy hunting.

Thank you

Jim Rubow

Santa Fe NM

505-320-7160

[Sent from Yahoo Mail for iPad](#)

From: [Aaron Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Extending bag limits
Date: Monday, October 16, 2023 5:09:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree strongly with extending bag limits for mountain lions. I am a lifetime resident, and avid outdoorsman. I strongly feel that if we do not keep lion numbers under control we will not have muledeer left in the state. I also feel that banning trapping dramatically hurt big game populations.

Sent from my iPhone

From: [Office of the New Mexico Governor](#)
To: [Sloane, Michael B., DGF](#); [Forman, Nicholas, DGF](#)
Subject: [EXTERNAL] FWD: Jan Cohen - DGF #3121458
Date: Friday, August 4, 2023 2:28:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Please see the information below for your department's review and response and contact the constituent within 2 business days. If your department requires an extension, please let us know why as soon as possible. Upon case conclusion, please reply to this email with detailed and pertinent information about your efforts, subject matter unaltered, for tracking purposes.

The contact information for the constituent is:

Jan Cohen, M.Ed
hh1joylane@yahoo.com
+15056994506
33 Caliente Road
Santa Fe (rural) NM 87508

The constituent's issue information is listed below.

From: Jan Cohen, M.Ed

Date: Fri, Aug 4, 2023 at 1:50 pm

The issue is Conservation and Wildlife. Please read before Aug.10, 2023. Thank You! To: New Mexico Department of Game and Fish @ DGF-BearCougar-Rules@state.nm.us August 4, 2023. Dear New Mexico Department of Game and Fish, As usual, it is disappointing that the New Mexico Department of Game and Fish proposes yet another plan to indiscriminately raise hunting quotas for the overwrought wildlife of our state. This time the targeted species are Bear and Cougar. All of our public wildlife populations are in extreme peril from climate change, drought, and loss of habitat. You have not done your due diligence of statewide ongoing scientific peer-reviewed counts of either species in years. And with our rapidly changing natural environs this is what is called for- not a last ditch ruling to trophy hunt the last populations of Bear and Cougar possibly to extirpation! NMDG&F's mission statement includes "to conserve". Your suggested increased quotas are more evidence that another agency needs to be formed that is dedicated to conservation oversight for all hunting rules and management of all of our wildlife. Trophy hunting needs to end now! Killing Bear and Cougar is in violation of "wanton waste laws" of hunting. And many hunters object to the low ethics of hound chases and resulting treed kills of our bear and cougar! There is also a growing non-consumptive public that finds these practices abhorrent. Hunting has been in steep decline over the last twenty years while wildlife viewing has dramatically increased. "More than 35.8 million Americans went fishing in 2016, while 11.5 million hunted and 86 million watched wildlife. This means that 14 percent of Americans 16 years of age or older fished, 4 percent hunted and 34 percent participated in wildlife watching" (U.S. Fish and Wildlife Service 2016- 50 State Survey). Shouldn't your policies reflect public values and

practices? Even if hunters' bullets may pay for many NMDG&F salaries and management costs, the wildlife is nonetheless owned by every citizen in the state, not just hunters. We realize that true conservation is not the business you are in, but it is statistically significant that our citizens are mostly wildlife watchers by a margin of almost 2:1. It has also come to our attention that non-hunting human-caused kills for bear and cougar are not being included in quota counts. For instance, depredation of cougar to boost big horn sheep populations, and/or accidental road-kills. All bear and cougar mortalities should be counted towards the quotas. On a personal note, I was a mountain hiker. I used to encounter bears regularly on my hikes. But spotting bear in NM has steadily declined over the last fifty years. I realize this is anecdotal and not scientific reporting, but it has been my observation. I hope future generations of New Mexicans will have the opportunity to thrill at seeing wild bears and cougars on our beautiful wild lands. Let's conserve our wildlife with the best science available, with biodiversity as the model, and with great respect and restraint. We request that this letter be entered into the official record of Public Comments for Bear and Cougar Rules proposal 2023. Thank you for your time and attention. Respectfully, Jan Cohen, M.Ed., Wildlife Chair, Indivisible SOS, NM email: hh1joylane@yahoo.com cc. NM Representative Matthew McQueen, U.S. Senator Martin Heinrich, Governor Michelle Lujan Grisham, Secretary of the Interior Deb Haaland, NM Game Commission Vice-Chair Tirzio Lopez
Would You Like A Response: Yes, please contact me

Name: Channel

Value: Web

Prefix: Ms.

First Name: Jan

Last Name: Cohen, M.Ed

Email Address: hh1joylane@yahoo.com

Phone Number: 5056994506

Address1: 33 Caliente Road

City: Santa Fe (rural)

State: NM

Zip Code: 87508

Type: Correspondence

Subject: Contact the Governor: Other Issues

Trace Id: PI3_wTnQmn

Office: newmexicogovernor

Form Id: e8157390-ee98-4a62-a4d6-edaeaa9b7628

--

Vanessa Kennedy (she/her)

Director | Constituent Services

Office of Governor Michelle Lujan Grisham

governor.state.nm.us

From: [Judy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] FW: Bear Killing
Date: Saturday, August 12, 2023 10:54:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I understand G&F killed a bear who was getting into someone's chicken pen out here in the East Mountains. Instead of killing the bear, why didn't you advise the people to get an electric fence around their pen?

They call it a nuisance bear. Well, we have nuisance people. They're shoplifting, car jacking, drug dealing, etc., etc. Does anyone suggest they be shot?

Shame on G&F for dealing with our wildlife by just taking the easy way out. That bear didn't need to be shot.

Sent from [Mail](#) for Windows

From: [Judy](#)
Sent: Wednesday, August 2, 2023 12:03 PM
To: DGF-Bear-Cougar-Rules@state.nm.us
Subject: Precious Wildlife

Hello --

I understand you're taking comments about the planned bear and cougar killings.

Charles Fox of Santa Fe wrote an opinion piece in Sunday's Albuquerque Journal. He made some good points, such as ... it's not necessary and it's cruel to chase them down just to give hunters a thrill.

I don't see how anyone can kill a cougar. They're beautiful animals. I don't

understand how anyone could just shoot one or why they think they have a moral right to do so. Also, we've had a mama bear and 2 cubs in our yards out here in the East Mountains this summer. We all care about them. I don't understand destroying life so wantonly.

My comment is, please just leave our wildlife alone.

Judy Crane

From: [Piotr Filipczak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] FW: Letter in Support of Predator Management via Hunting
Date: Thursday, August 17, 2023 10:05:42 AM
Attachments: [BEAR-AND-COUGAR-RULE-PROPOSED-CHANGES-SUMMARY_2nEd_08032023.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Committee,

In my previous email I expressed my general support for managing predators such as black bears and mountain lions via hunting based on scientifically identified quotas. In this email, I'd like to provide my support for recently proposed changes (described in attached document) which, among other modifications, increase harvest limits for both boar and sow in BMZs #1 and #10.

These are very good changes which reflect increase of black bear populations in this areas. This adjustment not only provides more opportunities for hunters who peruse black bears (including myself), but also minimize loss in livestock, and protect populations of ungulates which are affected by bears especially in a fawning and calving seasons.

Sincerely,
Piotr

Piotr Filipczak, PhD
Assistant Professor of Chemistry
The University of New Mexico-Valencia Campus
280 La Entrada Rd, Los Lunas, NM 87031
Phone: 505-925-8876
Email: pfilipczak@unm.edu

From: Piotr Filipczak
Sent: Wednesday, August 16, 2023 3:35 PM
To: DGF-Bear-Cougar-Rules@state.nm.us
Subject: Letter in Support of Predator Management via Hunting

Dear Committee,

My name is Dr. Filipczak, and I am an assistant professor of chemistry at the UNM-Valencia Campus.

I am writing this email to express my deepest support for managing predators such as black bears or mountain lions via regulate hunting.

North American model of wildlife conservation is the most effective method of managing wild game which has been proven for more than a hundred years. Absolutely integral part of it is regulating numbers of predators by harvesting part of

their population by hunters based on the quota established by wildlife biologist from the Game and Fish Department. From the ethical stand point, harvesting a black bear or a mountain lion is not at all different from harvesting an elk or a deer. From the ecological perspective, it is an absolute necessity as the populations of these species are on a big rise, and available habitat cannot accommodate further growth. Lastly, it is an extremely important part of a beautiful New Mexican culture which is still vivid for many residents, especially these from rural area.

There are examples of states (e.g. Washington state) who replaced traditional predator hunting seasons with state agency-managed shoot-out, and failed dramatically. Personally, I find hunting tradition which feeds on northern American model of wildlife conservation as one of the most attractive aspects of living in the State of Enchantment. It also unites many residents of this wonderful state regardless of their political affiliation. Any action that would result with replacing this tradition- and science-based model would be against vital and long-term interest of wildlife, wild habitat and all residents who love interacting with them.

If there is anything else that I can do to better support my statement, please do not hesitate to reach out to me.

Sincerely,
Piotr

Piotr Filipczak, PhD
Assistant Professor of Chemistry
The University of New Mexico-Valencia Campus
280 La Entrada Rd, Los Lunas, NM 87031
Phone: 505-925-8876
Email: pfilipczak@unm.edu

From: [Nina Eydelman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] FW: letter to NM fish & wildlife
Date: Monday, October 16, 2023 10:20:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: Joe Ward <darwinsdog@yahoo.com>
Date: Saturday, October 14, 2023 at 6:27 AM
To: Trapfreenm Info <info@trapfreenm.org>
Subject: letter to NM fish & wildlife

I live along Rio de la Plata which serves as a dispersal corridor for black bears, mountain lions, bobcats, deer and other wildlife. I enjoy seeing the wild animals even though a bobcat decimated my poultry and one morning a blonde black bear was on top of my chicken coop. When someone murders one of these fine wild animals I am deprived of the opportunity of observing and enjoying these animals alive and thriving in their natural habitat and the ecosystem these animals operate in are deprived of the services each individual provides. So stop the killing! New Mexico has *Cannabis* revenue now. We do not need the revenue from selling killing licenses! So just stop it. Stop the killing. Stop pandering to the psychosexual perversions of those who enjoy inflicting fear, pain and death on innocent, defenseless animals. These people are serial killers and it is only fear of consequences that keep them from practicing their sadistic arts on humans instead of non-human animals. I count on you, as the public servant of the Taxpayers, to do the right thing. Thank you.

Joe Ward
Farmington, NM
darwinsdog@yahoo.com

"Little garden planet,
Oasis in space.
Some hearts hurt,
They can hardly stand
The waste."
- from "Ethiopia" by Joni Mitchell -

From: [Lloyd Boatman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fair hunt
Date: Wednesday, August 16, 2023 1:24:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a registered to vote Vietnam era hunter and would be greatly offended if my hunting privileges were cancelled or reduced. Please do not let anti hunters agenda influence your vote

Thank you

Lloyd

Sent from my iPhone

From: [Karen Rojas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fall bear hunt
Date: Tuesday, August 15, 2023 5:07:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider reinstating the fall bear hunt. As wildlife populations expand, so do more wildlife human encounters. Hunting is a good way to keep populations manageable, please consider reinstating the August Bear season in New Mexico.

From: [John van der Laan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Follow the science for Bear and Cougar Rules
Date: Friday, August 18, 2023 8:59:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Game Commission,

I am an Albuquerque resident and an avid hunter. I fully support the proposed changes to the bear and cougar regulations as well as all science-based management practices/rules. As a scientist as well as a hunter it is very important to follow the facts not emotions when it comes to rules and regulations for hunting and fishing throughout our state.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people (that us and myself!), to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I strongly support legal bear and cougar hunting as an appropriate management tool.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I request that the State Game Commission prioritize the opinions of our biologists and scientist and the recommendations developed from their science-based data. Without data and science-based recommendations emotions can cause more harm than intended.

Please follow the experts to make hunting and fishing viable for all New Mexicans for decades to come.

Thank you,

John van der Laan
709 Loma Linda Pl SE,
Albuquerque, NM 87108
jdvander@gmail.com

From: [Jenn Cabbage](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] For Hound Hunting
Date: Wednesday, August 16, 2023 7:32:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am FOR hunting bear and lions with hounds. Hound hunting plays a crucial role in population management for bears and mountain lions in New Mexico. It helps maintain a balanced ecosystem. Banning hound hunting could lead to overpopulation and negative consequences for both wildlife and the state. Responsible and regulated hunting practices are necessary to ensure the long-term sustainability of these populations and the overall health of New Mexico's natural environment.

Jenn Cabbage

From: butzr1@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] For Predator Hunting
Date: Wednesday, August 23, 2023 12:10:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor to continue Bear and cougar hunting in New Mexico. I believe that the Fish and Game Dept. do a good job in managing the quotas and believe that they should continue to do the job.

Thank you for your time.

Ross Butz

Winston, NM 87943

Sent from AOL Mobile Mail

From: [david.elizalde](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] For hunting
Date: Wednesday, August 16, 2023 1:04:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting in New Mexico is a life of passion for me. The responsibility of guides and hunters in New Mexico has always been respected and followed by all. Current laws shouldn't be changed or modified. Thanks , David Elizalde

Sent from my iPhone

From: [Ted Jaycox](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Friday, August 25, 2023 6:26:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Ted Jaycox

From: [Jeremy Helm](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Thursday, August 24, 2023 9:02:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Jeremy Helm

From: [Richard Kinkopf](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Tuesday, August 22, 2023 5:45:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Richard Kinkopf

From: [Roman Lopukh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Tuesday, August 22, 2023 8:26:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Roman Lopukh

From: [Scott Robb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Monday, August 21, 2023 1:51:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's stance on wildlife management provides a compelling blueprint for balancing conservation with sustainable usage. Embracing scientifically-backed strategies, including regulated hunting, fortifies New Mexico's position as a forerunner in wildlife conservation. With that in mind, keep the bear and cougar hunts!

Sincerely,
Scott Robb

From: [Rene Blanc](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Sunday, August 20, 2023 12:13:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Rene Blanc

From: [Jason Boulanger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Sunday, August 20, 2023 10:08:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Jason Boulanger

From: [Paul Starkebaum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Saturday, August 19, 2023 9:30:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please follow the recommendations of our biologist to manage predators through hunting

Continuous review and adjustment are essential for effective wildlife management. The proposed changes to the bear and cougar rule seem well thought out, reflecting lessons learned over time. Such adaptations are necessary to ensure the well-being of our wildlife populations. Please support bear/cougar hunting.

Sincerely,
Paul Starkebaum

From: [Rob Sherman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fostering Respectful Hunting for All Game Species
Date: Friday, August 25, 2023 7:04:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's rich biodiversity is a testament to the success of its wildlife management programs. The proposed changes in the bear and cougar rule indicate a dedication to maintain this balance. Recognizing the essential role played by hunters, anglers, trappers, and recreational shooters across the country, it's vital that decisions be based on the insights and data provided by New Mexico's dedicated department biologists.

Sincerely,
Rob Sherman

From: [Kevin Martin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Wednesday, August 23, 2023 12:49:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Kevin Martin

From: [Tanner Newman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 6:53:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Tanner Newman

From: [Clayton Hoy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Saturday, August 19, 2023 9:09:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Clayton Hoy

From: [Drew Ericksen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Saturday, August 19, 2023 8:49:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Drew Ericksen

From: [Douglas Reimer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 9:09:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Douglas Reimer

From: [Mark Steinmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Monday, August 21, 2023 9:31:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Mark Steinmann

From: [James Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Monday, August 21, 2023 6:12:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
James Johnson

From: [David Fontenot](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Monday, August 21, 2023 8:08:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
David Fontenot

From: [Eric Peterson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 5:51:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
Eric Peterson

From: [Chris Hoex](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 1:21:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Chris Hoex

From: [Andrew Gibbons](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 11:25:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Andrew Gibbons

From: [Cory Larson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 7:15:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Cory Larson

From: [Edward Sheehy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Sunday, August 20, 2023 7:08:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Edward Sheehy

From: [Johann Plenk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] From Hunters: The Lifeblood of Wildlife Conservation
Date: Saturday, August 26, 2023 2:55:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Johann Plenk

From: [Brady Fincher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Full Support
Date: Tuesday, August 15, 2023 6:48:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a hunter and rancher in Unit 59 and I fully support the new rule changes on bear and lion hunts. I hope for future generations we will have a bear and lion season and it will only happen with the good folks working at NMDGF. Keep up the good work! We must guard the gate from the extreme anti hunting crowd!!

Brady Fincher

From: [Robert A. Peinert Jr. MD](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Future of hunting in New Mexico
Date: Wednesday, August 16, 2023 12:05:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Specific comments on the bear and cougar rule: if we do not have hunting then these predatory animals, and they are predators at the top of their respective food chains will destroy the deer populations, the elk populations and then the easier to hunt and kill domesticated herds-sheep and cattle. Along the way they will breed, increase in numbers and become a direct threat to humans:case in point-Connecticut and New Jersey. Limited hunting will increase the finances of the State and the guide services used for these hunts. The major question is how the hunts are to be carried out. Will baiting be allowed.?? Will dogs be allowed both for bears and cougars.? Do we have an accurate assessment of the populations to be hunted??? Initially, if approved,the hunts should be by draw both for in state and out of state hunters for 3 to 5 years to get an idea of the popularity, the harvest and the best regions for the hunts, and the effects of the hunts upon the population hunted. We need to intelligently MANAGE this resource so it survives in nature as it is important in natural deer and elk population control. We also need to MANAGE these predators to allow their survival. We are all linked in nature!!!

--

R.A. Peinert, Jr, MD

From: [Gerry & Jean](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fwd: Bear Rule Changes - My revised comments.
Date: Friday, August 25, 2023 4:59:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

----- Forwarded Message -----

Subject: Bear Rule Changes

Date: Fri, 25 Aug 2023 16:56:10 -0600

From: Gerry & Jean <engelhill@comcast.net>

To: DGF-Bear-Cougar-Rules@state.nm.us

Dear New Mexico State Game Commission,

I am a fair chase bear hunter and would like to continue to be able to do that. Fish and wildlife resources are the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. Science based management has resulted in good sustainable populations of bear and cougar in New Mexico. This management has included reasonable harvest of these animals. I support legal bear and cougar hunting as an appropriate management tool. I believe you should continue stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures. I WOULD HOWEVER LIKE TO SEE THE SEASON CONTINUE TO START IN SEPTEMBER RATHER THAN IT BEING MOVED BACK TO AUGUST.

Respectfully,

Gerry Engel

4551 Eddie Ward Way

Silver City, NM 88061

575-590-3497

From: [J Harrison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fwd: Delivery Status Notification (Failure)
Date: Thursday, October 19, 2023 4:13:58 PM
Attachments: [icon.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.



Address not found

Your message wasn't delivered to **DGF-Bear-Cougar-Rules@state.nmus** because the domain state.nmus couldn't be found. Check for typos or unnecessary spaces and try again.

[LEARN MORE](#)

----- Forwarded message -----

From: J Harrison <sappo70@gmail.com>

To: DGF-Bear-Cougar-Rules@state.nmus

Cc:

Bcc:

Date: Thu, 19 Oct 2023 16:07:41 -0600

Subject: Mountain Lions

PLEASE Leave the Mt. Lion count alone. New Mex. has already killed off enough lions. Between the natural death and rich hunters coming in there have been enough to already make the count too low.

Next thing you know they will have to be placed on the extinct list.

LEAVE THE MOUNTAIN LIONS ALONE. DO NOT INCREASE THE NUMBERS TOO BE KILLED.

Thank You, Jane Harrison

PS I moved here because of the wild animal life,

From: [Carl Tapia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fwd: Let The People Hunt.
Date: Wednesday, October 18, 2023 10:41:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

Begin forwarded message:

From: Carl Tapia <tapiacarl@icloud.com>
Date: October 15, 2023 at 9:49:07 AM MDT
To: dgf-bear-cougar-rules@state.nm.us
Subject: Let The People Hunt.

I'm not even a lion hunter, but we need balance and lion hunting is needed. Have you ever tried to hunt deer where it's covered with mountain lion tracks? You won't find a deer within miles. I have found deer dead heads in such places tho. The lion hunters help the big game hunters which provides more big game tags and food on our New Mexicans Tables.

Sent from my iPhone

From: [Hans Petersen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Fwd:
Date: Monday, August 7, 2023 2:44:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir or Madam,

Please consider reducing the harvest quotas for bears and cougars in New Mexico during this historic drought. Thanks.

Hans Petersen
Cedar Crest

From: [Michelle Franks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Commission: I oppose the proposed trophy hunting rules for bears and cougars
Date: Friday, August 11, 2023 1:40:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the subject proposal because:

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-

ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophy' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Respectfully,

Michelle Newsom

From: [Gerald Maciok](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Tuesday, August 22, 2023 4:52:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunts need to be supported. We're witnessing the fruits of diligent and scientifically-sound management through the increased populations of various species. I commend the department's efforts and wholeheartedly support the proposed changes to the bear and cougar rule.

Sincerely,
Gerald Maciok

From: [Kyle Purdy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 7:17:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Kyle Purdy

From: [Samuel Lands](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 7:08:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Samuel Lands

From: [Scott Graham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 7:08:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Scott Graham

From: [Greg HUnter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Tuesday, August 22, 2023 7:53:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Greg HUnter

From: [Bill Ritchey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Monday, August 21, 2023 7:21:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's stance on wildlife management provides a compelling blueprint for balancing conservation with sustainable usage. Embracing scientifically-backed strategies, including regulated hunting, fortifies New Mexico's position as a forerunner in wildlife conservation. With that in mind, keep the bear and cougar hunts!

Sincerely,
Bill Ritchey

From: [Blake Treanor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Monday, August 21, 2023 7:11:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Blake Treanor

From: [Ann White](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 1:42:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Ann White

From: [Daniel Spell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 8:51:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Daniel Spell

From: [Thomas Loczy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 8:46:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Thomas Loczy

From: [Eric Dice](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 7:39:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Eric Dice

From: [Mike Powers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Sunday, August 20, 2023 7:29:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Mike Powers

From: ["Clayton St. John"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Adhering to NM's Foundational Principles
Date: Friday, August 25, 2023 9:31:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Clayton St. John

From: [Luke VandenBrink](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Tuesday, August 22, 2023 12:26:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Luke VandenBrink

From: [Chuck W](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 7:37:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Chuck W

From: [Murray Stadnichuk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 7:24:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Murray Stadnichuk

From: [Jake Lapp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 7:24:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Jake Lapp

From: [Scott Seward](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 7:23:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Scott Seward

From: [Rueben Caballero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 10:29:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
Rueben Caballero

From: [John Becknell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 10:36:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
John Becknell

From: [Paul Craven](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 10:05:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Paul Craven

From: [chad.aurentz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 10:05:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
chad.aurentz

From: [Justin Barber](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 10:04:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Justin Barber

From: [Jared DuWell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 9:50:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Jared DuWell

From: [Matthew Corcoran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 9:33:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Matthew Corcoran

From: [Justin Belding](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 9:29:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Justin Belding

From: [Steven Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Sunday, August 20, 2023 9:28:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Steven Smith

From: [Brandon McGuire](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game Management: Striking the Balance Responsibly
Date: Thursday, August 24, 2023 10:30:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Brandon McGuire

From: [JAMES GRASMICK Owner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game and fish retires reunion
Date: Thursday, August 17, 2023 8:15:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Retain bear and cougar hunting in NM.

From: [Mick Babcock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Game commission proposal
Date: Friday, August 18, 2023 7:19:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I fully support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Here in Colorado in the recent years they have outlawed and banned all forms of bear hunting except for general stalking tactics. Unfortunately, now our bear population is out of control. bears are being killed regularly by Colorado Parks and recreation. Colorado parks and recreation officers do not take pride nor are they pleased in the fact that they are forced to kill these "problem bears" simply because now the bears are on porches, killing people's dogs, breaking into people's homes, etc etc.....

One of the most disappointing facts about our current situation here in Colorado is that the bears that could be responsibly harvested by responsible outdoorsman and sportsman, are being forcefully euthanized because these bears are now causing problems for the folks that voted against our conservative hunting regulations and methods here in Colorado. They are targeting our cat hunting now as well and the anti-hunting folks that vote on these measures, I don't believe they understand the long-term effects it has on the predator populations. In my opinion it's absolutely egregious!

In closing, I would like to take a moment to reiterate my full 100% support of the game commissions proposal for continued hunting of bear and cats in New Mexico .
Thank you.

Respectfully,
Mick Babcock

From: [Candace Funk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Give wildlife a break!
Date: Thursday, August 24, 2023 1:51:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Attn: New Mexico Game and Fish

Hasn't this year been tough enough? You are in the midst of a 20 year drought, and experiencing record heat. Give wildlife a break! Your plan of increasing the number of bears that can be killed and maintaining cougar hunting quotas that were already excessive according to experts is horrifying. Why is it that humans don't understand that Nature's plan is perfect. Why is it that you want to "manage" bears and cougars with sketchy counts and listening only to input from the minority. I've read that 99% of NM citizens don't hunt bears or cougars, yet you say you need to "maintain sustainable cougar and bear populations and hunting opportunities". This means you plan to cater to the minority regardless of what the majority wants! NMDGF and your Game Commission should be obligated to follow science. This decision is based on questionable science. Shouldn't the Game Commission as trustees of the wildlife trust wait for credible information in order to make such a bold and likely unsustainable decision? It is obvious your "management" of wildlife is aimed towards hunters and hunting opportunities. Respect nature and listen to science! Please consider kill quotas be seriously reduced to protect our wildlife. Raising quotas when your numbers are only estimates and likely inaccurate puts these species at risk! Nature knows how to manage, and these species are excellent at self-regulation.

Sincerely,

Candace Funk
funk_farm@me.com

From: [RANDY VIGIL](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [RANDY VIGIL](#)
Subject: [EXTERNAL] Go
Date: Friday, July 7, 2023 8:42:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Randy Vigil

From: [Wendy Keefover \(she/her\)](#)
To: [DGF-Bear-Cougar-Rules](#); [Forman, Nicholas, DGF](#); [Liley, Stewart, DGF](#); [Goldstein, Elise J., DGF](#)
Cc: [Nina Eydelman](#); [Mary Katherine Ray](#); [Lisa Jennings](#)
Subject: [EXTERNAL] Google Drive with studies cited in our cougar comments
Date: Wednesday, September 6, 2023 11:31:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico wildlife officials,

Here is the Google Drive link with all the studies we cited in our cougar comments. These studies are affirmatively included as part of the administrative record for the 2023 Cougar Rule. Let me know if you have any questions or issues.

https://drive.google.com/drive/folders/1x9j6KYrNiwc0SX-0rDBHaQL_EmxAVHND

Thank you!

Wendy Keefover

Senior Strategist, Native Carnivore Protection, Wildlife Dept.
wkeefover@humanesociety.org
C 720-437-0394

From: [Colleen Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] HAVE YOU NO HEART?
Date: Sunday, July 23, 2023 9:17:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to voice my protest over your misguided plan to increase hunting of our wonderful wild animals.
Please please don't do this.

It's a struggle for these animals to survive as things are now. We need to preserve the dwindling populations,
not destroy them.

PLEASE PLEASE

Colleen Jones
Santa Fe resident

--

This email has been checked for viruses by AVG antivirus software.
www.avg.com

From: khalil@losalamos.com
To: [DGF-Bear-Cougar-Rules: Khalil](#)
Subject: [EXTERNAL] Have your scientific studies of bear and cougar populations been peer reviewed by impartial experts?
Date: Wednesday, August 9, 2023 6:13:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Game and Fish Dept.

RE: Comments on new bear and cougar limits

I read the editorial in the Santa Fe New Mexican written by Nina Eydelman and Mary Katherine Ray that harshly criticized your proposed rule on harvesting bear and cougar. But their article did not offer any substantive reason for pushing back other than accepting their opinion that you have gotten it wrong. So my question is did you have your studies peer reviewed by outside wildlife management experts who can independently and impartially validate or criticize your methodology? If so, what was the result?

The authors, Nina Eydelman and Mary Katherine Ray, make comments about climate change, but I would assume that climate impacts the number of bear and cougar that the state can support if climate change affects their food sources. Have you considered that?

I'm not a wildlife biologist, so I am not in a position to decide whether the new rule is a good one or as Nina Eydelman and Mary Katherine Ray say, a bad one. Personally, I am not fond of shooting animals just for the sake of killing them. I hunted deer for many years to fill the freezer. Hunting is good if it is properly managed.

I would like to hear whether you asked for and received external validation for your proposal and the details of peer review, if it was done. If it was not done, why not?

Thank you, and best wishes,

Khal Spencer, Ph.D. (geochemistry, analytical chemistry)
134 Camino de las Crucitas
Santa Fe, NM 87501

From: [Gwen Gilligan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] High hunting limits for cougars
Date: Tuesday, October 24, 2023 7:26:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I disagreed with the Game and Fish Department decision to maintain high hunting limits on cougars. I believe these iconic animals need protecting.

Thank you

Gwen Gilligan, long time Santa Fe resident

headshot



Gwen Gilligan

Associate Broker | Lic # 13502

p: (505) 660-0500

e: gwen@gwengilligan.com

530 S. Guadalupe St.
Santa Fe, NM 87501

santaferealestate.com

logo



From: [butzphillip](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] History of hunting in NM
Date: Thursday, August 17, 2023 7:43:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have lived in NM most of my life and recall buying deer, bear, turkey licenses for \$7.50. I have had access to state, federal and private lands and seen some of our state's most pristine backcountry while hunting. I am apposed to any efforts curtailing access to hunting any species that has historically been allowed. A very small percentage of hunters actually hunt bear and lion. Most hunt deer, turkey and upland game. Be sure and have the game department provide the statistics on this before you make a decision to stop it.

Sincerely,

Phillip Butz

Sent from my Galaxy

From: [Liz Ashling](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honor our wildlife.
Date: Thursday, August 24, 2023 10:34:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We have forgotten that we are all related and needed on the earth for balance. We humans need to honor All the earth kingdoms, animals, plants and minerals. All are needed. I ask that you remove any bounty on the bears and cougars and all earths creatures they are our relatives. Please honor them. Liz Ashling.
Sent from my iPhone

From: [Nathan Garvin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Friday, August 25, 2023 11:43:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Nathan Garvin

From: [WENDALL HOUSLER](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Thursday, August 24, 2023 8:39:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
WENDALL HOUSLER

From: [Thomas Lough](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Tuesday, August 22, 2023 5:44:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Thomas Lough

From: [Kyle Hartzell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Monday, August 21, 2023 8:37:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Kyle Hartzell

From: [Bob Petit](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Monday, August 21, 2023 8:23:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Bob Petit

From: [James Reed](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Sunday, August 20, 2023 3:41:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
James Reed

From: [David Mills](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Sunday, August 20, 2023 1:40:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm writing in support of the cougar and bear hunts. The intricate web of ecosystem balance is maintained through various tools, with wildlife management being a crucial one. This isn't about favoring one group over another, but about understanding the symbiotic relationship between hunters, the game, and the larger ecosystem. The investment, both monetary and in terms of conservation efforts by hunters, has played a significant role in maintaining flourishing game populations. The challenge is to ensure that these efforts are recognized and not undermined by misconceptions or unscientific arguments.

Sincerely,
David Mills

From: [Charles Whitwam](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Saturday, August 19, 2023 7:51:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Sincerely,
Charles Whitwam

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Honoring Our Legacy: Support Game Biologists" Recommendations
Date: Tuesday, September 12, 2023 10:20:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I commend the New Mexico Department of Game and Fish biologists for their work on the bear and cougar rule. I support their proposed changes. The proposed changes in many instances reflect the success of game department management practices and resulting increased populations.

Thank you again for the opportunity to comment on this rule. I appreciate this commission's commitment to securing the future of hunting and conservation in New Mexico.

Sincerely,
CynJon Longman

From: [Aaron Adkins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting
Date: Wednesday, August 16, 2023 11:14:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

dgf-bear-cougar-rules@state.nm.us

Dear Sir or Madam,

I am an out of state hunter that hunted in New Mexico in 2020 and 2021.

I support science-based decisions in regards to wildlife management. Please strongly consider the opinions and findings of your wildlife biologists when making decisions on wildlife management. I am a strong supporter of our rights to responsibly pursue and harvest game species, especially through the use of our hunting dogs.

Aaron Adkins
El Paso, Texas

Sent from my iPhone

From: [Matthew DeVito](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting In New Mexico
Date: Wednesday, August 16, 2023 9:22:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it May Concern,

If it is the philosophy of “fair chase” that we’re discussing, I would make the argument that hound hunting is the greatest of all “fair chase” methods. It’s the ONLY method, where the game being pursued, is fully aware, from beginning to end that it is being hunted.

We’re not talking about a buck, mindlessly chasing a doe to breed, half out of his head with instinctual lust. We’re not talking about an elk being dropped from 500 yards away with a bullet he has no sense of where it’s coming from. We’re not talking about a boar being ambushed from above, entirely unaware of his enemy.

Once a game animal hears a hound, they are fully aware. All of their senses come into play. The terrain is their home, and they hold all the cards. More often than not, they use these advantages to escape.

Hound hunting is the only method of hunting where once an animal is “caught”, its age, sex, and health can be determined. If it’s too young, or the wrong sex, it can be set loose, to continue with its life. No other method of hunting has this conservation aspect, where caught game can be given another chance, if they were not the intended target.

Thank you for your time.

--

Matt DeVito
Vice President
Safari Club International NEF
Youth Mentor Program
(781) 520-0116

From: [Clayton Jump](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting
Date: Wednesday, August 23, 2023 8:38:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Best Regards,

Clayton Jump

From: [Allyssa Clear](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting
Date: Wednesday, August 23, 2023 8:43:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Best Regards,
Allyssa Clear
951-433-0632

From: [Dale West](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Thursday, August 24, 2023 1:48:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Dale West

From: [Robert Cozzo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 9:14:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm writing in support of the cougar and bear hunts. The intricate web of ecosystem balance is maintained through various tools, with wildlife management being a crucial one. This isn't about favoring one group over another, but about understanding the symbiotic relationship between hunters, the game, and the larger ecosystem. The investment, both monetary and in terms of conservation efforts by hunters, has played a significant role in maintaining flourishing game populations. The challenge is to ensure that these efforts are recognized and not undermined by misconceptions or unscientific arguments.

Sincerely,
Robert Cozzo

From: [Dan Merkel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 8:12:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Dan Merkel

From: [Tom Wind](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 7:53:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Tom Wind

From: [Rob Somers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 7:42:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Rob Somers

From: [Brent Owens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 7:02:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Brent Owens

From: [Aaron Warbritton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 8:37:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Aaron Warbritton

From: [brian grona](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Thursday, August 24, 2023 1:29:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
brian grona

From: [Claude Josey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Thursday, August 24, 2023 1:27:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Claude Josey

From: [Michael Samsel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Thursday, August 24, 2023 12:27:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Michael Samsel

From: [Garry Brandenburg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Thursday, August 24, 2023 12:13:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Garry Brandenburg

From: [Courtney darnell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Monday, August 21, 2023 8:08:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Courtney darnell

From: [Niklas Isaac](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 1:59:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Niklas Isaac

From: [Stephen Freiling](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 9:40:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm writing in support of the cougar and bear hunts. The intricate web of ecosystem balance is maintained through various tools, with wildlife management being a crucial one. This isn't about favoring one group over another, but about understanding the symbiotic relationship between hunters, the game, and the larger ecosystem. The investment, both monetary and in terms of conservation efforts by hunters, has played a significant role in maintaining flourishing game populations. The challenge is to ensure that these efforts are recognized and not undermined by misconceptions or unscientific arguments.

Sincerely,
Stephen Freiling

From: [Zach Ferenbaugh Ferenbaugh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Sunday, August 20, 2023 9:26:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm writing in support of the cougar and bear hunts. The intricate web of ecosystem balance is maintained through various tools, with wildlife management being a crucial one. This isn't about favoring one group over another, but about understanding the symbiotic relationship between hunters, the game, and the larger ecosystem. The investment, both monetary and in terms of conservation efforts by hunters, has played a significant role in maintaining flourishing game populations. The challenge is to ensure that these efforts are recognized and not undermined by misconceptions or unscientific arguments.

Sincerely,
Zach Ferenbaugh Ferenbaugh

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: A Proven Tool in Ecosystem Balance
Date: Tuesday, August 29, 2023 9:25:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Brian Carson

From: [Mark Yost](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Thursday, August 24, 2023 12:43:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Mark Yost

From: [Brandon Ray](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Thursday, August 24, 2023 12:09:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Brandon Ray

From: [Henry Cares](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Wednesday, August 23, 2023 7:11:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Henry Cares

From: [Kevin Puent](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Monday, August 21, 2023 6:30:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Kevin Puent

From: [Jon Brink](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Monday, August 21, 2023 5:04:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Jon Brink

From: [Corbin Rowe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Sunday, August 20, 2023 8:13:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hello,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Corbin Rowe

From: [Keith Swope](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Sunday, August 20, 2023 7:36:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Keith Swope

From: [Troy Robb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Sunday, August 20, 2023 6:59:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Troy Robb

From: [Rob Mcguire](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Sunday, August 20, 2023 6:10:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Rob Mcguire

From: [James McCarrick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: An Essential Tradition in Balance
Date: Friday, August 25, 2023 7:18:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunts need to be supported. We're witnessing the fruits of diligent and scientifically-sound management through the increased populations of various species. I commend the department's efforts and wholeheartedly support the proposed changes to the bear and cougar rule.

Sincerely,
James McCarrick

From: [leslie patten](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound Hunting: New Mexico already employs year-round contractors to kill lions
Date: Tuesday, August 22, 2023 5:04:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico is killing lions year-round by private paid contractors in several hunt zones already. A density study was conducted in the area around Santa Fe, the first of its kind in 2017, and found NMGF had so over estimated the lion population that they had to half their quota.

Before NM agrees to this new hunt quota, their Game and Fish needs to do real density studies in all the hunt zones. NMGF estimated densities that were borrowed from other states, some of which had habitat entirely different than what was in New Mexico. In addition, hired year-round cougar killers so to keep bighorn sheep is not based on science. If NMGF were serious about preserving lions, and bighorns, they'd be collaring every lion in bighorn areas and either doing transplanting or at the very least targeting those few lions that are repeat bighorn offenders.

Lions are being OVER-killed in New Mexico at this point. NMGF is very secretive about these contract killing contracts. NMGF is not doing the hard work of actual science in order to have quotas that are sustainable.

I do not support these changes

Sincerely,
leslie patten

From: [Cody Berghuis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Monday, August 21, 2023 12:23:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't go away with the seasons for hound hunting. It's quite unfair to the dogs that are bred and live for the hunt. You wouldn't take working cattle dogs away from ranchers. Those dogs use the same force and techniques as hunting hounds but they are praised. It's no different, these dogs depend on laws and rules for their lively hoods. This is heartbreaking in so many ways I just wish a state would stand up for these dogs because nobody else will.

From: [Bonner Webb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Thursday, August 17, 2023 7:02:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hound hunting has been a way of life for my family for years. It is something that provides for us financially as well as promoting a connection with the outdoors. Banning this will not only cause financial hardships on my family but many others. It will add to the strain on wildlife to support a predator population that is unchecked.

From: [Dalton madewell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 9:00:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hound hunting 100 percent

Sent from my iPhone

From: [Karissa Romero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 7:11:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

keep lion and bear hunting with hounds in New Mexico!!

Sent from my iPhone

From: [Preston Hadden](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 6:47:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hound hunting 100%

Sent from my iPhone

From: [Ty Soine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Monday, August 21, 2023 3:32:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hound hunting

Sent from my iPhone

From: [Zachary Felkins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting is absolutely necessary
Date: Wednesday, August 16, 2023 12:26:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please closely consider the affects of what losing hound hunting for lion and bear is doing in the western states. Please note the chaos and destruction currently going on in California due to out of control predator numbers. All other species of game animals are in dangerous declines. The money spent by the state of California to handle problem bears and lions is ridiculous. Conversely, revenues from licenses and tags have a huge impact on all aspects of game conservation.

We appreciate your careful and data based insights and considerations on this matter.
-American conservationists,

From: [tracy bratcher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting!!
Date: Wednesday, August 16, 2023 9:55:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hunting animals with Hounds has been a tradition and way of life for thousands of people families and generations for 100s of years and should be a protected way way of hunters rights for 100s of years to come please do not band hound hunting

[Sent from Yahoo Mail for iPhone](#)

From: [Brian Ringels](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Friday, August 18, 2023 3:25:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consult science based research for all wildlife management decisions.

Please keep hound hunting for bear and cougar.

Thanks

From: [babybooner73](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Wednesday, August 16, 2023 10:11:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am contacting you in support of hound hunting bears and cougars. Hunting predators with hounds is a selective way to identify male from female. It helps to control predator numbers and problems. Living in WA state I am all too familiar with the problems we have with predators on our deer and elk herds, and conflicts with people, since hunting with hounds was band years ago. Hounding hunting is a tradition with families that goes back many generations and would be a tragedy if lost. We as sportsman and conservationists need to use solid, proven science and management to make decisions. Not our egos or pocket books.

Thank you
Mat Weiler
Yakima WA.

Sent from my U.S.Cellular© Smartphone

From: [Jason Parker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Wednesday, August 16, 2023 10:07:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

keep lion and bear hunting with hounds in New Mexico!!!!

Sent from my iPhone

From: [Mahonri Murphy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 11:58:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear dgf-bears-cougar-rules,

Hi, I'm Mahonri Murphy and I have used hounds for hunting for a few years now and have seen the amazing sport that it is for bears and mountain lions. It would be a shame to not let future generations experience hounding for bears in your great state. I've seen the rise of bear number on the coast since they have ban houndsmen from hunting. The bears start getting more comfortable with going into towns and eating pets and from trash therefore making neighborhoods less safe for kids to be kids.

I have seen first hand how devastating mountain lions can be unmanaged with dogs. I've seen them eat childhood pets and people's live stock. It is alot easier to prevent this from happening with the uses of dogs then with people trying to hunt them my foot. As you guys probably know cats are very elusive and we **NEED** hounds to fill in the gaps between our stamina and there smarts.

Please don't take away the opportunity to keep hounds run in your great and wonderful state.

Thanks for your time,
Mahonri Murphy

From: [Joey Dotson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 8:42:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Save the oldest form of hunting there is. Hound hunting is the most effective way to manage predators. Without proper predator management, deer and elk and other prey animals suffer substantially.
Sent from my iPhone

From: [scotty hamilton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 6:42:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support for the hound hunting in New Mexico. It is a trip that about 15 of us make every year to bear hunt. It is such a wonder place to go to hunt as a non resident and it was a trip of a lifetime as some of the old timers will not be able to make it back up there.

Anthony Hamilton

Sent from my iPhone

From: [scotty hamilton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 6:41:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in support for the hound hunting in New Mexico. It is a trip that about 15 of us make every year to bear hunt. It is such a wonder place to go to hunt as a non resident and it was a trip of a lifetime as some of the old timers will not be able to make it back up there.

Anthony Hamilton

Sent from my iPhone

From: [hillbilly nation](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Tuesday, August 15, 2023 6:37:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support hound hunting 100 percent

Sent from my iPhone

From: [Jamie Reynolds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound hunting
Date: Thursday, August 17, 2023 6:46:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

The citizens of New Mexico once again come under attack from extremists. At what point is enough enough? It's bad enough that so much bear / cougar habitat is behind locked gates and difficult to hunt with hounds. Now we have to worry about ending hunting with the use of hounds?

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Thank you

Jamie Reynolds (avid outdoorsman who will fight for my lifestyle!)

From: [Jonathan Starling](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hound use
Date: Wednesday, August 16, 2023 9:23:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Tyson Fisher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds
Date: Tuesday, August 15, 2023 9:45:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

You can not stop the pursuit of lions and bears. You will destroy the population of overall animals in the state of New Mexico.

From: [Eric Zahradka](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Monday, August 21, 2023 7:48:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Eric Zahradka

From: [Peyton Wackerman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Monday, August 21, 2023 10:55:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Peyton Wackerman

From: [James Forslund](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Monday, August 21, 2023 10:41:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
James Forslund

From: [Wesley Warner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Sunday, August 20, 2023 10:00:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Wesley Warner

From: [Daniel Irwin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Sunday, August 20, 2023 4:32:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Daniel Irwin

From: [Daniel Druia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Sunday, August 20, 2023 9:11:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Daniel Druia

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Saturday, August 19, 2023 9:47:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
John C

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hounds: Essential Tools in Game Management
Date: Wednesday, August 30, 2023 6:26:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Kyle Ronning

From: [Braylee Larson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Houndsmen Laws
Date: Tuesday, August 15, 2023 9:31:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a fourteen year old female houndsmen from raising and training hound dogs from pups to hard hunting bear and lion dogs i can personally say this sport with these dogs is something i enjoy and love doing. And please do not support the ban of bear and lion hunting!

From: [Conner Burnham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Houndsmen
Date: Wednesday, August 16, 2023 8:59:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Using hounds is the best technique for controlling lion and bear populations. Western states that banned hound hunting big game has seen predation on humans increase, populations explode, and ranch animal predation increase. Using hounds is a tradition and a way of life. The houndsman is not a cruel, abusive person that beats his dogs. Most hounds I see are better taken care of than 90 percent of overweight house dogs. Fed premium food, routine exercise, worming/vet schedules, taken out more than Fido gets let out of the back yard. My hounds are my family and they hold an important place in conservation.

Get [Outlook for iOS](#)

From: [Jane Mackenzie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Howl are misguided liars
Date: Tuesday, August 22, 2023 1:15:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I do not support bear and cougar hunting or wolves for that matter. These people are misguided and liars. They blatantly spin facts into whatever their narrative is they want a small group of people to believe. Wildlife belongs to themselves and the greater public. Not to a small band of small minded hunters and trappers who want to keep their sordid activity while the rest of us don't know what's going on.
Spare us the vitriol.

Sincerely,
Jane Mackenzie

From: [Alyssa Lopez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunt New Mexico
Date: Tuesday, August 15, 2023 8:23:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with hunting bears and cougars with hounds in New Mexico.

From: ["Gaelan Chutter-ames"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunt for Food
Date: Wednesday, August 23, 2023 4:28:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Gaelan Chutter-ames

From: [Michael Beguelin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Thursday, August 24, 2023 8:36:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Michael Beguelin

From: ["Justin Medina-Casillas"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Sunday, August 20, 2023 12:17:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Observing the repercussions of hound bans in places like California has been alarming. Predator populations must be managed responsibly for the health of the ecosystem. Let's learn from others' mistakes and maintain the balance here in New Mexico. Continue with cougar/bear hunting!

Sincerely,
Justin Medina-Casillas

From: [Joseph Purdy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Thursday, August 24, 2023 7:54:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Joseph Purdy

From: [Brian Lowry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Thursday, August 24, 2023 5:27:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts!

Sincerely,
Brian Lowry

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Monday, August 21, 2023 4:51:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Brian Carson

From: [Mackenzie Best](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Monday, August 21, 2023 4:49:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Mackenzie Best

From: [Richard Wenzel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Sunday, August 20, 2023 1:36:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Richard Wenzel

From: [Chris Moskoff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Sunday, August 20, 2023 7:46:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Chris Moskoff

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Saturday, August 19, 2023 9:48:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
John C

From: [Jacob Pickett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Saturday, August 19, 2023 9:43:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Jacob Pickett

From: [Brandon Vonaesch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: Funding Our Wildlife's Future
Date: Thursday, August 24, 2023 9:20:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's rich biodiversity is a testament to the success of its wildlife management programs. The proposed changes in the bear and cougar rule indicate a dedication to maintain this balance. Recognizing the essential role played by hunters, anglers, trappers, and recreational shooters across the country, it's vital that decisions be based on the insights and data provided by New Mexico's dedicated department biologists.

Sincerely,
Brandon Vonaesch

From: [Ro Mang](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: The Backbone of Conservation Efforts
Date: Monday, August 21, 2023 11:13:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Ro Mang

From: [Levi Winger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: The Backbone of Conservation Efforts
Date: Sunday, August 20, 2023 7:21:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Levi Winger

From: [Dell Oliver](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: The Backbone of Conservation Efforts
Date: Sunday, August 20, 2023 7:16:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Dell Oliver

From: [Caleb Strough](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: The Backbone of Conservation Efforts
Date: Saturday, August 19, 2023 10:46:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Caleb Strough

From: [Adam Brescia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: The Backbone of Conservation Efforts
Date: Saturday, August 19, 2023 9:33:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Adam Brescia

From: [Matt Eggers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunter Contributions: The Backbone of Conservation Efforts
Date: Wednesday, August 23, 2023 10:53:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Matt Eggers

From: [Ramon Chacon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunters Fund Bear and Cougar Management
Date: Monday, August 21, 2023 3:27:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Ramon Chacon

From: [Jeffery Cowlshaw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunters Fund Bear and Cougar Management
Date: Monday, August 21, 2023 1:52:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Jeffery Cowlshaw

From: [Cara Humphreys](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunters Fund Bear and Cougar Management
Date: Sunday, August 20, 2023 10:08:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Cara Humphreys

From: [Mathew Zimmerman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunters Fund Bear and Cougar Management
Date: Sunday, August 20, 2023 8:20:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Mathew Zimmerman

From: [Trevor Probandt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunters Fund Bear and Cougar Management
Date: Saturday, August 19, 2023 9:23:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives.

Sincerely,
Trevor Probandt

From: [Jerry Thorson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunters Fund Bear and Cougar Management
Date: Thursday, August 24, 2023 5:49:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Jerry Thorson

From: [Brian de la Fé](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Thursday, August 17, 2023 6:54:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is Brian de la Fe. I was born and raised in NM. Hunting bear and mountain lion in NM needs to continue to make sure numbers are kept manageable. Please don't make the mistake California is making with its mountain lion agenda. Everyone loses out if these predators are not kept in check, that includes our elk, deer, barbary, big horn, javelina etc plus our camping and hiking human populations.

Please do not consider banning bear or mountain lion hunting in NM.

Brian de la Fe
505-974-8670

From: [J.R. Marquez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Wednesday, August 16, 2023 11:56:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I hunt cougar when I don't draw for deer or elk that's keeps me going outdoors and enjoying the mountains and also helping local ranchers when they are having trouble with cougars in their area. Doing away with these hunt will not help our environment and cougars need fresh meat every 5 days so once they run out only a matter of time when they start coming into our city limits. Be careful what you vote let the hunt stay. Thank you.

Librado Marquez

From: [Richard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Monday, August 7, 2023 8:34:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern: It is totally unacceptable that you sell licenses to hunt down and kill bears and cougars in the state of NM . It's heart breaking what is going on I totally agree with the article in the Albuquerque Journal written by Charles Fox , on July 30th . Shame on you for allowing this tragic practice .
Caroll Follingstad

Sent from my iPhone

From: [Frank Romeo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting Bears and Cougars
Date: Thursday, August 17, 2023 12:52:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Gentlemen and ladies, Hunting is a tradition of the common man in the USA. elsewhere rules are written to reserve hunting for the empowered and elite. Currently nonhunters are pressuring wildlife managers and politicians to stop all hunting. The scientifically managed harvest of all animals is a hallmark of good conservation. Please continue the hunting of bears and cougars in New Mexico, it is our right and is appropriate for the balance of prey and predators.

Frank C. Romeo PE

From: [Roy Michelotti](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting Bears and Cougars
Date: Wednesday, August 2, 2023 2:38:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a long-term (greater than forty years) resident of New Mexico, I object to recreational hunting (or harvesting) of any bear or cougar. Hunting of other game species, like deer and elk, is essential because we have eliminated, or significantly reduced, populations of predators that would maintain an ecologically sustainable predator:prey ratio. Any removal of bear or cougar contributes to increases in the already unsustainable populations of prey animals.

Elimination of problematic bear or cougar that, predate upon livestock, or otherwise harass humans or their livelihood, is undestrandably sometimes appropriate, but that is not to be confused with recreational hunting.

Prey harvesting, deer and elk for example, is necessary to maintain ecosystem balance, based upon ecological- and biological-science data. If there are similar scientific data that suggest that bear and/or cougar populations need to be reduced, please provide references to those sources. Absent any scientific data, I firmly object to any recreational hunting of bear or cougar.

Encountering bear or cougar in New Mexico's rural landscape is a rare and enchanting experience. These iconic New Mexico species deserve protection from, rather than being sacrificed to, trophy and recreational hunting.

Roy Michelotti
3 Arbol Court
White Rock NM, 87547

From: [Lawrence Bradley](#)
To: [DGF-Bear-Cougar-Rules](#); [Lawrence Bradley](#)
Subject: [EXTERNAL] Hunting Bears in New Mexico
Date: Thursday, August 17, 2023 6:40:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Officials,

Last year in 2022, a rather large black bear tried to break into my father-in-law's house in rural Mora County. The same bear ripped the chicken coop apart and feasted on chickens. A number of other bears tore down tree branches in the fruit orchard. I say that sound conservation efforts need to be kept in place with regards to hunting bears in New Mexico. I have two degrees in biology and a Ph.D. In Geography. Thank you.

Dr. Larry Bradley
6068 Country Club Oaks Place
Omaha, NE 68152

From: [Roy Lamb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting Complaints
Date: Wednesday, August 16, 2023 12:06:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

If anyone's opinion can be heard, first they must have had a License to hunt for 4 of the last 5 years. Otherwise there opinion doesn't need to be opened.

Sent from my iPhone

From: [John and Linda Douglas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting Limits on mountain lions
Date: Sunday, October 15, 2023 10:08:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I understand you are considering limits that amount to about 10% of the existing population (as estimated). Some limit! It is actually a gift to trophy hunters, and it is far too high! I urge you to cut the number down significantly from that limit. Trophy hunting must not trump wise limits that help protect the future of the species. Mountain lions belong in the New Mexico landscape, and should not be sacrificed to hunting interests.

Sincerely,

Linda Douglas
Las Cruces

From: [Jim Brinkerhoff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting New Mexico
Date: Wednesday, August 16, 2023 12:37:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't let anti-hunters ruin one of the best hunting states in the nation. New Mexico has always done a great job. Please don't let anti-hunters ruin everything for the hunting community

Sent from my iPhone

From: [burlington43](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting Quotas for Bears and Cougars
Date: Sunday, July 16, 2023 12:44:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game Commissioners:

Please DO NOT raise kill quotas on bears, extend hunting, and adjust kill quotas for cougars for the following reasons.

The science governing the maintenance and protection of our unique and endangered New Mexico ecosystem doesn't support any of these actions. Fire, increased drought, human/wildlife conflict and animal extinction can be the results of mismanaged and unsupported policy decisions.

Please carefully review what is known about these impacts and consider unintended consequences, as well as aggressively support solid research which can then support any policy changes. DO NOT MAKE ANY CHANGES UNTIL MORE IS KNOWN ABOUT THEIR IMPACTS.

Once your policies are set in motion, the negative cascading effects may be impossible to reverse. Our ecosystem, as you know, is at a tipping point. I don't want our grandchildren to ask, "were there ever bears and cougars in New Mexico?"

**Spider Kedelsky
273 Headquarters Trail
Santa Fe 87506**

From: [Dennis Trumblee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting Rules for Bear and Cougar
Date: Wednesday, August 16, 2023 7:47:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Commissioners,

I believe the only way to manage wildlife in New Mexico is to allow the Game and Fish biologists to do the job that they have been hired to do. Game management is required to allow species to flourish in our ever changing landscape of urban development and up and down lifecycle of other wildlife species.

Anytime the state legislature gets involved with game management, wildlife and humans suffer.

Thanks, Dennis Trumblee
331 Joya Loop
White Rock, NM 87547

Sent from my iPhone

From: [Melissa Sledge](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting bear and cougar
Date: Wednesday, August 16, 2023 6:03:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I believe that hunting bear and cougar is vital to the safety and well-being of all New Mexicans. As a female I'd hate to be walking on a trail and have a life altering encounter with either animal.

From: [Stan Armstrong](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting bear and lion with hounds.
Date: Thursday, August 17, 2023 12:26:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Just a little note from an old retired bear and lion hunter. First of all I strongly support the New Mexico Game and Fish. With all the game studies that they do I strongly believe that they know what's best for our game animals. Bear and lion are predators that need to be kept in check. California is a prime example of letting lions go unhunted and now they are attacking joggers, hikers and little kids.

I remember back in the late 60's, early 70's around Alto Village people were calling us every day to come and run off bears as they were tearing up trash cans and scaring people. I remember the Mescalero Apache reservation had a 2 bear limit back then.

I also remember when the Game and Fish put a band of Desert Bighorns in the peloncillo mountains of south west New Mexico and the lions about killed them all in no time.

If predator numbers are not kept in check then we will not be able to enjoy seeing the other species that we all love seeing on occasion. Let's listen to the NM Game and Fish and go with their recommendations. They are in the field every day and know what's best for our game animals. It is after all what we pay them for.

Thank you
Stan Armstrong

From: [Michael Mrochek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting bears and cougars with hounds
Date: Wednesday, August 16, 2023 12:10:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

Hunting cougars without hounds is usually unsuccessful; hunting cougars with hounds is also difficult and frequently unsuccessful, but is a much better method.

Similarly, hunting bears in New Mexico without hounds is difficult and has a low yield. Hunting bears with hounds improves the chances of success. Both are humane methods.

From: [Bill Sallee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Monday, August 21, 2023 7:14:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Bill Sallee

From: [Cole Kristensen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Sunday, August 20, 2023 8:49:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Cole Kristensen

From: [Clarence Rushing](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Sunday, August 20, 2023 8:31:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Clarence Rushing

From: [Tom Waters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Sunday, August 20, 2023 7:59:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Tom Waters

From: [Benjamin Porath](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Sunday, August 20, 2023 7:37:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Benjamin Porath

From: [Cameron Stauffer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Sunday, August 20, 2023 7:10:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Cameron Stauffer

From: [Philip West](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Saturday, August 19, 2023 10:33:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Philip West

From: [Clayton Thompson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting for Sustainability, Not Just Sport
Date: Tuesday, August 22, 2023 9:00:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Please protect these hunts!

Sincerely,
Clayton Thompson

From: [Todd Charles](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting in New Mexico
Date: Tuesday, August 15, 2023 7:13:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please keep hunting of all species and all styles in New Mexico as is . I'm a houndsman from Michigan and am looking forward to hunting Cougar and bear in the upcoming years to come.

From: [Brandon McDow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting is Conservation!
Date: Thursday, August 17, 2023 10:08:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Managing beers and mountain lions through sustainable hunting is essential to New Mexico's wildlife habitat and species!

Thank You,
Brandon McDow

From: [Barbara McGuire](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting limits on Cougars
Date: Sunday, October 15, 2023 12:24:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to comment on the proposed increase in the number of Cougar hunting limits proposed by the DGF. I am strongly opposed to the increase in the limit as these creatures are an important and valuable apex predator as well as a historically present species in our state. Given the advanced technology that hunters are using (dogs with GPS collars), satellite data and incredibly accurate long-range rifles, the cougars have little chance to avoid being hunted and killed by hunters, even in the most remote parts of our state. I am a longtime resident of NM and an avid hiker, camper and user of our beautiful public lands here. Please consider declining to adopt the new, higher limits on cougars in order to maintain their presence in our forests and wilderness areas. Thank you for your consideration.

Barbara McGuire

From: [Dylan Shaw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting of Bears and Cougars
Date: Thursday, July 20, 2023 11:23:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game Commission,

As with other wildlife, killing bears and cougars at random for recreation and trophies exacerbates conflict because trophy hunters target larger animals for their kills which then disrupts important social structures. When social structures are in place these animals can self-regulate their own numbers; it is not problematic to kill fewer bears and cougars.

These current proposals are reckless and don't apply the best science. They lack scientific rigor. Have you accounted for the intensifying of climate change into your killing quota increase?

Also, please consider the broad public opinion to adopt hunting rules that ban the use of dogs in cougar and bear hunting. This is so cruel.

Please do the right thing for the animals and there is no downside to lowering the numbers.

Thank you for your time.

Dylan Shaw

From: [Darien Ross](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting of Bears or cougars
Date: Wednesday, August 16, 2023 12:14:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Just a week ago, I had an issue where a cougar was stalking my horses. I have 2 very expensive speed horses that I compete in Mounted shooting with and cannot risk them getting attached, killed or injure themselves while trying to run away from danger.

The anti-hunting people most likely live in a city and have not experienced the fear of a 1200-pound animal whose only defense is to run. I have a game camera set up and the next time the cougar comes around I will shoot it. Unfortunately, because all the game is in our town, the cougars have no food in the country where they belong and have to go for domestic animals.

I think while the people who are against hunting need to understand that farmers and people like me are risking our animals to predators, the wildlife in our village needs to be thinned out and taken to the country so cougars will have a food source so they will leave farmers animals and any domesticated animals alone. This is bigger than just changing a hunting law in my opinion.

Darien Ross
Associate Broker
Pinnacle Real Estate
931 Hwy 48, Alto, NM 88312
575-336-7711 Office
575-336-9110 Fax
575-973-0117 Cell

From: [Karen Schmidt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting of cougars and bears
Date: Monday, July 31, 2023 1:03:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Stop the hunting of bears and cougars for recreation. It is sad that this continues in New Mexico when we should consider our state blessed to have such magnificent wildlife. I don't understand the desire to KILL. Karen Schmidt, Tesuque, NM

From: [Mike Cribbs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting predators
Date: Saturday, August 19, 2023 7:39:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern, I am in favor of hunting, cougars, and bears because they kill a lot of wildlife and cattle.

Thanks, Mike Cribbs

Sent from my iPhone

From: [Eva Greenwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting rules
Date: Saturday, August 19, 2023 7:38:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with the rule changes you are proposing for bear and mt. lion hunting.

Thanks,
Eva Greenwood

From: [Brayden Munkres](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting rules
Date: Thursday, August 17, 2023 6:30:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [LD Hawkins, Jr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting with dogs
Date: Wednesday, August 16, 2023 11:57:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

These people have no clue how to manage game.

I have hunted all my life and between hunters booked, guided and licenses bought have contributed millions of dollars to support the conservation of wildlife. They don't understand the importance of the balance of nature. I've been hunting lions for years and without dogs it is nearly impossible to harvest one. Even with the quotas issued there are so many it's unbelievable. Not every lion is chased because of size or sex they are left to reproduce and they are. We cut lots of tracks every year in areas that are heavily hunted and there's always lions. Bears can be hunted other ways but the bear population is high and in my opinion out of control in our neighboring state of Colorado due to no baiting, no dog hunting and very limited hunting opportunities. I personally think it has hurt the elk population. I have seen and talked to lots of people who have seen bears with calves in their mouths time and time again. New Mexico has done a great job on trying to keep the numbers in check. I hunt southwestern New Mexico a lot and there's still tons of bears there. You can find them all over the state despite how much they're hunted. Letting these non hunters tell us how to keep nature balanced is like letting a Walmart checkout person do open heart surgery on someone. They don't have a clue what's going on out there.

Sincerely

Lester Hawkins
Soaring Hawk Outfitters

Sent from my iPad

From: [Kelley Brent Compton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting with hounds
Date: Wednesday, August 16, 2023 7:22:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

Hound hunting for bears and mountain lions in New Mexico is crucial for population management and the overall well-being of the state. By carefully regulating these populations, we can maintain a healthy balance in the ecosystem. Banning hound hunting could lead to overpopulation, which can have detrimental effects on both wildlife and the state of New Mexico.

Hound hunting allows for selective harvesting, targeting specific bears and mountain lions that may pose a threat to human safety or livestock. This helps prevent conflicts and ensures the safety of communities. Additionally, hound hunting provides valuable data for wildlife management, allowing researchers to gather information about population size, health, and behavior. This data is essential for making informed decisions and implementing effective conservation strategies.

If hound hunting were banned, the bear and mountain lion populations could increase unchecked, leading to overpopulation. This would result in a strain on their natural food sources and potential damage to the ecosystem. Overpopulation can also increase the risk of human-wildlife conflicts, as bears and mountain lions may encroach on human settlements in search of food. This could impact the safety and well-being of both residents and animals.

In summary, hound hunting plays a crucial role in population management for bears and mountain lions in New Mexico. It helps maintain a balanced ecosystem, prevents conflicts, and provides valuable data for conservation efforts. Banning hound hunting could lead to overpopulation and negative consequences for both wildlife and the state. Responsible and regulated hunting practices are necessary to ensure the long-term sustainability of these populations and the overall health of New Mexico's natural environment.

Sincerely,
A Hound Hunter
Sent from my iPhone

From: [Beverley Spears](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Sunday, July 30, 2023 7:48:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a new Mexican, a landowner and a taxpayer, I would like to express my disapproval of increasing hunting of bears and cougars. To go out and shoot another living being for sport is disgusting.

Beverley Spears

Sent from my iPad

From: [ty crook](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Wednesday, August 16, 2023 6:52:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We the hunters that hunt bear and cougars are the ones that keep the population down so that these animals stay out of neighborhoods and away from kids and are domesticated animals such as the family dog or cat or any other kind of pet you may have. You anti hunter I want you to go look and watch videos of this animals that come in to peoples home and attack kids or family pets or farm animal and then after you watch then give me your opinion, how you would feel if it was yours or someone you know how would feel then. Your local animal control can only do so much to help catch the animals and what comes after that is your games wardens and guess what happens they are more than likely going to put that animal down because wants they get a taste of water ever they are attacking and see how easy that prey is to get to they are going to keep coming back. Bears and cougars are just like you, me or anyone else in this world they get hungry and have their family to feed and they are going to do it anyway they can and go after that easy prey so by hunting them it keep them afraid of humans and out of the neighborhoods and everything and everyone you love.

Sent from my iPhone

From: [Jason Brumley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Wednesday, August 16, 2023 3:28:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a NM farmer and rancher and an outdoor enthusiast and hunter. Predator hunting is needed coyotes and occasional mountain lion have killed calves and calving cows on our ranch.

Allowing responsible hunting gives ranchers and landowners another tool to deal with predators and really any nuisance game animal. It also slows hunters to attempt to harvest a game animal. Bears and wolves are not a problem in our area, but they need to be hunted as well. A good balance is needed, and I feel that current rules are pretty good.

Thanks

Jason Brumley

Torrance County NM

Get [Outlook for iOS](#)

From: [Frank A. Kozeliski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Wednesday, August 16, 2023 12:17:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want to continue to hunt

Sent from my iPhone Apple 13

Senior Advisor of Quality Control
Michele's Ready Mix, Rock & Recycle
Hasler Valley, Rd, Gallup
that Concrete
Frank A Kozeliski ,PE
Cause -a- liskey
505-870-0316

Gallup, New Mexico 87301
fakoz123@gmail.com

Have a good day I Concrete

From: [Regan Aguirre](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Wednesday, August 16, 2023 11:31:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to continue a program for hunting bear and cougar to maintain a balance
Sent from my iPhone

From: [Paul Rockhold](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting,
Date: Wednesday, August 16, 2023 1:20:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from [Mail](#) for Windows

In the early 70's, after financial reverses where I was employed, The wild game that I hunted for and brought home provided well needed protein for my young family. Regards, Paul Rockhold

From: [Michael Chavez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting, bear,cougar with hounds,,
Date: Tuesday, August 15, 2023 7:23:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with hunting bear and mountain lion with hounds,, it's a way of hunting .

Sent from my iPhone

From: [Lura Brookins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting
Date: Sunday, August 13, 2023 8:14:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs,

Please, please end all hunting of our stressed wildlife in New Mexico!!

Tragedies of global warming- produced wildfires already endanger the lives of wildlife.

Human hunting is cruel.

Bears and cougars are not just "game". They are a vital part of our forest ecosystems and our heritage.

Your jobs at Game and Fish should be focused on conserving wildlife ecologies.

Lura Brookins
Santa Fe

From: [Dan Barnhurst](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Hunting: An American Heritage And Valuable Wildlife Management Tool
Date: Thursday, August 24, 2023 9:12:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am a trained wildlife biologist. I have a bachelors degree in Wildlife Management (82 - USU) and a Masters Degree in Wildlife Management - emphasis Predator Ecology (85 USU). My Masters Thesis was on The Vulnerability of Cougars To Hunting. I worked as a Wildlife Biologist and Conservation Officer for 32 years (now retired).

Properly balanced wildlife management by the state wildlife agencies has been a huge success. Habitat research and enhancement projects, wildlife transplants, and science based regulated hunting regimen have insured healthy wildlife populations nationwide.

Cougar and bear populations are great examples of these success stories. Their populations have never been healthier across the nation. Using research based regulated hunting to balance apex predators with their prey base and mitigate depredation and predator-human conflicts is working very well.

Hunting bear with bait stations and hunting both cougar and bear with hounds allow the hunter to be very selective in the animal they choose to harvest. Young animals and females are released and hunters often selectively harvest larger males. Houndsman invest huge amounts of money and time into maintaining and training their hounds. And both they and their hounds live to hunt. They have a vested interest in maintaining healthy cougar and bear populations. And there is great peer pressure among them to not harvest females and young.

Where these predator populations are out of balance with their prey, or depredation on livestock or human conflicts are excessive, selective harvest with hounds is the only effective tool available to wildlife managers.

While I understand the well-meaning sentiment of anti-hunters that want to eliminate all bear and cougar hunting. It is very short-sighted and would become an ineffective solution to a nonexistent problem. It would cause imbalance between predators and their prey base and increase conflicts with humans and livestock depredation.

Please allow the professional wildlife managers to continue to use regulated sustainable harvest of cougars and bears as a management tool (really the only viable one). And allow those families that enjoy this hunting activity to maintain this heritage that many have enjoyed for generations.

Thankyou for yor consideration.

Dan Barnhurst
Retired Conservation Officer

Sincerely,
Dan Barnhurst

From: [Elizabeth Rose](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I OPPOSE INCREASED KILL QUOTAS
Date: Friday, August 25, 2023 11:19:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

TO WHOM IT MAY CONCERN: NM Department of Game and Fish

It has come to my attention that today is the last day to voice our criticism of the proposed new kill quotas and guidelines for bears and cougars in New Mexico.

I would like to add my name to the list of people extremely displeased with the proposition to increase kill numbers of our beloved wildlife.

The reasons for my objection are outlined below...

1) Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

2) Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.

3) Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

4) The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

5) NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

6) Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they

are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophy' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

My objections are not limited to these arguments, but I believe this is more than enough to make you rethink passing these new measures.

I will conclude by reiterating that I STRONGLY OPPOSE increased kill numbers for Bears and Cougars in New Mexico, and as a registered voter I will be paying closer attention to such issues in the future.

Regards,

Elizabeth Rose

BBB
PO BOX 36198
ALBUQUERQUE, NM 87176

From: [Peter Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I OPPOSE THE KILLING OF EVEN A SINGLE BEAR OR COUGAR!
Date: Saturday, October 14, 2023 10:42:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Trophy hunting is cruel, barbaric, and unethical - it should not be allowed in civilized society! I OPPOSE THE KILLING OF EVEN ONE BEAR OR COUGAR!

NMDGF's kill limits are largely not grounded in sound science and should be reduced by at least 50%.

In the case of black bears, NMDGF uses mostly outdated studies conducted in the best bear habitats and then generalizes the results statewide. And in the case of cougars, NMDGF relies on an old, flawed habitat model to set kill limits for the majority of cougar management zones, despite more recent and reliable studies demonstrating that this model produces inaccurately high population estimates.

NMDGF proposes to only count legal kills by hunters towards their kill limits, instead of all sources of bear and cougar mortality. Total mortality includes disease, predator-control kills, human conflict kills, road-killed wildlife and the significant amount of annual poaching. Failing to include total mortality in the kill limits means that an unlimited number of bears and cougars may be killed on top of the hunting kill limits.

The Southwest has been experiencing a "megadrought" from 2000 to 2023, the driest period since 800 A.D. As result, New Mexico also experienced the most severe wildfires in recent history, destroying habitats, food and wildlife themselves. The NM Game and Fish has failed to account for these factors in their habitat or population estimates. Climate trends weigh in favor of lowering kill limits, not raising them.

Trophy hunters use radio-collared hounds to chase bears and cougars in New Mexico—a method that is both cruel and unfair. THIS IS WHAT SLOB "HUNTERS" DO! IT'S SICK, SHAMEFUL, AND OBSCENE!

Hounding harms non-target species, including deer and domestic livestock and results in deaths and injuries to federally protected Mexican wolves, bear cubs, mountain lion kittens, and results in deadly fights between bears or cougars and hounds. Hounding can cause both wildlife and hounds to die from heat exhaustion.

Archery equipment is cruel and results in uncounted wounding losses. Because of their heavy musculature, allowing archery equipment to hunt bears results in prolonged deaths of bears and wounding losses that are never counted in bear kill limits.

Bears and cougars make New Mexico's ecosystems healthy and diverse. Bears spread more seed than even birds, and cougars leave carrion for multiple species, contributing to biological diversity.

Researchers have found that black bear hunting does not resolve human-bear conflicts, and, may in fact, worsen them. Trophy hunters target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory. Also, killing these large carnivores does not reduce attacks on humans—but keeping dogs on leashes and carrying bear pepper spray in in wild places does.

Hunting cougars and bears will neither bolster ungulate herds (like mule deer or bighorn sheep) nor make people safer. o Killing cougars, however, creates social chaos in their families resulting in even greater mortalities from intraspecific aggression. Randomly killing cougars or bears exacerbates conflicts between

these animals and people, pets and livestock. It can even intensify losses of rare prey animals such as bighorn sheep. o Bears' diet is comprised of more than 90% plant materials. • Living black bears and cougars hold intrinsic, social, and economic values, and provide incalculable benefits to their ecosystems.

The American public opposes trophy hunting by 2/3rds majorities. Ask NMDGF to consider broad public opinion, adopt hunting rules that ban the use of dogs in cougar and bear hunting, reduce the proposed hunting kill limits by at least 50%, and include all human-caused sources of mortality in the kill limits.

Peter Wood

From: [Chantal Buslot](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I OPPOSE the Current Bear & Cougar Rule
Date: Sunday, October 15, 2023 7:18:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To :
NM Dept. of Game and Fish

Dear Madam, dear Sir,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans.

Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity.

Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to your state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans.
Your state's wildlife deserves better.

Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,

Chantal Buslot Belgium

From: [carlos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I Oppose Recreational Hunting
Date: Thursday, August 3, 2023 4:34:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I strongly oppose the recreational killing of bears and cougars, Quite frankly, it is horrifying that NM Game and Fish condones and authorizes killing just for kicks. Has history taught us nothing? State residents have to question who are the real decision makers in this department, Sounds to me like the NRA is in control.

When under strong and intelligent leadership this country has tried to restore the natural habitat of the land and all her native species, and rid the landscape of invasive plants and animals. Mother Nature is a thousand times more intelligent than those people who believe THEY control HER and can kill indiscriminately without dire consequences.

Is there no leadership with a backbone at NM Game and Fish that can stand up to the select few who believe it's fun to kill magnificent creatures just to stroke their egos? Bears and cougars belong on this land and should be respected and free to live without humans savagely hunting them like it was 1860.

For those that somehow gain enjoyment from killing just for fun, I recommend you send them to Florida to hunt invasive species with their bare hands. Species like the burmese python who, thanks to human stupidity, are currently devastating the native wildlife. They would be providing a much needed service to the native species and they would get their thrills killing.

Carlos Corella
Albuquerque

From: [Nick Kufalk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I Stongly Support Proposed Changes
Date: Tuesday, August 15, 2023 7:58:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I strongly support the departments science based methods to manage the bear and cougar populations. I am also happy that they are using the management practices to maintain wildlife populations and hunting opportunities. I support the proposed changes and hope that the department continues to use their proven methods to manage wildlife and not fold to some people's opinions based on emotion.

Thanks,

Nick Kufalk

From: [Dustin Ashley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I Support Predator Management
Date: Sunday, October 15, 2023 9:38:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing this today because of the concern that New Mexico will follow the examples of other states and ban predator management due to public opinion and not science based conservation methods. I 100% support the management of predators and the hunting (and trapping) of lions, bears, bobcats, coyotes and other predators. New Mexico has a diverse set of wildlife and that should be managed accordingly. As we can see in Colorado and Idaho the unmanaged approach to predators can lead to the plummeting of ungulate numbers and a drastic reduction of the number of hunter opportunities and ultimately money that comes into the state through the management of game species.

Sincerely,

Dustin Ashley

New Mexico Lifetime Resident and Conservationist

From: pelesaubers@everyactioncustom.com on behalf of [Pele Saubers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I am a New Mexico resident and VOTER...Please Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 6:00:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Pele Saubers
Algodones, NM 87001
pelesaubers@hotmail.com

From: [Lucero, Ray P](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.
Date: Wednesday, August 16, 2023 11:47:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning,

I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.

Hunting is a life long journey. We don't need more regulation.

Thank you

Ray P Lucero Life long resident Alb, NM

From: [Carl E Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I believe the control of predators such as bear and cougar helps control the other species such as elk and deer herds. Please continue bear & cougar seasons.
Date: Thursday, August 17, 2023 6:18:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Carl E Johnson johnsoncarl_e@hotmail.com

From: rocaudt@cybermesa.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I object to the recreational killing of wildlife
Date: Sunday, July 30, 2023 2:47:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The recreational killing of wildlife in New Mexico must stop!

I agree with Charles Fox's "My View" in the July 30, 2023 "Opinion" section of the Santa Fe New Mexican. Bears and cougars are native to this area; humans are the invasive species! Stop the recreational killing of bears and cougars!

The most destructive species known to Man is Man! And look where that has gotten humans to now! Shame on us! Do better!

Ann Young 250 East Alameda St. #232, Santa Fe, NM 87501

From: [Laura Hitt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I oppose raising/adjusting the kill quotas for bears and cougars
Date: Monday, July 17, 2023 4:23:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Department of Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time. Also, using dogs for hunting is unethical, unsportsmanlike, lazy, and cruel.

Sincerely,
Laura

From: [jh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I oppose the proposed trophy hunting rules for bears and cougars.
Date: Tuesday, August 15, 2023 12:16:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the proposed trophy hunting rules for bears and cougars.
Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised.
Kill quotas for both species have been unjustifiably high for many years. ^[L]_{SEP} Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers.
Therefore, erring on the side of killing fewer of these animals is not problematic.
Killing too many can impact their populations for a long time. ^[L]_{SEP} Killing bears and cougars at random for recreation and trophies does not help address conflict with humans.
In fact, it may exacerbate conflict.
Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.
Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected.
Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions.
Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying.
This is both reckless and cruel. ^[L]_{SEP} The hunting proposals lack scientific rigor.
There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates.
Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived.
And there has been no external review of those population estimates by independent, outside experts.
In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

I oppose the proposed trophy hunting rules for bears and cougars.

Sincerely,
Jana Harker

From: [jeremy.rice](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I oppose this bill
Date: Monday, October 16, 2023 11:25:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

While hunting elk on a 5 day hunt I saw 2 different lions, the way things are set up now for predator control in New Mexico should be left alone.
Sent from my iPhone

From: [Melissa Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I oppose your proposal to extend hunting limits on cougars
Date: Friday, October 6, 2023 8:46:44 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose your proposal to extend hunting limits on cougars. Don't do it.

Melissa Smith
Santa Fe, NM

Sent from my iPhone

From: [Mariah Chacon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I stand with hound hunting!
Date: Thursday, August 17, 2023 5:57:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Nick Kufalk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support Bear And Cougar Hunting!!!!
Date: Thursday, August 17, 2023 12:57:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Keep The American Dream Alive for Everyone!!!!!!

Long Live the Hound Dog and Houndsman!

Nick Kufalk

From: [mission avenue PE](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support Current Rules, Regulations & Processes
Date: Wednesday, August 16, 2023 2:36:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I wanted to express my support for the Game Commission keeping politics out of wildlife management decisions and for current management practices that align with the North American Model for Wildlife Conservation.

The Game Commission should continue to work with biologists, wildlife management professionals and use data to set and maintain healthy balances in both predator and prey populations.

Thank you Game Commission for listening to wildlife professionals and using scientific data to make wildlife decisions. Thank you for ignoring the private interest groups that do not align with best management practices and would have wildlife decisions made with subjective emotional attacks as opposed to biological data.

Sincerely,

Common Sense New Mexican

From: [Luke Ellifritz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support bear and cougar hunting
Date: Wednesday, August 16, 2023 11:33:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support Responsible and Ethical hunting of Bear and Cougar.
Luke Ellifritz

Sent from my iPhone

From: [F.Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support biologists NMGF and scientific management of all predators by wildlife Professionals and Biologists
Date: Wednesday, August 16, 2023 12:06:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support biologists NMGF and scientific management of all predators by wildlife Professionals and Biologists.

Please continue to let data and sustainable practices in harvest quotas be the best management practices as NMGF always have.

Furthermore, please continue to strongly oppose any rule/initiative that does not seek the balanced management of ALL game animals in an ecosystem.

Continue to be leaders and an example for other states to look to when it comes to the sound management of game.

Thanks for all you do at the NMGF Department

Filiberto Martinez

From: [Jeremy Malett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support current harvest
Date: Wednesday, October 18, 2023 1:56:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the current regulation on mountain lion harvest goals. I live in the mountains. Almost every person emailing you about opposing hunting lives outside of the mountains. They have no idea what they are talking about. They are mostly uneducated city folk that believe the antihunting lies that are being spread.

Please do not further restrict the people that support nmgdf. It should be a law that if you do not buy a habitat stamp with a license you may not have input on our policy.

Jeremy Malett
JbarDOutfitters
nmhuntguide@gmail.com
575-551-6093

From: [Katie DeLorenzo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support legal bear and cougar hunting and proposed rule changes
Date: Wednesday, August 16, 2023 9:47:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a lifelong New Mexican, hunter and conservationist I strongly support regulated bear and cougar hunting in addition to the changes being proposed by the NMDGF in the current 2023 rule making session.

It's imperative to put the resource first and use the best available science to make management decisions rather than conjecture and emotion. The methodology used by NMDGF in determining the data used to make these decisions is sound. Current population estimates and on-the-ground depredation reports point to an increasing population, more human wildlife conflict, and the unnecessary expenditure of conservation officer resources that would be better spent protecting our shared wildlife resources. It's important that New Mexico continue to manage predator populations through regulated public hunting and the purchase of licenses that generate rather than diminish revenue for the department and it's critical mission.

Thank you for your consideration,

Katie DeLorenzo

From: [Paul Comino](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support mountain lion and bear hunts
Date: Friday, October 20, 2023 7:16:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please dont listen to people that dont understand the importance of managing predators for many reasons.

From: [Leo Evans](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support scientific studies performed by our game department bear and lion biologists. I am in favor of bear and Lion with the use of hounds
Date: Wednesday, August 16, 2023 11:29:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

[Sent from Yahoo Mail for iPhone](#)

From: [bill-bradford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support the scientific management proposal submitted by the game department biologists and the continuation of scientific predator management programs in New Mexico. Bill Bradford
Date: Wednesday, August 16, 2023 4:30:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

90 Camino Redondo

Placitas, NM 87043

Sent from my Verizon, Samsung Galaxy smartphone

From: [knutsonconstruct](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I support
Date: Wednesday, August 16, 2023 4:06:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not take away any more of the publics rights for hunting and trapping !! Period

From: [jayson.grover](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I wish to voice my support in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.
Date: Wednesday, August 23, 2023 8:56:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Respectfully,

J. Grover, P.E.
Bluewater, NM

From: [Phil Wasz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In Defense of Science Based Bear and Cougar Management in New Mexico
Date: Wednesday, August 23, 2023 4:13:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am writing you this email in defense of science based bear and cougar management in the great state of New Mexico. The North American Model for Wildlife Management and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by SCIENCE over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Phillip Wasz

From: [Joshua Lane](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In FAVOR of responsible predator management
Date: Friday, August 18, 2023 3:31:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm writing to urge you to support responsible predator hunting programs, including bear and cougar hunting. I've hiked areas that are overrun by bears and feel their population should be properly and responsibly managed. I've also hiked and hunted in areas that have an incredible number of cats including cougars and bobcats. With the change to the trapping rules on public land, these numbers are without a doubt growing.

I SUPPORT the SCIENTIFIC management proposal submitted by the game department biologists and the continuation of SCIENTIFIC predator management programs in my state of NM.

Thank you,
Joshua Lane

From: [Vince Tafuro](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In Favor of Bear and Cougar Hunting
Date: Friday, August 18, 2023 7:20:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Commissioner,

As a lifetime resident and hunter in New Mexico, I believe that proper management of all animals is critical. Bear and Cougar hunting are a necessary tool to maintain healthy game populations for all species. Our deer and elk herds are already suffering from wolf populations, poachers and poor management decisions. Bear and cougar populations need to be kept in check.

I support the proposed rule change for bear and cougar and I firmly support bear and cougar hunting.

Thank you for your time and consideration.

Respectfully,

Vincent Tafuro

[Sent from Yahoo Mail for iPhone](#)

From: [Russell Frame](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In Favor of Proposed Changes
Date: Wednesday, August 16, 2023 2:52:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a resident of New Mexico and an avid outdoorsman and big game hunter. I am in favor of the proposed changes for bear and cougar management. Bear and cougar hunting is necessary, and is the most effective way to maintain healthy populations of both species. It is also necessary to help maintain and sustain healthy populations of all species of wildlife that inhabit our great state.

Thank you,

Russell Frame
Animas Pump Specialists
(505)947-7257

From: [Jonathan Medina](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In Favor
Date: Wednesday, August 16, 2023 4:50:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi NMWF

I'm in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.

Thanks,

Jonathan Pedraza

From: [Hannah Greene](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In Support of Lion& Bear Hunting in NM
Date: Saturday, September 2, 2023 1:35:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to keep the Management of Predators in the Hand of Hunters here in NM. Our Deer Herds are already struggling , we have increased sightings of Cougars in our Canyon here in Southern NM Mountains (GMU34) and it will only be a matter of time till People out for recreational use of our Trails&Forests will find themselves in an encounter with either species, as they are both hunting in more populated Areas to get to their Food Sources .

Our Elk Population is also at risk .

As a responsible Hunter and Mother of future Hunters in the State of NM , learning , teaching & supporting adequate Predator Control , to me is essential ,there can't be a healthy Balance in this System if we as Hunters don't get to help out .

Best Regards . Hannah G.

Sent from my iPhone

From: [Luke Kellogg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In favor of responsible and Cougar Hunting
Date: Wednesday, August 16, 2023 12:00:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a long term New Mexico landowner, wildlife manager and hunter, I am strongly in favor of continued responsible Bear and Cougar hunting in New Mexico . This includes continued hunting with hounds. Please register my support in favor of NMDGF continuing these hunts. Respectfully submitted . - Luke C. Kellogg Vice President Cherry Valley Ranch LP.

Luke C. Kellogg
The Law Offices of Luke C. Kellogg P.C.
250 W. Nottingham , Suite 425
San Antonio , Texas 78209
(O) 210 821 5757
(M) 210 260 8004

Luke@kelloggfirm.com

Confidential Communication- delete immediately if you are not an intended recipient

From: [Pat Archuleta](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In favor of responsible hunt program
Date: Wednesday, August 16, 2023 7:15:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I stand by the biologist proposal to continue the rule of hunting bear or cougar with dogs and for the privilege of responsible hunters hunting with dogs. I believe if we let anti-hunting groups reverse our rights as hunters it will have adverse affects, not only on taking away our hunting privileges but it will have impacts on the state economy and eventually affecting livestock loss even more. Not to mention that there will be more encounters with predatory wildlife which could lead to injuries and possible loss of human life and pet deaths. I am a pet owner myself and as a responsible pet owner I understand that public lands have many uses, so I know that it is my responsibility to keep my pet on a leash to keep them safe out in public lands and public streets, no difference!

Sincerely,

Mr. Pat Archuleta

Sent from my iPhone

From: chea505l@yahoo.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In favor of responsible predator hunting
Date: Wednesday, August 16, 2023 11:26:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Kayvan Varyani

From: [Adam Baca](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In favor of responsible predator hunt programs
Date: Wednesday, August 16, 2023 1:47:20 PM
Attachments: [image001.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I write to express my strong feelings that NM should continue to have responsible predator hunt programs. I support the scientific management proposal submitted by game department biologists.

Adam Baca, CPA/ABV, CVA



2155 Louisiana Blvd NE, #7000
Albuquerque, NM 87110

Main 505-200-3800
Direct 505-835-7755
Fax 505-884-0510

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From: [keith.carraway](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In favor
Date: Wednesday, August 16, 2023 12:02:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm in favor of the current regulations that allow for the hunting of bears and cougars within New Mexico

Keith Carraway

[Sent from Yahoo Mail for iPhone](#)

From: [Kyle Adamson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In regards to the proposal to stop hound hunting for mtn lion and black bear
Date: Tuesday, August 15, 2023 6:52:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider the American heritage of hound hunting when making your final decisions. To many of us houndsmen and women it is a lifestyle. Hunting bear and mtn. Lion is the only sure way to know what you are harvesting (if harvesting)as for male or female or size. If NM loses their rights to run hounds it will devastate many families and the population will go out of control for example what is happening in California, Oregon and Washington with humans being attacked or killed regularly and nuisance bear and lion in populated areas they should not be. Not to mention the effect it will have on the other wildlife that will take a hit from higher numbers of deaths do to over population of predators. Thank you for your time.
Kyle Adamson

From: [jason.amaro](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In support of Bear and Cougar Seasons
Date: Wednesday, August 16, 2023 7:03:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good Afternoon

Thank you for taking my comment, I am in support of keeping the existing bear and cougar rules.

Jason Amaro

From: [Matt Klooster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In support of bear/cougar hunting and use of hounds
Date: Thursday, August 17, 2023 10:52:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Afternoon,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Thank you
-Matt K

From: [JOSE CARRASCO](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In support of proposed changes to Bear and Cougar
Date: Wednesday, August 16, 2023 8:02:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to give my support for the proposed changes to Bear and Cougar 19.31.11. I understand that this will increase the quota from the current numbers.

Thank you for your time,
Jose Carrasco

Sent from [Mail](#) for Windows

From: [J. Brandon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] In support of science-based bear and cougar hunt rules
Date: Friday, August 18, 2023 12:23:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the New Mexico State Game Commission-

I am writing to you today to express my support for the scientific management proposal submitted by game department biologists and the continuation of science-based management programs for bear and cougar populations in our state.

Thank you,

-J. Brandon

Silver City, New Mexico

From: k9gaj@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Increasing number of cougars who can be killed in New Mexico
Date: Saturday, October 7, 2023 2:50:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

PLEASE DO NOT INCREASE THE NUMBER OF COUGARS WHO CAN BE HUNTED OR KILLED THIS YEAR!!!!!! THE ARE PRECIOUS ANIMALS WHO HAVE BEEN IN NEW MEXICO FOR A LONG TIME.

i AM A VOTING RESIDENT OF NM FOR OVER 40 YEARS AND CARE ABOUT OUR ANIMALS AND LANDS.

THANK YOU!!

SUSAN B ARKELL

3005 SIRINGO RD

SANTA FE, NM 87507

505 474-3315

From: [Barbara Liberty](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Increasing quota on bear and cougar killings
Date: Thursday, August 24, 2023 2:33:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please stop this insane proposal. Bear and cougars are necessary for our wildlife habitat. Your proposal isn't based on science.

I have lived in northern New Mexico for 30 + years and have never even seen a bear. I don't believe there are many in our state. I did not think it's worth it to decrease population.

As for cougars. We all love our cougars and seem to successfully cohabitate with them with no harm to humans.

We have built into alot of widldlife habitats creating a dwindling habitat for wildlife of all species. It's clear to me that hunting for sport is immoral.

Where I live we have many bobcats , some cougars, rarely a bear and we all live successfully with them. They are a source of great joy for this community.

We need our bears our bobcats and out mountain lions ... not
Hunters who wish to kill for sport or hunt them for any reason other than self protection.

Barbara Milton
Santa Fe NM

From: mrccritters@yahoo.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Information
Date: Friday, July 7, 2023 5:33:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good evening.

Could you please provide either a copy or a link to the "recent research" mentioned in your email about the bear/cougar rules.

Thanks!

Mike

[Sent from Yahoo Mail on Android](#)

From: [ronald brewer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Input for rule change
Date: Wednesday, August 16, 2023 7:54:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hound hunting for bears and mountain lions in New Mexico is crucial for population management and the overall well-being of the state. By carefully regulating these populations, we can maintain a healthy balance in the ecosystem. Banning hound hunting could lead to overpopulation, which can have detrimental effects on both wildlife and the state of New Mexico.

Hound hunting allows for selective harvesting, targeting specific bears and mountain lions that may pose a threat to human safety or livestock. This helps prevent conflicts and ensures the safety of communities. Additionally, hound hunting provides valuable data for wildlife management, allowing researchers to gather information about population size, health, and behavior. This data is essential for making informed decisions and implementing effective conservation strategies.

If hound hunting were banned, the bear and mountain lion populations could increase unchecked, leading to overpopulation. This would result in a strain on their natural food sources and potential damage to the ecosystem. Overpopulation can also increase the risk of human-wildlife conflicts, as bears and mountain lions may encroach on human settlements in search of food. This could impact the safety and well-being of both residents and animals.

In summary, hound hunting plays a crucial role in population management for bears and mountain lions in New Mexico. It helps maintain a balanced ecosystem, prevents conflicts, and provides valuable data for conservation efforts. Banning hound hunting could lead to overpopulation and negative consequences for both wildlife and the state. Responsible and regulated hunting practices are necessary to ensure the long-term sustainability of these populations and the overall health of New Mexico's natural environment.

[Sent from Yahoo Mail for iPhone](#)

From: jransbarger@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] I'm so pissed off
Date: Wednesday, August 16, 2023 2:32:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone I'm going to try to be nice. But I spent a week in the Gila National Forest this last week and did not see 1 deer this is not good for NM hunters in the future. I feel like the game department and commissioners are not going to do anything about this. I have talked to a dozen hunters over the week and all think the same thing as I do. Predators are taking our wildlife because we have allowed our commissioners to listen to anti hunters who could care less about our wildlife it's an agenda that they have caved to. Trapping is eccential in controlling our predators and bear and mountain lions are killing off our fawn crop more and more every year including coyotes, wolves. Our commissioners need to listen to the people that are out there in the wild and seeing this. We used to have the best deer hunting in the west and we have lost that most precious thing we as hunters have had. It's sad

From: [Craig Clement](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep Bear and Cougar Hunting in NM.
Date: Thursday, August 24, 2023 1:24:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please keep Bear and Cougar Hunting in NM. I would hate to have rural suburban areas over run with large predators. Please do not cancel these hunts. Sincerely, Craig J. Clement.

Sent from [Outlook](#)

From: [DAN DRAIN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep Bear and Cougar hunting Legal
Date: Thursday, August 17, 2023 10:26:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am an active hunter and trapper in NM. Bear and cougars that are not managed through hunting means a lot more unfavorable human/animal encounters. Managed predator populations are much healthier populations. Plus it's a source of revenue for the state. Keep Bear and Cougar hunting Legal!!

Dan Drain

Get [Outlook for Android](#)

From: [Paul Ussery](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep Hunting Predator species
Date: Wednesday, August 16, 2023 11:34:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Requiring a license and abiding by current rules and regulations should be sufficient to satisfy state lawmakers. Those in the roundhouse need to frequent the State Parks and National Forests more often. I've seen bear at close proximity in Coyote Creek State Park, Junebug National Forest Campsite near Red River, and along the Cimarron river below Eagle Nest State Park. People shouldn't be afraid of bears, bears should be afraid of people. I was glad to see the Valle Vidal opened up to bear hunting. On my two elk hunts there, I was reluctant to enter the forests pre-dawn or remain after dark due to the many bears found in the south loop. And don't get me started on Cougars! When frequenting State Parks in my RV, my dogs usually want to get out pre-dawn for their walk, and I can't carry loaded firearms? Which species are you really trying to protect here? Gun control means knowing what you're shooting at, and hitting what you aim at.

Paul W. Ussery

From: [Matricia Fincher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep Science in NM Bear & Cougar Hunting Regulations
Date: Wednesday, August 16, 2023 9:51:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we, as the public who cherish & respect these resources, support legal bear and cougar hunting as an appropriate and effective management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time. The measurable expansion of healthy populations into historic ranges is clear evidence of this fact.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Matricia Fincher

From: [Randy Ellison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep Science in NM bear & Cougar hunting regulations
Date: Thursday, August 17, 2023 11:29:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

It has come to my attention that a large number of comments have been received and directed to your commission, from well intentioned but largely uninformed citizens who have argued for the cessation of Bear and Cougar hunting. This is in direct opposition to all scientific data and population estimates based on true research.

I would strongly appeal to you to please not give in to the emotional and uninformed plea from these people to stop hunting of both species. Currently our state enjoys healthy numbers of both bear and cougars as they are correctly and intelligently managed by the NMDGF. To change these two species to totally "protected" would result in devastation of our cattle ranching industry and our deer and elk herds as well. Both of which currently face tremendous pressure from a burgeoning wolf population. Ultimately this would of course seriously reduce the Apex predators themselves as they would run out of prey species, turn to livestock and then be eliminated to preserve private property of the ranchers.

The changes as proposed by NMGFD to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our department biologist and the recommendations developed from their science-based data such as non-invasive scat/hair sampling, remote/trail cameras, GPS collars, hunter surveys, landowner reports and other traditional measures.

Thank you for your sincere consideration of this request.

Respectfully,

Randy A. Ellison
505-450-8386
RAEllison52@gmail.com

From: ben@salopek6u.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep bear and cougar hunting, especially in the drought so a number of these can be reduced to help the remaining animals.
Date: Wednesday, August 16, 2023 2:32:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [Ubaldo Gallegos](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep bear and cougar hunting
Date: Thursday, August 17, 2023 7:50:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [Lukas Madrid](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep bear and lion hunting
Date: Wednesday, August 16, 2023 3:01:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We are New Mexico, stop trying to be a small California.!

If you take away bear and lion hunting you'll see the over population in predators and they will become a problem in our towns and cities.

Bring back our deer population and kill all the predators

Sent from my iPhone

From: [John Evert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep bear and lion hunting with hounds
Date: Thursday, August 17, 2023 1:00:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want to let you know I support raising quotas on bear and lion. Also using hounds is the best way to manage these species. Using hounds is the only way to be selective in harvesting bear and mountain lion. Letting elk and deer hunters shoot at them is not a good way to manage bear and lion. To many sows and young bear and lion would be killed this way.

Thank you. John Evert

Sent from my iPhone

From: [dylan.meyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep hound hunting
Date: Wednesday, August 16, 2023 2:38:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support bear and lion hunting. Every animal needs to be managed. Hound hunting is a great ethical way to manage game animals all across the country

From: [bif barlow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep open cougar & bear seasons
Date: Wednesday, August 16, 2023 11:50:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider keeping the seasons open for predators under the current rules and regulations. Without hunting an imbalance is in the future that could devastate other wildlife such as deer, elk, ibex, Barbary Sheep, recently populated big horn sheep. Also with expanding urbanization of many communities it could potentially endanger human populations, pets such as dogs, cats as well as multiple species of domesticated livestock.

Respectfully yours

Kenneth Hargues

Sent from my iPhone

From: [Jacob Brady](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Keep the hounds running!
Date: Monday, August 21, 2023 10:14:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a big game guide here in New Mexico, I understand the need to harvest animals in the efforts of population management. This same methodology should apply the predator population as well. To make the effect season more successful, the use of hounds is almost a must.

There is a common joke among resident hunters, "that if you are worried about seeing a bear or a mountain lion while you are in the woods, just buy a tag and you're guaranteed to never see one." While it is meant in some humorous way, there is a lot of truth to the joke. The spot and stalk approach to hunting cougar and bear is wildly unsuccessful.

In order to be more to be successful in the management of the predator populations hounds have been the key to that success. Although it does sound rather violent or inhumane to the activist groups that are pushing for this law, the need is apparently greater.

Without the help of the hounds in the efforts to manage populations, I feel that larger predator populations will rise greatly in short amount of time with the amount of food resources that are available. With the increased population numbers, and the natural instincts, the territory that they will require is going to increase. This could lead to effect on the natural environment that has already established.

Making predators expand they're environment moves them closer to established communities and towns. This only increases the potential for encounters with these animals.

These are just a few reasons that we should continue allowing the hounds to do their job. There are so many other reasons that I can think of that would be in support of the houndsmen keeping their livelihoods, there is no need for a novel. Thank you for your time.

Jacob Brady,
New Mexico Big Game Guide

From: [Lee Laney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Kill Limits
Date: Tuesday, October 17, 2023 9:18:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to let you know that I wholeheartedly oppose the high hunting limits the NMDGF is considering for our mountain lion population.

These animals are an integral part of our state's fauna and deserve our protection, not a death sentence.

Stop the slaughter.

**Lee Laney
1500 Escalante Ave SW
Albuquerque, NM 87104**

From: [William Bowen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Kill Limits
Date: Friday, October 20, 2023 5:01:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to respectfully lodge my support for lower kill limits, as apex predators are critical for healthy prey populations and ecosystems at large. Thank you,

Mac Bowen
1024 Don Cubero Ave
Santa Fe, NM 87505

From: [Sharon Dogruel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Kill Quotas
Date: Thursday, August 24, 2023 12:25:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

DGF,

I understand that you are considering raising the kill quotas for NM bears and cougars and I want to make several specific points:

1. The numbers of bears and cougars that are allowed to be hunted and killed is not based on sound scientific evidence. I know that DGF keeps records but there is no evidence that the populations of bears and cougars has increased to warrant killing more of them. These animals self-regulate as history has shown and their populations rise or fall based on the availability of natural food.
2. We are facing extreme weather events driven by climate change: increased temperatures, severe drought, loss of habitat, wild fires. All of these are already limiting the populations of bears and cougars and this will only increase. More killing makes no sense,
3. Hunting bears and cougars does not impact livestock as record will demonstrate. The number of livestock killed by bears or cougars is minuscule, at best. This is just an old tale that has no basis.
4. Killing more bears and cougars only degrades an already threatened environment. Nature needs balance and has evolved to maintain that balance. We are beginning to see what damage we are doing when we arbitrarily upset that balance.

For these reasons, and just plain common sense I ask that you drop this unnecessary rule change. We have only a short time to preserve the natural world that we all enjoy. Do not make more irreversible changes.

Thanks you, Sharon Dogruel

Santa Fe, NM 87506

From: [Michael Milone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Kill quota for bears and cougars
Date: Monday, August 21, 2023 5:12:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Do we really need to "harvest" bears and cougars? I can understand the need to control major carnivores if they pose a threat to humans, pets, or farm animals. However, in order to maintain a balanced community of wildlife animals, it might be better to ban the trophy hunting of bears and cougars..

Michael Milone, Ph.D.
Placitas, NM

From: [Stella Thompson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Killing Cougars
Date: Saturday, October 7, 2023 12:50:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone. Please DO Not kill those majestic creatures. They deserve to live. Haven't you watched any of the animal shows and seen how climate change and global warming are killing off our wildlife in droves? They need all the help they can get. Us humans did this. Please don't make it worse.

From: [Valli Aran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Killing bears and cougars
Date: Thursday, August 24, 2023 8:58:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears and cougars are publicly owned natural resource. What's the reason for killing them? Is it to provide "sport" for rich, out-of-state people who want to kill something? They are not really a food source.

From: [Gloria Constantin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Killing bears and cougars
Date: Friday, July 7, 2023 5:52:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Is anyone keeping track of how many bears and cougars are left?

This is an ecological concern. Bears, cougars, along with elk, deer, and other animals are frequently poached.

All of nature is intricately connected to a complex ecosystem. We don't want to hunt nature to extinction.

Gloria Constantin
521B Evergreen Lane
Taos, NM 87571

From: chinle3@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Killing of Bears and Cougars
Date: Monday, July 31, 2023 11:25:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am against any killing of the Bears and Cougars in the state of New Mexico.
“Bears and cougars are both native to New Mexico and belong on this landscape in ecologically significant numbers. These species manage their own populations based on the availability of food and habitat. There is no credible evidence that either species needs to be lethally “managed.”

Thanks for your consideration,
Cindy Beaver
Silver City, NM
88061

Sent from my iPhone

From: [Gail Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Killing of bears and cougars
Date: Sunday, July 30, 2023 2:38:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I read the article in The Journal...July 30.

Here's my thoughts.... Remember the old tv commercial where Mother Nature said " don't mess with me"? Just take a look around at our planet...our only home...and see what a mess HUMAN nature has done! Leave the wildlife alone. If we...at the top of the food chain...cannot live with these (who lived here first!). Then maybe WE need to move. Nature will take care of hers...as it always has.....WE need to stop messin' with it. I have learned to "follow the money" and I think it is more of THAT than being their "keepers".

Sent from my iPad

From: [jean.robinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Killing quotas
Date: Thursday, July 20, 2023 1:12:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reduce killing quotas for bears and cougars the world has moved on and knows the importance of animals in nature it's time to bring hunting under strict control not pleasure but necessity

Sent from my iPhone

From: [Bill Tiwald](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Bill Tiwald](#)
Subject: [EXTERNAL] Large mammals have become scarce in NM
Date: Saturday, August 26, 2023 7:41:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a wildlife tracker I've hiked and backpacked the entire state since early 2000. The 10,000 ft or better mountain ranges no longer have springs, let alone streams. With no water sources, bears and cougars are no longer in these mountains. I also hike and backpack NM's Sangre de Cristo mountains. I haven't seen bear and cougar traces in the Sangre de Cristo either since 2018. I hope the game commission hasn't foolishly increased limits on bears and cougars because with these facts we must stop the hunting of bears and cougars.

Bill Tiwald
(505) 331-6676

From: [Sallie McCarthy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Leave NM Wild
Date: Friday, August 4, 2023 2:45:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Do we really have too many bears and cougars in NM? I thought there were precious few. What is the standard for beginning a kill-off of those remaining in the wild.? Why does Game and Fish pursue the eradication of these “gentle” predators? And wolves? I believe that the balance of nature must be respected.
Sincerely, Sallie McCarthy

From: [eric.shantz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Leave our hunting alone.
Date: Wednesday, August 16, 2023 1:42:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [Randy Hunter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Leave them alone
Date: Sunday, October 15, 2023 8:16:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please leave the mountain lions alone. They are part of this glorious earth and deserve to live their beautiful lives here on this earth as much as anyone else. There is no reason we go into their space and eliminate them. We as humans are smart enough to share this world with animals.

Sent from my iPhone

From: [Abran Briseno](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let Science dictate policy
Date: Thursday, August 17, 2023 9:53:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commissioners,

The current practice of science-based fish and wildlife management is the foundation of the American Model, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture. Bear and cougar are an important economic resource to many New Mexicans. The right to access those resources has been challenged and, in some cases, taken away in some states due to organized opposition from groups unconcerned with the negative impacts of the loss of said rights.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

As public servants, I'd ask that you please continue to prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data, such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures, in primacy when considering possible changes to policies and rules.

Respectfully,

Abran Briseño

--

NM BHA Stewardship Chair

From: [Carl Tapia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let The People Hunt.
Date: Sunday, October 15, 2023 9:49:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm not even a lion hunter, but we need balance and lion hunting is needed. Have you ever tried to hunt deer where it's covered with mountain lion tracks? You won't find a deer within miles. I have found deer dead heads in such places tho. The lion hunters help the big game hunters which provides more big game tags and food on us New Mexicans Tables.

Sent from my iPhone

From: [Tiffany Rexrode](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Saturday, August 26, 2023 8:24:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Tiffany Rexrode

From: [Mark Basinger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Tuesday, August 22, 2023 8:32:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Mark Basinger

From: [Taylor McGarrigle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Monday, August 21, 2023 6:01:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Taylor McGarrigle

From: [Darrin Boyd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Sunday, August 20, 2023 11:47:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Continuous review and adjustment are essential for effective wildlife management. The proposed changes to the bear and cougar rule seem well thought out, reflecting lessons learned over time. Such adaptations are necessary to ensure the well-being of our wildlife populations. Please support bear/cougar hunting.

Sincerely,
Darrin Boyd

From: [Brad Thomsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Sunday, August 20, 2023 7:14:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
Brad Thomsen

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Monday, August 28, 2023 9:03:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Randy Fish

From: [Jerry Sanchez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Lets Keep Hunting Bears and Lions
Date: Wednesday, August 16, 2023 7:17:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,
Let's keep hunting Bears and Lions!! To Hell with the Anti-Hunters.....I support the Changes.

Jerry Sanchez

From: [Piotr Filipczak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Letter in Support of Predator Management via Hunting
Date: Wednesday, August 16, 2023 3:35:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Committee,

My name is Dr. Filipczak, and I am an assistant professor of chemistry at the UNM-Valencia Campus.

I am writing this email to express my deepest support for managing predators such as black bears or mountain lions via regulate hunting.

North American model of wildlife conservation is the most effective method of managing wild game which has been proven for more than a hundred years. Absolutely integral part of it is regulating numbers of predators by harvesting part of their population by hunters based on the quota established by wildlife biologist from the Game and Fish Department. From the ethical stand point, harvesting a black bear or a mountain lion is not at all different from harvesting an elk or a deer. From the ecological perspective, it is an absolute necessity as the populations of these species are on a big rise, and available habitat cannot accommodate further growth. Lastly, it is an extremely important part of a beautiful New Mexican culture which is still vivid for many residents, especially these from rural area.

There are examples of states (e.g. Washington state) who replaced traditional predator hunting seasons with state agency-managed shoot-out, and failed dramatically. Personally, I find hunting tradition which feeds on northern American model of wildlife conservation as one of the most attractive aspects of living in the State of Enchantment. It also unites many residents of this wonderful state regardless of their political affiliation. Any action that would result with replacing this tradition- and science-based model would be against vital and long-term interest of wildlife, wild habitat and all residents who love interacting with them.

If there is anything else that I can do to better support my statement, please do not hesitate to reach out to me.

Sincerely,
Piotr

Piotr Filipczak, PhD
Assistant Professor of Chemistry
The University of New Mexico-Valencia Campus
280 La Entrada Rd, Los Lunas, NM 87031
Phone: 505-925-8876
Email: pfilipczak@unm.edu

From: [nathan.riley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Let's Stand by Scientific Recommendations
Date: Thursday, August 24, 2023 11:03:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
nathan.riley

From: [Trent Pannell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Monday, August 21, 2023 2:45:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
Trent Pannell

From: [Andy Elliott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Saturday, August 19, 2023 8:50:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The law is clear in its directive: New Mexico's wildlife must be managed scientifically to ensure both recreation and sustenance for its people. The proposed changes to bear and cougar management are in line with this directive. It's not merely a matter of tradition but of legal and ethical responsibility. Cat and bear hunts must continue!

Sincerely,
Andy Elliott

From: [Ian Elstrom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 8:45:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Ian Elstrom

From: [Jared Politz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Monday, August 21, 2023 8:08:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Jared Politz

From: [Anthony Rubeo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Monday, August 21, 2023 9:30:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Anthony Rubeo

From: [Kyle Mills](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Monday, August 21, 2023 8:08:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Kyle Mills

From: [David Nielsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 11:45:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
David Nielsen

From: [DARRELL JANG](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 11:43:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. Some of us hunters enjoy ursine and feline meat. The results of hunting them are quite the dining experience. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
DARRELL JANG

From: [Tyler Thede](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 3:53:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Tyler Thede

From: [Bob Strong](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 10:08:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Along with preserving habitat, large ungulate populations may need to be preserved by limiting the amount of predators killing them.

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Bob Strong

From: [Shawn Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 8:09:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Shawn Young

From: [dennis kildall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Sunday, August 20, 2023 7:32:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
dennis kildall

From: [Daniel Epperson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] License Fees: The Underpinning of Wildlife Flourishing
Date: Thursday, August 24, 2023 1:08:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Daniel Epperson

From: [Timothy Gallagher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Lion Hunting
Date: Sunday, October 15, 2023 9:43:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't listen to the tree huggers. I have had many close calls with hunting deer and lions sneak up on me when I do t have a tag. These need to be hunted so my kids have a chance to enjoy elk deer and other big game hunting!! They need to be controlled and hunting them with dogs is the best way to control them. I agree on raising the quota numbers.

From: [Jarrod Fischer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Lion and Bear hunting
Date: Tuesday, August 15, 2023 5:36:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We need to keep the lion and bear hunting regulations the same. The department has done a great job managing these animals and NOTHING SHOULD BE CHANGED. Hound hunting is a great tradition in New Mexico and the state even has a memorial of Ben V Lilly hound hunter in Silver City. Hound hunting is a great tool to manage predators like lions and bears. We can sex and determined age of the animal by using hounds which allows the hunters to be more selective with Lion and Bears.

Sent from my iPhone

From: [Chris Morgan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Lion and bear changes
Date: Wednesday, August 16, 2023 9:49:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello there!

I'm writing this email in support of continuing the usage of hounds to hunt predators in your state. Wholistic wildlife management is essential, now more than ever. Regardless of social opinion, too many predators on the landscape disrupts the balance of all species. Every legal means should be retained in order to manage numbers to a level that supports healthy populations of both predators and their prey.

Thanks,

Chris Morgan

From: [Kirk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Lion and bear hunting
Date: Thursday, August 24, 2023 10:05:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Banning and/or restricting the hunting of mountain lion and/or black bears in New Mexico would not be in keeping with the North American Model of Wildlife Conservation. The emotions of “wildlife conservation groups” who contribute nothing of value toward actual conservation should not outweigh continuing a science based approach to lion and bear hunting.

Respectfully,

Kirk Douglas

From: [Stan Stevens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Lions and bears
Date: Wednesday, August 16, 2023 1:26:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't allow people who hate hunting to enact laws affecting our responsible hunting heritage this state is receiving millions of dollars in revenue from our time honored freedom of choice in recreation .

From: [Stefanie M. Schober](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Long hunting season
Date: Thursday, August 24, 2023 12:45:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Dept of Fish and Wildlife,

I am writing to ask you to significantly reduce the kill quotas for both bears and cougars and reduce the length of the hunting season. Please protect our precious natural resources and respect our wildlife. They have a right to live, too. And their existence (alive!) brings in tourism dollars.

Thank you for your consideration,
Stefanie

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Thursday, August 24, 2023 1:38:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
John C

From: [Jimmy Shaw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 8:26:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Jimmy Shaw

From: [Jeff McCarroll](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 8:17:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Jeff McCarroll

From: [Andrew Martin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Tuesday, August 22, 2023 7:44:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Andrew Martin

From: [Jesse Stovall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Monday, August 21, 2023 9:11:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Jesse Stovall

From: [Brad Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Monday, August 21, 2023 12:31:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Brad Smith

From: [Jennifer Warner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 10:09:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Jennifer Warner

From: [Tyler Goudeau](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 8:24:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Tyler Goudeau

From: [Evan Rindal](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 5:17:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Evan Rindal

From: [Kevin VanderPloeg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 4:55:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Kevin VanderPloeg

From: [Andrew Shuler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Sunday, August 20, 2023 4:38:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Andrew Shuler

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Looking at Broader Impacts of Hound Hunting Bans
Date: Thursday, August 24, 2023 1:42:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
John C

From: [Elizabeth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ludicrous.. as in what are you not thinking?!
Date: Wednesday, July 19, 2023 4:03:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Absolutely NO changes to increase bear and mountain lion kills.

The only changes should be to eliminate killing both of these animals.

They are part of our pride and joy in NM.

We have no desire to be like the killing fields of other western states.

Instead we should showcase these animals by not killing them.

As the Hornecker Report years ago stated we do not know an exact number of Mt lions so how can you set a kill rate?

Bears are searching for food and water in the drought and trying to survive. We need to help them ie. water and food drops....not kill them.

Why kill apex predators at all?!

Whoever put it out there from Fish and Game about this issue of increasing kills for these predators, should be fired.

Obviously they have no clue about science or animal welfare and should not be representing NM animals.

Take a job in the other western states if a Fish and Game employee wants to increase killing these animals.

I do not want NM to be like these other western states.

Instead we need to protect and preserve our heritage.

This is what an employee of the NM Dept of Game and Fish should be doing.

Listen and adhere to the science and stop being the yahoo dept of NM.

I heard from friends near Grants and Ramah that 6 Mt lions have been killed within 3 miles of Ramah recently.

And were these kills reported.....!
I doubt it.

So there you go on unreported kills.

You have no idea on the population of Mt lions...or bears!

Sincerely,
Beth McDonald

From: [Colin Pahl](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Maintain Science-Based Management of Bears and Cougars
Date: Wednesday, August 23, 2023 7:35:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Colin Pahl

Sent from my iPhone

From: [Ron Spomer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Maintain sustainable, responsible bear and mountain lion hunts
Date: Wednesday, August 16, 2023 1:14:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I urge the NM Game Commission to heed scientific wildlife management recommendations and continue bear and mountain lion hunting on a sustainable basis. This alleviates to a large degree predatory complaints and costly animal damage control by govt. while bringing sport hunter license and tags fees in to fund anti-poaching and other Game Department work. Neither black bears nor cougars are threatened with low population numbers.

Ron

--

Ron Spomer
Writer, Photographer, TV Host, Naturalist
www.ronspomeroutdoors.com

Ron Spomer Outdoors Inc.
208-866-5421 cell

From: mailagent@thesoftedge.com on behalf of [Annette Stephenson-Reynolds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Monday, August 28, 2023 10:30:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Annette Stephenson-Reynolds
P.O. Box 413
Jarales, NM 87023

From: mailagent@thesoftedge.com on behalf of [Edwin Zuni](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 8:22:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Edwin Zuni
3727 state hwy 47
Bosque farms, NM 87068

From: mailagent@thesoftedge.com on behalf of [Chase Wilbanks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 8:18:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Chase Wilbanks
704 Southern Sky St
Carlsbad, NM 88220

From: mailagent@thesoftedge.com on behalf of [Jacob Lobato](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 5:58:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jacob Lobato
6604 Los Prados Rd NW
Albuquerque , NM 87114

From: mailagent@thesoftedge.com on behalf of [Warren Goode](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 2:46:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Warren Goode
545a Bottomless Lakes Road
Roswell, NM 88203

From: mailagent@thesoftedge.com on behalf of [William Edrington](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 2:36:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

William Edrington
443 Paseo Real
Santa Fe , NM 87507

From: mailagent@thesoftedge.com on behalf of [Jimmy Head](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 2:08:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Thankyou,Jimmy Head

Respectfully,

Jimmy Head
30 Powderhorn Ridge Road
Mimbres , NM 88049

From: mailagent@thesoftedge.com on behalf of [Austin Hannum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 2:02:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Austin Hannum
8904 Arkansas Rd NW
Albuquerque , NM 87120

From: mailagent@thesoftedge.com on behalf of [Joel Gothard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 1:40:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As a caretaker of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time. I personally have had many amazing encounters, with bears in particular, while hunting other species and have enjoyed those opportunities to observe their behavior. Sound, data driven, hunting based population management of these animals will ensure the wellbeing, for years to come, of not only the black bear and cougar, but also the many species of plants and animals they require for food.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Joel Gothard
506 Landreth Ave
Hope, NM 88250

From: mailagent@thesoftedge.com on behalf of jeff@sol-engineering.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 1:20:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

JEFF HEAD
4 Snowcap Ct.
Cedar Crest, NM 87008

From: mailagent@thesoftedge.com on behalf of [Stephen Baker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 1:18:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Stephen Baker
7 idlewild DR
Edgewood, NM 87015

From: mailagent@thesoftedge.com on behalf of [Warren Hartman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Saturday, August 26, 2023 9:22:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Warren Hartman
9416 Admiral Lowell Street NE
Albuquerque, NM 87111

From: mailagent@thesoftedge.com on behalf of [RAYMOND COFFMAN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 1:14:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

RAYMOND COFFMAN
23 CALLE CHAMISA
Placitas, NM 87043-9323

From: mailagent@thesoftedge.com on behalf of [Chance Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 11:10:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Chance Lee
1300 Piedmont Dr
Clovis , NM 88101

From: mailagent@thesoftedge.com on behalf of [Dominick Bernstein](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 7:02:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Dominick Bernstein
5052 Walker St
North Charleston , SC 29405

From: mailagent@thesoftedge.com on behalf of [Nick Mahon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 8:54:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Nick Mahon
4321 Crestridge Street
Laramie , WY 82070

From: mailagent@thesoftedge.com on behalf of [Tim Rixmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 8:10:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Tim Rixmann
W8423 690th Ave
River Falls , WI 54022

From: mailagent@thesoftedge.com on behalf of [Mike Winther](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 5:32:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Mike Winther
4721 Rutte Cir
Las Vegas, NV 89123

From: mailagent@thesoftedge.com on behalf of [Darren Coleman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 4:32:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Darren Coleman
187 Buena Vista Ln
Roseburg , OR 97471

From: mailagent@thesoftedge.com on behalf of [Gray Riatti](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 3:32:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Gray Riatti
2633 La Altura Ln
Dallas, TX 75212

From: mailagent@thesoftedge.com on behalf of [Jordan Harrison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 3:10:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jordan Harrison
1545 Madison St.
Denver , CO 80206

From: mailagent@thesoftedge.com on behalf of [Ryan Mackerer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 2:50:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Ryan Mackerer
65 Elliot Road
East Chatham , NY 12060

From: mailagent@thesoftedge.com on behalf of [Dominic Toya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 25, 2023 1:20:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Dominic Toya
P.O. Box 184
Jemez Pueblo , NM 87024

From: mailagent@thesoftedge.com on behalf of [Joey Swager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 2:48:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Joey Swager
19445 Road I18
Cloverdale, OH 45827

From: mailagent@thesoftedge.com on behalf of [Nic Paskett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 2:38:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Nic Paskett
5808 Gate House Ct.
Boise , ID 83703

From: mailagent@thesoftedge.com on behalf of [Riley Stringer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 23, 2023 2:38:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Riley Stringer
1838 E Curtis St
Laramie, WY 82072

From: mailagent@thesoftedge.com on behalf of [Richard Whitten](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Sunday, August 20, 2023 6:40:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Richard Whitten
8509 Hawk Eye Rd
Albuquerque, NM 87120

From: mailagent@thesoftedge.com on behalf of [Kevin Patterson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Sunday, August 20, 2023 10:16:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Kevin Patterson
11605 Rosemont Ave NE
Albuquerque, NM 87112-5644

From: mailagent@thesoftedge.com on behalf of [Moses Mondragon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Saturday, August 19, 2023 4:12:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Moses Mondragon
721 Chihuahua rd ne
Rio rancho , NM 87144

From: mailagent@thesoftedge.com on behalf of [Logan Wilson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Saturday, August 19, 2023 8:14:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Logan Wilson
123 Tamari Dr.
Buffalo, WY 82834

From: mailagent@thesoftedge.com on behalf of [Aaron Cline](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Saturday, August 19, 2023 7:34:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Aaron Cline
1420 Axtell St.
Clovis, NM 88101

From: mailagent@thesoftedge.com on behalf of [Jesse Mendoza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Saturday, August 19, 2023 7:28:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Living in the Southwest Region of New Mexico I have been seeing the increase of populations of Bear and Mountain Lion. We do need to do something to help control the populations better. This plan, I believe is one solution.

Respectfully,

Jesse Mendoza
P.O. Box 1262
Silver City , NM 88062

From: mailagent@thesoftedge.com on behalf of [Grant Jerry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 18, 2023 7:44:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Grant Jerry
Sun Valley Dr
Woodland Park, CO 80863

From: mailagent@thesoftedge.com on behalf of [Melissa Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 25, 2023 8:58:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

Dear New Mexico State Game Commission,

It has come to my attention that a large number of comments have been received and directed to your commission, from well intentioned but largely uninformed citizens who have argued for the cessation of Bear and Cougar hunting. This is in direct opposition to all scientific data and population estimates based on true research.

I would strongly appeal to you to please not give in to the emotional and uninformed plea from these people to stop hunting of both species. Currently our state enjoys healthy numbers of both bear and cougars as they are correctly and intelligently managed by the NMDGF. To change these two species to totally "protected" would result in devastation of our cattle ranching industry and our deer and elk herds as well. Both of which currently face tremendous pressure from a burgeoning wolf population. Ultimately this would of course seriously reduce the Apex predators themselves as they would run out of prey species, turn to livestock and then be eliminated to preserve private property of the ranchers.

The changes as proposed by NMGFD to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our department biologist and the recommendations developed from their science-based data such as non-invasive scat/hair sampling, remote/trail cameras, GPS collars, hunter surveys, landowner reports and other traditional measures.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

Thank you for your sincere consideration of this request.

Respectfully,

Melissa Moore
6801 Welton Dr. NE
Albuquerque, NM 87109

From: mailagent@thesoftedge.com on behalf of [Norman Gruner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 9:20:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Norman Gruner
4432 Organ Mesa Loop
Las Cruces, NM 88011

From: mailagent@thesoftedge.com on behalf of [Max Brien](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 6:28:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Max Brien
3825 Nancy Lopez Dr
Clovis, NM 88101

From: mailagent@thesoftedge.com on behalf of [Chris Gardner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 5:50:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Chris Gardner
650 Colosseo Cir
Las Cruces, NM 88012-9369

From: mailagent@thesoftedge.com on behalf of [Ignacio Castillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 5:12:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Ignacio Castillo
1511 Drake RD SW
Los Lunas, NM 87031

From: mailagent@thesoftedge.com on behalf of [Everett Cole](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 5:00:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Everett Cole
134 B Nine Mile Rd
Santa Fe, NM 87508

From: mailagent@thesoftedge.com on behalf of [Andrew Jollif](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 4:42:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Andrew Jollif
904 W Avenue G
Lovington , NM 88260

From: mailagent@thesoftedge.com on behalf of [Cody Anderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 3:42:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Cody Anderson
39 quail meadow rd
Placitas , NM 87043

From: mailagent@thesoftedge.com on behalf of Caden@bestcdrs.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 3:38:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Caden Rezek
789 Tech Center Dr
Durango, CO 81301

From: mailagent@thesoftedge.com on behalf of [Warren Goode](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 1:38:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Warren Goode
545A Bottomless Lakes Road
Roswell, NM 88203

From: mailagent@thesoftedge.com on behalf of [Caty Enders](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 1:30:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Caty Enders
701 Camino de la Familia, #305
Santa Fe, NM 87501

From: mailagent@thesoftedge.com on behalf of [Kyle Lipke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 25, 2023 8:42:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting, including hunting with hounds, as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rules. These have proven to maintain healthy and abundant populations of both species.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Kyle Lipke
15 Michelle Lane
Silver City , NM 88061

From: mailagent@thesoftedge.com on behalf of [Esteban Molina](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 11:22:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Esteban Molina
1432 Hickox st
Santa fe, NM 87505

From: mailagent@thesoftedge.com on behalf of [Thad Fuller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 11:02:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Thad Fuller
172 Via Sedillo
Tijeras, NM 87059

From: mailagent@thesoftedge.com on behalf of [Amos Grado](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:50:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Amos Grado
2504 West Centre Ave
Artesia, NM 88210

From: mailagent@thesoftedge.com on behalf of [Jose Carrasco](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:50:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jose Carrasco
1704 Golf Course Rd SE
RIO RANCHO, NM 87124

From: mailagent@thesoftedge.com on behalf of [Richard Wenzel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:48:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Richard Wenzel
1345 mangas rd
Datil, NM 87821-2084

From: mailagent@thesoftedge.com on behalf of [Nicholas Heine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:42:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

Thank you for your hard work and dedication to New Mexico's wildlife and wild places. The North American Model of Wildlife Management is the foundation of science-based fish and wildlife management, and I support legal, science-backed bear and cougar hunting as an appropriate management tool. I fully support your efforts to advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time. As a conservationist, hunter, and lover of the natural world, I fully support the proposed changes to bear and cougar hunting rules in New Mexico. But public opinion alone is not what should drive decision making for such an important resource.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures. While public support is paramount to the success of our wildlife and wild places, our management agencies cannot be swayed by opinions and emotions, both for or against any proposed rule changes. For those reasons I want to voice my support for the continued reliance on scientific, evidence-based wildlife management practices.

Respectfully,

Nicholas Heine
4415 Inspiration Dr SE
Albuquerque, NM 87108

From: mailagent@thesoftedge.com on behalf of [James Deffenbaugh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:40:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

James Deffenbaugh
9208 Cascajo Dr NE
Albuquerque, NM 87111

From: mailagent@thesoftedge.com on behalf of [RAYMOND COFFMAN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:28:16 AM

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Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

RAYMOND COFFMAN
23 CALLE CHAMISA
PLACITAS, NM 87043-9323

From: mailagent@thesoftedge.com on behalf of [Jeremy Valentine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:26:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jeremy Valentine
5 Hobart Lane
Tijeras , NM 87059

From: mailagent@thesoftedge.com on behalf of [Robert Hodshire](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 17, 2023 7:22:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

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We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Robert Hodshire
168 R G Davis Road
Romance, AR 72136

From: mailagent@thesoftedge.com on behalf of [Felix Hernandez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 25, 2023 8:26:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Felix Hernandez
19 Apache rd
Santa Fe , NM 87508

From: mailagent@thesoftedge.com on behalf of [Dale Lipke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Wednesday, August 16, 2023 7:28:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

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We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Dale Lipke
7 Mirkwood rd
Tijeras , NM 87059

From: mailagent@thesoftedge.com on behalf of [W.D. Byers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 25, 2023 7:48:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

W.D. Byers
902 Weleka Lane
Carlsbad, NM 88220-8833

From: mailagent@thesoftedge.com on behalf of [Martin Torrez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Friday, August 25, 2023 6:06:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Martin Torrez
4706 Diamante Ct
Las Cruces, NM 88012-7047

From: mailagent@thesoftedge.com on behalf of [Carlos Garzon Monsalve](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Thursday, August 24, 2023 8:30:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Carlos Garzon Monsalve
6600 Jaguar Drive 710
Santa Fe , NM 87507

From: mailagent@thesoftedge.com on behalf of [Paul Ortega](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Make Science Paramount in Predator Hunting Regulations
Date: Monday, August 28, 2023 11:48:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission:

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Paul Ortega
963 Alamos Rd
Corrales, NM 87048

From: [Shawn Kloster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Manage Bear and Cougar Numbers
Date: Wednesday, August 23, 2023 9:44:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the harvest of bear along with cougar harvest season regulations 2023, everything including predators needs to be managed to help maintain healthy ecosystem that meets the carrying capacity of the land & prevent massive starvation death of predators, prey, flora and fauna.

The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Shawn Kloster

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Monday, August 28, 2023 5:37:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
David Wright

From: ["Michael O'Brien "](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 3:28:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Michael O'Brien

From: [Bryan Pennington](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 3:26:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Bryan Pennington

From: [Steven Hering](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 2:32:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Throughout the globe, traditional hunting practices have been crucial for maintaining ecological balance. New Mexico's proposed bear and cougar rule adjustments are in line with this worldwide perspective. Prioritizing expert recommendations is imperative for the preservation of the state's rich biodiversity. Protect the hunts!

Sincerely,
Steven Hering

From: [Quentin VanPelt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 8:17:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Quentin VanPelt

From: [Dylan Trollinger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 8:09:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Dylan Trollinger

From: ["Anthony O'Neill"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 7:20:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Anthony O'Neill

From: [Philip Bischof](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 7:04:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Philip Bischof

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Saturday, August 19, 2023 9:49:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
John C

From: [Ryan Little](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 9:15:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Ryan Little

From: [Chase Watson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Thursday, August 24, 2023 5:16:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Chase Watson

From: [Dan Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Thursday, August 24, 2023 3:34:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Dan Young

From: [Roberson Roberson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Thursday, August 24, 2023 8:00:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Emphasizing the importance of basing wildlife management decisions on scientific evidence and proven methodologies can't be stressed enough. The state's mandate, which emphasizes the protection, regulation, and conservation of game and fish, is a testament to a vision that prioritizes balance. Abiding by these principles, as reflected in the proposed changes to the bear and cougar rule, ensures that this vision is sustained. Keep the hunts!

Sincerely,
Roberson Roberson

From: [Sibel Fite](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Tuesday, August 22, 2023 11:32:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Sibel Fite

From: [Ciro Lujan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Monday, August 21, 2023 12:19:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Ciro Lujan

From: [Ryan Los](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Monday, August 21, 2023 7:26:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Ryan Los

From: [Greg Petsch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 7:51:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Greg Petsch

From: [Rachel Crosby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Sunday, August 20, 2023 3:50:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Rachel Crosby

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Managing Game: A Lawful and Necessary Act
Date: Tuesday, August 29, 2023 4:09:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Jesse Shertzer

From: [Rodney Stubblefield](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mandates Matter: Managing Wildlife Responsibly
Date: Tuesday, August 22, 2023 4:54:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Rodney Stubblefield

From: [Raul Scholnick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mandates Matter: Managing Wildlife Responsibly
Date: Tuesday, August 22, 2023 3:40:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Raul Scholnick

From: [Terry Shepherd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mandates Matter: Managing Wildlife Responsibly
Date: Sunday, August 20, 2023 7:19:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Terry Shepherd

From: [Jay Mince](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mandates Matter: Managing Wildlife Responsibly
Date: Friday, August 25, 2023 3:15:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Jay Mince

From: [pattiPatti.sellersSellers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Most certainty continue hunting for cougar and trapping
Date: Thursday, August 17, 2023 8:48:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [Janene Habers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain Lion Killing
Date: Tuesday, October 17, 2023 3:06:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am quite appalled that a state department tasked with the protection of all wildlife is proposing a regulation intent on killing one of the iconic animals that inhabits the wilds of New Mexico.

I vehemently oppose this policy since it flies in the face of good wildlife management. In my life of 75 years I have been fortunate To see 2 of these animals in the wild, and would urge you to rescind any thought of enacting this proposed rule which would surely decimate the Mountain Lion population of the State of New Mexico and make us all poorer as a result.

Leo Habers
554 Avenida Encantada
Bernalillo, NM. 87004

From: [Scott Goodreau](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain Lion Policy
Date: Sunday, October 15, 2023 7:47:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear DGF,

The mountain lion, cougar, puma (wild cat by any name) should not be hunted. The current policy could lead to the extinction of this majestic creature.

Please reconsider the policy and, at a minimum, engage the knowledge of conservationists, experts on this topic, and animal rights organizations to find a better solution. The policy now is not an answer to whatever you see the problem to be.

Sincerely,
Scott R. Goodreau, M.D.

Sent from my iPhone

From: [Ron Costa](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain Lion and Bear Quotas
Date: Wednesday, August 16, 2023 2:34:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Everyone please understand that nobody knows better what is good for big game management than The Game and Fish Department, hunters, and guides and outfitters.

The Game Department makes decisions based on facts, data and science.

The anti-hunting crew uses scare tactics, sympathy and emotion in their efforts to to ultimately wipe out all hunting. No fact, data or science whatsoever involved in their stance.

Ron Costa
Licensed New Mexico hunting guide.
Deming, New Mexico

Sent from my iPhone

From: [oppermand](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain Lion cull.
Date: Saturday, October 14, 2023 1:27:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I was born and raised here in New Mexico, I have lived here all my life. I'm now 73.

I have enjoyed hunting, fishing, camping and hiking all over New Mexico.

I feel that the current number of Mountain Lions is a good number. But, I have concerns as a result of the loss of habitat due to fires that have scoured our forests in recent years. I think that increasing the number of permits to take Mountain Lions at this time could cause a real problem for the population of Lions. I think the lions and many other predators are going to have hard times in the coming years until the prey population has time to recover.

Thank you for listening.

Dale Opperman

Los Alamos NM

From: [Michael Lewitke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain Lions
Date: Saturday, October 14, 2023 2:10:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am contacting you, asking you to reconsider your plan to decimate the mountain lion population in New Mexico with your proposed high hunting limits on this iconic species.

Aldo Leopold must be rolling over in his grave knowing how a top predator is so recklessly regarded. If you have questions about what happens to the game population (elk and deer) in the absence of predators I invite you to read his books.

I moved here ten years ago from the Midwest to enjoy my retirement years in a magnificent state with all its natural wonders. Witnessing a wildlife slaughter was not in my plans!

Please reconsider. That extra revenue from the sale of hunting licenses will be short lived when the states ecosystems are no longer functioning.

Sincerely,

Michael Lewitke
Mora, NM

From: [EL Camp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain Lions
Date: Monday, October 16, 2023 4:30:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want to voice my opposition to the hunting of cougars and of hunting any other animal that is not considered a source of food for humans.

The killing of cougars for sport is appalling to me. It should be appalling to you too.

Elizabeth Camp
ec1064@gmail.com

From: [Lexy Halmi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lions
Date: Sunday, October 15, 2023 7:41:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Abq Resident who is urging you not to sell out NM mountain lions for barbaric trophy hunting! They are keystone species that deserves protection, the Mountain lions have a important role keeping New Mexico ecosystems healthy! Shame on you if you would sell mountain lions out for a lousy dollar , we need them more than brutal corrupt politicians causing this man made Holocene mass extinction!

Alexandra Carleton
Albuquerque

From: [Debbie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion hunting limit extensions
Date: Sunday, October 22, 2023 11:24:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Just reiterating my position. We do not need to kill so many cougars. Please don't extend the current hunting limits. Reduce them or stop them totally.

Debbie Conger
Albuquerque New Mexico

Sent from my iPhone

On Aug 3, 2023, at 1:36 PM, Debbie Conger <dconger@swcp.com> wrote:

I really do not like this proposed rule. Please don't do it.

Debbie Conger
Albuquerque, NM

From: [LORI PETERKIN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion hunting limites
Date: Thursday, October 19, 2023 11:11:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to oppose extending hunting limits on mountain lions(cougars) in NM. As it is, our human expansion is already taking away a good part of their habitat, which will eventually drive them to extinction in our state. They are not a food source, so what is the point of hastening the path to their extinction? I have seen them in the Sandias and they are truly majestic animals. Hunters can stick to animals that at least can be used for food, such as deer and elk, rather than senseless killing for no other reason than a trophy.

Thank you for your consideration.

Sincerley,

Lori Peterkin
Albuquerque Resident

From: [Holly Thomas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion hunting limits
Date: Sunday, October 15, 2023 10:51:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Respectfully, the mountain lion hunting limits set are neither rational nor sustainable. This is not in the interest of the general population of New Mexico. Please reconsider.

Sincerely,
A concerned citizen of New Mexico,
Dr. Holly Thomas

From: [Tyler Hoyt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion hunting
Date: Saturday, October 14, 2023 8:06:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I'm reaching out because I wanted to share that I support mountain lion hunting and would like it to remain a thing in New Mexico.

That is all.

Thank you,
Tyler

From: [Benton Lunt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion hunting
Date: Wednesday, October 18, 2023 6:37:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please allow more tags to hunt and control mountain Lions. Make the tag OTC like Utah does, or you can place your current deer tag on one like Idaho. I came face to face at 10 yards with one in Unit 27 while hunting Coues deer. I sure wish it was easier to harvest one as I hear their meat is the best.

Thanks

Benton Lunt
801-699-5534

Sent from my iPhone

From: [Mildred Sanchez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion plan
Date: Sunday, October 15, 2023 3:43:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to express my opposition to the proposed increase in allowable cougar kills in New Mexico. The numbers proposed are not sustainable for an ongoing healthy population of mountain lions. Please be an advocate for the animals for a change. NM Game and Fish should be more than just a “game” agency. No animals should be hunted to endangerment or extinction. Watch PBS’s American Buffalo this week. Watch and learn.
Mildred Sanchez

Sent from my iPad

From: [Conrad Ley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion quota
Date: Sunday, October 15, 2023 5:52:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good morning,

I am writing in support of increasing the number of tags for Mountain lions. I believe that their population has steadily increased and there are not very many people that pursue them and we need to keep their numbers at a manageable level or we may not have other big game species to hunt.

Thank you

Conrad

From: [Donna Larragoite](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion quota
Date: Sunday, October 15, 2023 6:57:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I just finished reading the article in the Albuquerque Journal regarding the proposed increase in the number of mountain lions hunters may kill. I was appalled that New Mexico Game and Fish is considering this. I think this is a horrible idea as mountain lions are killed for sport, only to be stuffed and mounted on someone's living room wall.

Please reconsider this inhumane plan. Leave our mountain lions alone. They deserve our protection.

Donna Larragoite

From: [Kenneth Pena](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lion
Date: Saturday, October 21, 2023 7:15:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose this plan.

Sent from my iPhone

From: metaylor@wyoming.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lions in NM
Date: Tuesday, October 24, 2023 6:04:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello NM DGF,

Please accept the following comment re: the proposal to extend mountain lion hunting limits.

I oppose this proposal because such an increased kill rate would be unsustainable to the state's mountain lion population.

Mountain lions are part of the predator prey balance throughout the Mountain West. They are an keystone species that is essential to this area. It is rare to witness this elusive animal, but I am honored to have seen them.

I am a hunter and respect all wildlife for the role each species contributes to the biodiversity of NM. I am surprised at this NM DGF anti-predator attitude towards mountain lions.

Please manage mountain lions sustainably like all wildlife species, so that they will continue to be part of the picture here. Do not extend the mountain lion hunting limits.

Thank you,

Meredith Taylor

Montezuma, NM

From: metaylor@wyoming.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lions in NM
Date: Tuesday, October 24, 2023 6:05:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello NM DGF,

Please accept the following comment re: the proposal to extend mountain lion hunting limits.

I oppose this proposal because such an increased kill rate would be unsustainable to the state's mountain lion population.

Mountain lions are part of the predator prey balance throughout the Mountain West. They are an keystone species that is essential to this area. It is rare to witness this elusive animal, but I am honored to have seen them.

I am a hunter and respect all wildlife for the role each species contributes to the biodiversity of NM. I am surprised at this NM DGF anti-predator attitude towards mountain lions.

Please manage mountain lions sustainably like all wildlife species, so that they will continue to be part of the picture here. Do not extend the mountain lion hunting limits.

Thank you,

Meredith Taylor

Montezuma, NM

From: [A. Anderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lions
Date: Sunday, October 15, 2023 12:33:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Stop trophy hunting of these animals now!

Thank you
Arlie Anderson

From: [richard.fagerlund](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mountain lions
Date: Sunday, October 15, 2023 2:28:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi

I just read an article in the paper that your organization (New Mexico Dept. of Game & Fish)) is going to expand the number of mountain lions allowed to be killed for fun by trophy hunters. That is despicable. Lions, like all animals, should be protected, not assassinated by someone who wants to decorate their house with the lion's body parts.

Trophy hunting is not a sport. A sport is when two people or two teams with equal capability confront each other. There is nothing sportslike for a hunter to shoot a defenseless animal. I urge you to cancel this in the name of Mother Nature.

Thank you for your time.

Richard Fagerlund

From: [Timon Fish](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mtn Lion License
Date: Sunday, October 15, 2023 1:03:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please stop selling these to effectively allow legal trophy hunting.

It's immoral and unsustainable.

-Timon Fish

From: [Debbie Ekhaml](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mtn Lion tgas
Date: Wednesday, October 18, 2023 11:43:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM DFG,

I am asking that you please reconsider raising the bag count on Mtn Lions.

I understand that this is about revenue and where money is involved, logic does not always follow. Mountain Lions are keystone species and are already "hunted" with unfair advantages. Raising the limits to 16% from 10% will most likely prove to not be sustainable since other forms of mortality have not been taken into consideration.

Just as I have heard from Hunter Friends and an Outfitter friend about the decrease in numbers of the trophy Bull Elk, quite possibly in part due to too many tags and muzzle loaders that now shoot excessively long distances, the Mountain Lion population is headed for the same fate with this new proposed limit. Predators take out the weak, sick, old and young, while Hunters take prime animals.

Please have foresight into this proposed decision.

Thank you,

Debbie Merrill

Reserve, NM

Sent from [Mail](#) for Windows

From: [Debbie Merrill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Mtn Lion tgas
Date: Wednesday, October 18, 2023 8:18:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM DFG,

I am asking that you please reconsider raising the bag count on Mtn Lions.

I understand that this is about revenue and where money is involved, logic does not always follow. Mountain Lions are keystone species and are already “hunted” with unfair advantages. Raising the limits to 16% from 10% will most likely prove to not be sustainable since other forms of mortality have not been taken into consideration.

Just as I have heard from Hunter Friends and an Outfitter friend about the decrease in numbers of the trophy Bull Elk, quite possibly in part due to too many tags and muzzle loaders that now shoot excessively long distances, the Mountain Lion population is headed for the same fate with this new proposed limit. Predators take out the weak, sick, old and young, while Hunters take prime animals.

Please have foresight into this proposed decision.

Thank you,
Debbie Merrill
Reserve, NM

Sent from [Mail](#) for Windows

From: [Susan Hubby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Murder of native mountain lion.
Date: Sunday, October 15, 2023 12:09:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It seems that N.M. game and fish want to destroy our native mountain lions. Your dept. Won't be happy till ALL of our species become target of your uneducated dept. It's time you wake up and realize part of N.M. vacationers come to see our environment and the species of wildlife we have. Your dept. has become one of the hated in this state because of your so called "actions" against our wonderful wildlife !!!!!

From: [Ron Savage](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] My Concern for Cougar and Bear populations
Date: Thursday, August 24, 2023 11:43:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Game Commission,

As a photographer who has roamed the Southwest since 1970, I am deeply concerned about the plight of predators, particularly cougars and bears in New Mexico.

1. In over 50 years of wandering and driving through the mountains, diverse habitats and wilderness areas of Arizona and New Mexico I have only seen one cougar and two bears. Hence, my sense is that these animals are increasingly uncommon, and I have yet to see any scientific data that states the contrary.
2. I'm deeply concerned that human impacts, habitat destruction, and climate change are further threatening cougars and bears, and virtually all wildlife populations. And, I have yet to see any valid scientific data that states the contrary.
3. The hunting of these animals with dogs is barbaric and unsportsmanlike. Hunting with dogs should be banned immediately.
4. The use of traps of any kind to catch and kill these animals is also barbaric and should be banned on both public and private lands throughout the state.
5. The hunting of cougars and bears around water sources should also be banned.
6. New Mexico needs to modernize its hunting and fishing regulations, and ensure that they are based on sound, modern science and best practices.
7. Quotas for the killing of cougars and bears need to be lowered considerably, and in my opinion there should be a 10 year moratorium placed on the killing of these animals until valid scientific data is collected.

Thank you for taking into account my concerns.

Signed,

Ronald F. Savage
2316 Madre Drive NE
Albuquerque, New Mexico

--

Ron Savage

USA- 202-302-6938 MST-Denver Time, call or text
Skype- ron.savage2

From: [RONALD.MOON](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] My thoughts
Date: Wednesday, August 16, 2023 1:43:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Since we hunters and NMGF are the only animals to keep big predators in check, they should be managed to the carrying capacity of the land they occupy similar to other big game.

Sent from my iPhone

From: [Sandra Jackson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NEW QUOTA RULES
Date: Saturday, July 15, 2023 7:32:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is unfathomable to me, and I would suggest, also anti-science as well as anti-common sense, to increase quotas on bears and cougars after incredibly damaging fires and a continuing drought situation. These animals are already beyond being stressed. They don't need a bunch of well-fed macho killers out there trying to kill them, not to eat, but so their heads can be hung on some wall.

Sandra Jackson
Santa Fe

From: [DAVID KERSHEN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM Bear Season
Date: Thursday, August 17, 2023 8:31:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom This May Concern:

Please reinstate the August bear seasons in the southern zones in New Mexico. Hunting opportunities should be controlled by the NM game biologists to managed the resources, not by non-hunting public sentiment.

Thanks,

Dave Kershen

From: [Brian Tousley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM Cougar Harvest Public Comment
Date: Friday, July 7, 2023 5:21:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Allow to take as many as desired, no limits, multiple cougars per hunter, season.

All year, any season, any method, any weapon.

Brian Tousley

5751 Cody Road NE
Rio Rancho, NM 87144

ph: 832 463 8647

From: [Bob Rubin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM Department of Fish and Game Hunting Policy
Date: Wednesday, August 2, 2023 9:01:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to add my full support in agreement with the editorial in the July 30, 2023 editorial in the Albuquerque Journal about the proposal by NM Department of Game and Fish to allow the killing every year of an estimated 10% of the wild cougars and black bears. As pointed out by the author, Charles Fox, there is no scientific or community safety basis for allowing the recreational hunting of these animals. Instead, this policy comes across as the willingness of the NMDFG to gratify the hunting community's "fun" activity and to justify the Department with a source of self-supporting income. Regardless of the rationale behind this policy, these animals are native to this area, are not owned by the NMDFG, and deserve to be left alone in their natural environment.

Robert Rubin
16 Bear Claw Trail
Tijeras, NM 87059

From: [susan_selbin](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Martinez, Javier](#); [Ortiz y Pino, Gerald](#); [Bill O'Neill \(dist. 13\)](#); [susan_selbin](#)
Subject: [EXTERNAL] NM Fish & Game Proposed Rule for Killing of Bears & Cougars is WRONG!
Date: Sunday, July 30, 2023 1:12:12 PM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Leaders of New Mexico Department of Game & Fish,

NM needs its wild creatures to maintain the balance of natural life. Today's (7/30/23) ABQ Journal features an article entitled "Proposed rule authorizing killing of bears and and cougars is unethical and unscientific."

I believe your Department does provide positive service to protect NM game and fish. I've contacted your offices by phone and email when positive policies are highlighted.

However, the proposed authorization of killing up to 25% of NM's bears and cougars every year has no basis in reality! To my knowledge, Game & Fish doesn't even have a count of the number of bears and cougars in New Mexico! THIS MAKES NO SENSE!

These are my animals as well as the majority of New Mexicans who do NOT support the recreational killing of bears for \$47 each and cougars for \$43 each!! This is a proposed tragic give away of animals that belong to all New Mexicans!

Further, this makes no sense for nature in a time of Climate Change when our natural areas and creatures are already under extreme threats.

If hunters must kill critters, let them purchase and establish their own killing range fenced off from designated natural areas by electric fences to prevent exit of their animals and entry of New Mexico's wildlife that should be protected. Hunters can then raise animals to hunt and kill on their own range by paid members of their private area.

I'm including NM legislators on this email for consideration on the next session's agenda.

NM needs its wild creatures to maintain the balance of natural life. This is even more crucial than ever given the reality of Climate Change.

Thanks for your attention.

Susan Selbin

ABQ

From: [Mark Baca](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM Hunting
Date: Friday, August 18, 2023 6:30:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern I believe the scientific experts in our game management have not only ours as hunters but the predators management well in hand and I support their decisions when it comes to the management of hunts.

CHEERS!!

Mark

From: [Shaun Root](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM Lion and Bear Hunting Support
Date: Monday, August 21, 2023 8:43:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,

I support the hunting of Bear and Cougar in NM.

Thank you,

Shaun Root

From: [Patrick Wundrock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM Mtn Lion and Bear hunting
Date: Tuesday, August 15, 2023 9:15:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I just wanted to express my support for the hunting and therefore the conservation of the MtnLion and black bear populations in the state of New Mexico. I think the importance of proper management of these species cannot be overstated. Without keeping the population in check, many problems arise for not only the public but for the G&F department.

I also feel that the management of these species is best left in the hands of your biologists AND the houndsmen of New Mexico. The houndsmen operate with the good of the species in the forefront of their minds when on the hunt. Most houndsmen refuse to take animals that are not males or animals that aren't mature. This allows for the most effective and efficient management of these species. I feel that without the houndsmen, the populations of these species would be in worse shape

In addition to management of these species, I also generally support mandatory check ins so that the animal can be inspected and aged by a qualified individual. I wish all states had check ins for all species, the harvest data would lose any bias it ever had

Respectfully,
Patrick Wundrock

From: [Lynn Fowler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM New Rules for hunting bear and cougar
Date: Monday, July 31, 2023 9:11:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Without adequate information on bear or cougar populations it makes no sense to increase the kill quotas, and this could be extremely detrimental to their populations and the ecosystems. These animals self-regulate their populations. I am strongly opposed to increasing the kill quotas.

Lynn Fowler
Silver City, NM

From: [Obie Pinner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM bear and cougar rule comment
Date: Friday, August 18, 2023 9:52:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good evening,

I just wanted to take a moment to show my support for science-based management of bear and mountain Lion in the State of New Mexico. It is extremely important that these, and all other game species, are managed in such a way as to protect the rights and traditions of hunters, ensure healthy populations, and preserve the future. This is not something that can be accomplished through the popular vote but only through the proven methods and means laid out by qualified individuals in the Science community.

Thank you

From: [trent strickland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Tuesday, August 22, 2023 9:37:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
trent strickland

From: [Tina Greene](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Sunday, August 20, 2023 2:43:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Tina Greene

From: [Scott Thouvenot](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Sunday, August 20, 2023 8:50:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Scott Thouvenot

From: [Colten Tholen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Sunday, August 20, 2023 8:26:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Colten Tholen

From: [Daniel Wren](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Sunday, August 20, 2023 7:19:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Daniel Wren

From: [Tom Bruha](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Sunday, August 20, 2023 7:13:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts! There needs to be continued management on these predators which includes the use of hunting. With habitat loss a factor in more encounters with human population areas the animals need to be controlled.

Sincerely,
Tom Bruha

From: [Mark Steele](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Saturday, August 19, 2023 11:37:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Mark Steele

From: [Keenan Milligan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Saturday, August 19, 2023 9:49:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Keenan Milligan

From: [Samuel Mendoza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Saturday, August 19, 2023 9:12:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Samuel Mendoza

From: [John Teichert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NM's Wildlife Flourishes Thanks to Hunting Traditions
Date: Wednesday, August 23, 2023 1:03:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Throughout the globe, traditional hunting practices have been crucial for maintaining ecological balance. New Mexico's proposed bear and cougar rule adjustments are in line with this worldwide perspective. Prioritizing expert recommendations is imperative for the preservation of the state's rich biodiversity. Protect the hunts!

Sincerely,
John Teichert

From: [Josh Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F's Proposal: A Testament to Effective Management
Date: Monday, August 21, 2023 10:47:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Josh Jones

From: [Garrett Robinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F's Proposal: A Testament to Effective Management
Date: Sunday, August 20, 2023 10:44:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Garrett Robinson

From: [Justin Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F's Proposal: A Testament to Effective Management
Date: Sunday, August 20, 2023 7:32:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The law is clear in its directive: New Mexico's wildlife must be managed scientifically to ensure both recreation and sustenance for its people. The proposed changes to bear and cougar management are in line with this directive. It's not merely a matter of tradition but of legal and ethical responsibility. Cat and bear hunts must continue!

Sincerely,
Justin Smith

From: [Craig Eckhardt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F's Proposal: A Testament to Effective Management
Date: Sunday, August 20, 2023 8:52:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Craig Eckhardt

From: [Dean Bartz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F's Proposal: A Testament to Effective Management
Date: Sunday, August 20, 2023 8:00:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Dean Bartz

From: [Corey Siegler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F"s Proposal: A Testament to Effective Management
Date: Saturday, August 19, 2023 9:32:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Corey Siegler

From: ["Will Christison-Williamson"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F"s Proposal: A Testament to Effective Management
Date: Thursday, August 24, 2023 12:01:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

This is happening in Washington State as well and it will devastate wildlife management and conservation practices if we start down this road!

I support bear and cougar management!

Sincerely,
Will Christison-Williamson

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDG&F's Proposal: A Testament to Effective Management
Date: Monday, August 28, 2023 10:58:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Scientific management of predators is an essential part of North American Conservation practices, and as such, it is important that the science and fish and game biologists expertise are what drive decisions related to the management of these species, not emotional appeals by anti-hunting groups. Bear and cougar hunting is an important part of our hunting heritage, and is essential to maintaining healthy populations of both predators, and ungulates. Thank you!

Sincerely,
Jeremy Daniel

From: [Chris Francia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NMDGF BEAR AND COUGAR RULE
Date: Wednesday, August 16, 2023 12:30:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of continued bear and cougar hunting and harvest.

Thank you,

Chris Francia

From: [Denise Aragon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NO COUGAR/MOUNTAIN LION HUNTING
Date: Sunday, October 15, 2023 3:34:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

You should all be ashamed of yourself. This is wrong, and should be stopped . NO MORE TROPHY HUNTS OF OUR BEAUTIFUL MOUNTAIN LIONS. Do the right thing.

Sent from my iPhone

From: [Linda Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NO To Bear and Cougar Hunting Proposal
Date: Tuesday, August 22, 2023 10:07:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To New Mexico Dept. of Game and Fish:

As regards the current proposal, which I as a resident of this state very strongly oppose, to raise the kill quota for New Mexico bears and cougars, some intelligent thought needs to be applied here because it seems very little, if any, logic is at play.

Bears and cougars are not likely to overrun New Mexico. Both species are capable of self-regulating their numbers. Since there are no specific census counts on either of these species to support what the Department is proposing how can increasing the killing of them make any sense at all? As it is they, like other wildlife, are now struggling with the effects the climate change crisis is inflicting on us all and which will, undoubtedly, worsen before, or if, things ever get better. These issues alone must ultimately negatively affect the health of bear and cougar populations to continue to survive as viable species. Plans to purposely reduce their numbers even further when there is really nothing substantial or concrete to support such plans is absurd.

Bears and cougars play a vital role in environmental balance. This is not debatable. Furthermore, it is undeniable that human misuse and abuse of the natural world has directly caused much, if not most, of the problems we are now experiencing. This planet's continued longevity and ability to support life in any sort of tolerable way depends on maintaining a delicate balance in which all life forms play an important role. Such a balance can only be maintained if and when we recognize that we are only a part of a greater functioning whole—NOT the supreme commanders over all of it.

The hunting proposal revamp appears to cater to a specific segment of the population that enjoys what they label "hunting" but which, as practiced, is really blood sport. Wildlife is NOT expendable to suit humans—least of all for so

called recreation. Increasing the kill quotas for bears and cougars by pandering to trophy hunters is unreasonable, unethical and totally irresponsible—not to mention just plain cruel—and reflects a chilling and meaningless waste of life that should be neither encouraged nor promoted. Maybe hanging a head or pelt on a wall was admired in the days of the Wild West but certainly we must have progressed, at least a little, beyond that attitude.

Please do NOT go forward with enacting this proposal. New Mexico could, and should, be a state that stands as an example of responsible stewardship of its environment and all the species who live here. They are all to be valued, respected and protected—definitely not eliminated. Bears and cougars are a special segment of our population. Their importance cannot be ignored.

Thank you for considering my viewpoint.

Respectfully,

Linda Young
2929 Indiana St. N.E.
Albuquerque, 87110
LSYoung@comcast.net

From: [Herbert Staniek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] NO trophy hunting please
Date: Thursday, July 20, 2023 4:12:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the NM Department of Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.

Respectfully,
Herbert Staniek

Gesendet von [Mail](#) für Windows

From: [Lee Anderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New Bear Cougar Rules
Date: Thursday, August 17, 2023 11:53:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time. I would also add that a multi-state program to catch and release Lions into areas of deer over population should also be considered. Predators (including man) should be apart of any healthy ecosystem.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Lee Anderson

Los Alamos, NM

From: [JANE AUBELE](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New Bear/Cougar Rule
Date: Friday, August 4, 2023 10:22:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am totally against the proposed increase in numbers of cougars and bears allowed to be killed by hunters in NM.

This is ridiculous in our modern era of a new understanding of ecosystems and the appropriate management of wildlife.

I call on our Governor and legislators to finally put a stop to the poor management and bad decisions of our NM "hunting and fishing" Dept. This state of New Mexico department, paid for with our taxes, is apparently only run to keep hunters (and especially those large game ranches mostly owned by Texans) happy and to acquire funds through hunting and fishing licenses. The dept is NOT run as a 21st century wildlife management and conservation agency.

Enough is enough! Stop catering only to hunters and start representing the rest of the public in our state who want to conserve our wildlife - not kill it.

J. C. Aubele

From: camaross1997@hotmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New Mexican opinion
Date: Wednesday, August 16, 2023 1:15:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I live in New Mexico and am an avid Hunter and love of New Mexico public lands and resources. I have been fortunate to hunt elk, deer, javelina, Barbary sheep, and Turkey And got an oryx tag this year! While I don't hunt mountain lions, I do want to get a bear tag sometime soon. Responsible legal bear and mountain lion hunting is good for the people, the land and the populations of all of New Mexican wildlife. Please keep bear and mountain lion hunting legal. I, of course, only want it legal if the populations can be sustained and healthy in accordance with biologist recommendations. Thank you!

Eric ladd

134 bishop lamy road

Lamy, NM 87540

314-452-4916

Sent from my iPhone

From: [Stephen Coale](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New Mexico Cat and Bear hunting via hounds
Date: Sunday, August 20, 2023 5:00:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am very disappointed that consideration is being given to outlaw the use of hounds for cat and bear hunting in New Mexico. I have hunted both species with hounds in New Mexico 5-6 times over the last 20 years. Knowledgeable Hunters are very selective and only shoot males.

It is very difficult to hunt lions via spot and stalk. Possible for bears, but not very productive. Doing away with hound hunting lions, will really negatively affect your mule deer population, and to some degree you elk calf recruitment.

Game management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our local communities.

The first big mistake you made was doing away with trapping on public lands. That too will have a very negative effect on Mule Deer numbers. Just give it some time.

Please do not another wildlife management mistake.

I support the cat and bear hunts in NM.

Stephen L. Coale

Sincerely,
Stephen Coale

From: [Julie Tumblety](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New Mexico Department of Game and Fish, Attn: Bear and Cougar Rule Development, 1 Wildlife Way, Santa Fe, NM 87507
Date: Saturday, July 29, 2023 10:27:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Department of Game and Fish
1 Wildlife Way
Santa Fe, NM 87507

I recently learned that New Mexico Game and Fish wildlife managers are considering increased hunting limits for black bears and cougars in New Mexico, citing indicators that populations are growing in some areas of New Mexico and thus should be reduced.

I have reviewed the agency's public document available for review **Bear and Cougar Rule (5/18/23)** and do not see the metrics supporting an increase in hunting limits nor an increase in demand for these types of trophy hunting licenses from the public. I also do not see that the agency is taking into account the environmental impact factors on current and future animal populations, such as climate change, drought and ever-increasing wildfire occurrences. As the agency charged with "Conserving New Mexico's Wildlife for Future Generations," I strongly believe that NMGF's adjustment to this policy will have significant economic and ecological harm to our state.

Your agency knows that cougars and bears are an important part of the ecosystem and play a unique ecological role. They help foster plant biodiversity by keeping deer and other herbivores in check. By removing sick individuals and reducing the spread of deadly diseases such as chronic wasting disease, cougars help stem an epidemic plaguing deer and elk herds throughout the country. They also supply bobcats, coyotes, ravens and other scavengers with a steady stream of food, a particularly critical service during winter and other lean times. Just as beaver ponds create habitat for fish, amphibians and other species, cougar kills create habitat for nature's janitors, insect "decomposers" that break down rotting flesh and liberate nutrients for soil microbes and plants, an ever-pressing need in our fire ravaged forests where soil health has been severely compromised. It is also well known from that Increasing hunting quotas can lead to overhunting of the healthiest animals which can have cascading negative effects on the entire ecosystem.

It is now universally accepted that we are facing a global extinction crisis with thousands of declining species worldwide. Healthy ecosystems depend on the full range of species, which includes top carnivores. When the healthy balance tips by taking too many top carnivores out, humans then need to play the role of ecosystem manager, a role that humans have clearly failed at providing. Though economic "benefits" of trophy hunting proceeds may be easier to quantify than ecological benefits, this trade off approach needs to be determined and guided by ethical concepts.

Research indicates that the majority of New Mexicans and Americans hold positive attitudes towards cougars and bears. NMGF should support policies that respect the wishes of their citizens to protect these species rather than increase trophy hunting limits.

We all benefit from healthier ecosystems which have a better chance of surviving the climate crisis. Our citizens and the non-human life that we share this beautiful state with, have a right to live healthy and fulfilling lives. And we have a responsibility to provide the same for future generations of New Mexicans.

Thank you for taking my comments into consideration.

J. Tumblety
Las Vegas, NM

From: [Natalie Collison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New Mexico Wildlife Management
Date: Thursday, July 20, 2023 6:29:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To All whom this may concern,

I am writing this email rather than attending the meeting that New Mexico Game and Fish is holding July 21, 2023. I am at my cabin in the mountains of northern New Mexico where the internet is unreliable. What we lack in modern convenience is more than made up for by the natural wonders that grace our beautiful state.

The mountains, forests, lakes, rivers and all of the creatures (including humans) that make this special place home are my concern. I think it takes living here to really appreciate how the puzzle pieces of nature interlock, it's an intricate system that scientific study continues to reveal. This wonderful puzzle includes everything from the tiny "no see 'em's" to the apex predators, cougars and bears. All are very important to the health of this mountain system.

Therefore, I am asking that in the interest of all who share these wild lands, that the raising of kill quotas of cougars and bears be suspended until a thorough scientific study be done to determine what the population of these species actually is. We can't successfully manage what we don't know.

Bears and cougars are not really food animals, maybe occasionally a bear is eaten but I've never heard of anyone sitting down to cougar. Killing them for sport or trophy is cruel and unnecessary especially when we really don't know the population count of either. By raising the kill quotas we are tampering with a fragile system. Taking out the largest specimens for trophy badly weakens the system and also leaves orphans, many of whom aren't prepared to care for themselves which will further reduce populations in an uncontrolled way.

In closing I'm asking all agencies to be willing to take the time to let science determine by how much and when we raise quotas. We must manage with great care. It's so easy to destroy a natural system and so very difficult to rebuild one.

Respectfully,

Natalie Collison

From: [Raye Malzhan](#)
To: [DGF-Bear-Cougar-Rules](#); [Raye Malzhan](#)
Subject: [EXTERNAL] New Rules for Bear/Cougar Hunting
Date: Monday, August 21, 2023 4:08:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon:

I am in your Raton district, just outside of Guadalupita on Coyote Creek. Our bear sightings and evidence of bears have declined year after year for 14 years now. The same can be said for cougars. We are wildlife watchers, and work on restoration and enhancement of habitat on our land for the benefit of wildlife. We may not be hunters anymore, but we are a part of your constituency. I ask that you base your management practices on science based population studies and ethical management practices. Raising the kill quote on bears and continuing to allow the decline of cougar populations is not justified based on our personal observations.

I might add that hunting with dog packs and baiting is not ethical hunting, and is outlawed in several states. In addition, it is time that you became the Department of Wildlife, and dropped your anachronistic insistence on calling wildlife game, and not calling fish wildlife.

Sincerely,
Raye Malzhan
Guadalupita, NM

From: [Chip](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New high hunting limits on our majestic mountain lions are just plain wrong and totally unacceptable!
Date: Sunday, October 15, 2023 3:42:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not raise the amount of mountain lions that hunters can kill each year!

Thank you,

**Chip Leavitt
4510 Olympus St
Silver City, NM 88061
575-654-5654**

From: [Leroy Whitaker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New rules
Date: Wednesday, August 16, 2023 1:36:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Leave the hunts and rules alone there are enough regulations in place right now !we just need new commissioners to do what's right!

Sent from my iPhone

From: [Mary](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] New rules
Date: Friday, August 11, 2023 3:24:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am very opposed to upping the numbers of animals to be killed. Climate change will kill off enough species, we humans don't need to kill unless it is for food or protection. Even predators like wolves and cougars have a role to play in the environment, killing them could cause an imbalance in nature that might never be corrected. Please either keep the current quotas of bears and cougars, or lower them. Sincerely, Mary Holden
Sent from [Mail](#) for Windows



Virus-free. www.avast.com

From: [cal.jaeger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] No increase to hunting limit for bears and cougars
Date: Sunday, October 15, 2023 12:48:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We believe that we represent the vast majority of New Mexicans who enjoy the outdoors and the beautiful lands and wildlife of New Mexico but choose **not** to hunt and kill our wildlife such as bears and cougars. For that reason, we are adamantly opposed to any rule (19.31.11) which would increase the number of bears and/or cougars that are killed by hunters. We are not convinced that NMDGF has established a scientifically sound approach to bear and cougar management. We believe they are being influenced by a vocal minority of New Mexicans who hunt these animals. The funding for the NMDGF relies on fees and licenses for hunting permits, so how can they be objective when deciding hunt numbers or permit numbers?

In the last 100 years scientists have learned that predators are a valuable and necessary part of an ecosystem. Our native bears and cougars should be considered keystone species, that whatever affects these animals also affects the habitat and other wildlife in the area.

Currently we are seeing dramatic changes in our climate with historically low precipitation. With the added stresses due to Climate Change, our wildlife is under increased threats beyond just hunting. Such changes will significantly affect the amount of food available to wildlife and cause even more stress to our wildlife and lands than we have ever seen before. Now is not the time to make changes in any rules which would further reduce the numbers of bears and cougars in New Mexico.

We are particularly opposed to the use of dogs in these hunts. Having radio-collared dogs chase bears and/or cougars until near exhaustion is not hunting. When the exhausted animal finally climbs a tree in an effort to escape, the hunters, who have followed the dogs by radio, can easily shoot and kill at point-blank range. There is no avenue of escape for an animal in this situation. How does this protect a mother with cubs? How is this ethical or even considered sport? It is not. We believe that if New Mexico voters were asked to vote on allowing dog hunting of bears and cougars, they would overwhelmingly reject this out-of-date activity.

I believe that the hunting of bears and cougars should be suspended until sound scientific evidence is provided that the hunting will not significantly harm the current population of bears and cougars in New Mexico. These are a keystone species and affecting their populations also affects the habitat and wildlife in the area. I believe that the majority of New Mexicans would support having a strong, viable population of bears and cougars in New Mexico versus the small minority of people who want to kill them.

I reviewed the bear data sheets provided by the NMDGF and found in a footnote that the

estimate for the bear populations was based on a studies done in 2001 and another by I believe a graduate student in 2015. I sent an email to NMDGF asking them if they had more current studies to support their population estimates and never received a reply. If in fact the population estimates are based on these old studies, then more current work needs to be done before increasing the kill limits.

From: [Jimmy Lopez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] No rule change
Date: Wednesday, August 16, 2023 9:05:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, I a hunter. I would like to speak about the new bear and cougar rules. I feel there is no need to make a rule change due to the fact bears and cougars are making great population boosts in many areas of NM. Keep the hunting regulations the same. The goal limits are meet keeping the populations in check but with room to grow. Let's not make the mistake like stopping trapping. The coyote numbers are growing out of control and now coyotes are coming closing to residence causing problems. Home owner are seeing coyotes on a daily basis. Coyotes are attacking pets and causing a concern to humans. The best practices should be if it's not broken Don't try and fixes it.

[Sent from Yahoo Mail for iPhone](#)

From: familia.underwood@everyactioncustom.com on behalf of [Gretel Underwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] No to the Killing of New Mexico's Bears and Cougars! Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:49:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Gretel Underwood
Santa Fe, NM 87508
familia.underwood@gmail.com

From: annekea1@everyactioncustom.com on behalf of [Anna Brewer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] No to the bear and cougar rule, protect New Mexican wildlife
Date: Monday, August 14, 2023 12:30:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill even more black bears and cougars by

- 1) Making unspecified increases in hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Anna Brewer
Albuquerque, NM 87105
annekeal@hotmail.com

From: [Dan Stephens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] No, to more hunting of Cougars
Date: Sunday, October 15, 2023 9:03:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Kill more, more, more. Kill, kill, kill! Why? What's the point ? What is the motivation? What lobby is pressuring you? What's wrong with people here?
How many dead mountain lions hanging on hunters' walls do we need?

If NMGF does not know the total death rate of cougars from all causes, there is no basis to add more permits for hunting. With so few cougars in NM, isn't there a risk that the remaining cougars cannot sustain a healthy population? Until u have the requisite information, let the animals alone. Let nature control populations.

Have you considered that the increased cougar and bear killing decreases the opportunity for me, a wildlife photographer, to encounter these beautiful animals in the wild. What about my rights? How about setting aside large areas where hunting, as well as running cattle, is prohibited, so nature enthusiasts can see nature as God intended it.

Daniel Stephens
505.379.4779

From: [Wendy Keefover \(she/her\)](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Lisa Jennings](#); [Nina Eydelman](#); [Mary Katherine Ray](#)
Subject: [EXTERNAL] OPPOSE black bear rule
Date: Tuesday, August 22, 2023 1:59:13 PM
Attachments: [image002.png](#)
[image003.png](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

On behalf of the Humane Society of the United States, Animal Protection New Mexico, the Rio Grande Chapter of the Sierra Club, and our members and supporters in New Mexico, we thank you for this opportunity to comment on New Mexico Department of Game and Fish's four-year, proposed rule for black bears. Given the immense uncertainties New Mexico black bears face, we request that NMDGF reduce their proposed bear-kill quotas by at least 50%. We provide a summary overview of our comments and full, cited comments follow.

Summary:

A. New Mexico's black bear population density and abundance determinations made by department of Game and Fish personnel have been wholly insufficient, are undiscoverable and therefore must be assumed to be scientifically indefensible. Since the public has not been provided with tangible reasons to trust the department's conclusions, the Game Commission must lower statewide black bear quotas. The NMDGF has redacted (blacked out) population data from our public information requests, making a study of their population calculations (peer review) impossible. The process involving NMDGF's proposal to raise the black bear quotas has been unnecessarily secretive, and the public has been kept in the dark. Instead, NMDGF initially developed a document totaling 1.5 pages that encompassed both its proposed black bear (*Ursus americanus*) and cougar (*Puma concolor*) rule changes and then suddenly updated that document with a few more pages in early August. NMDGF will accept comments on its proposed rules until an unknown date in September, at which time it will prepare final draft rules for both bears and cougars that will be posted to its website. It is uncertain if the public will have an opportunity to review and comment on these final draft rules before the Game Commission makes its decision in October. The public has little information about the studies NMDGF relies upon to make population determinations, and we have seen no population management objectives (other than implicit hunter satisfaction and future hunting opportunities). In other words, the process by which these rules were drafted and the public engaged, is a failed course of action.

NMDGF's bear-population determinations are based upon an unscientific and crumbling foundation because New Mexico's bear studies are woefully outdated. Those old studies were conducted in New Mexico's best bear habitats. Then NMDGF took those high-density numbers and mysteriously generalized them statewide—artificially inflating estimated population figures that likely have no basis in reality.

NMDGF has not embarked on year-to-year population studies so it is not possible to know how bear populations are trending and thus whether current hunting is sustainable, much less whether increasing hunting quotas will be. NMDGF's claims, that New Mexico bear management is sustainable, are not backed up by current empirical data.

NMDGF has not factored in climate instability into its bear hunting proposals. It has not considered the 20-year *megadrought*—a drought not seen since 800 A.D.—and the historic wildfires which killed bears and destroyed their habitats, including last year's wildfires (the largest in New Mexico's recorded

history), into its quota-setting process. Because New Mexico's bear population suffers from low genetic diversity, because those populations are poorly connected to others and because the climate crisis will only worsen, New Mexico's bears face a bleak future that will not be able to withstand over-hunting.

When an activity potentially threatens the environment, the *precautionary principle* warns that the proponent of that activity assumes the burden of proof and must act with restraint. NMDGF has not met this burden but rather has thrown caution to the wind with bear quotas that are likely to damage New Mexico's black bear populations. **For those reasons, the Game Commission must lower statewide black bear quotas to prevent inbreeding and the loss of bear populations that are uniquely adapted to New Mexico's arid habitats.**

- B. NMDGF proposes not to count all sources of bear mortality as part of its quotas, including disease, predator-control kills, human-bear conflict kills, road-killed bears and the significant amount of annual bear poaching.** Black bears are slow to reproduce and can only withstand **between 4% and 10% total mortality**, and failing to include total mortality amounts to flawed wildlife management. For all of these reasons, **the Game Commission should not only reject any increase in hunting quotas but also should call for quota reductions statewide.**
- C. Hounding bears with packs of radio-collared hounds is not fair chase hunting and using archery equipment is cruel and results in uncounted wounding losses.** Hounding harms non-target species, including deer and domestic livestock and results in deaths and injuries to *federally protected Mexican wolves*, bear cubs, and results in deadly fights between bears and hounds. It causes both bears and hounds to die from heat exhaustion. Using archery equipment to hunt bears results in prolonged deaths of bears and wounding losses that are never counted in bear quotas. For these reasons, **the Game Commission must abolish hound hunting of bears and the use of archery equipment to hunt bears.**
- D. Researchers have found that black bear hunting does not resolve human-bear conflicts, and, may in fact, worsen them. Also, trophy hunting bears does not reduce attacks on humans—but keeping dogs on leashes in bear country does.** NMDGF must engage Bear Wise or Bear Smart strategies to prevent future conflicts in both urban and rural areas—because human-bear conflicts are entirely preventable with planning.
- E. New Mexico's wildlife managers should develop a comprehensive management plan informed by the best available science.** That management plan should clearly spell out goals and objectives so the public and decisionmakers alike are not kept in the dark. No such plan currently exists. The public is being kept in the dark about even the most basic aspects of the department's bear management plans in New Mexico.
- F. Family oriented black bears hold intrinsic, social and economic values, and provide incalculable benefits to their ecosystems.** Highly intelligent, devoted black bear mothers spend up to two years raising their very few cubs they produce. Among other myriad benefits they provide, bears also spread more seed than birds. Furthermore, the public loves viewing and photographing bears. For these reasons, the Game Commission must conserve and protect black bears for future generations.
- G. New Mexico law confirms that black bears must be conserved for all citizens.** It is axiomatic that “agencies are created by statute, and limited to the power and authority expressly granted or necessarily implied by those statutes.” *Qwest Corp. v. New Mexico Pub. Reg. Comm’n*, 140 N.M. 440, 446 (N.M. 2006). Thus “the Legislature, not the administrative agency, declares the policy and establishes... standards to which the agency must conform.” *State ex rel. Taylor v. Johnson*, 125 N.M. 343, 349 (N.M.

1998). Here, the New Mexico Legislature created the Game Commission in order “to provide an adequate...system for the protection of the game and fish of New Mexico” and “to provide for their... protection, regulation, and conservation...” N.M.S.A. § 17-1-1. In promulgating rules and regulations pertaining to hunting, the Legislature expressly directed the Commission to give “due regard” to “the distribution, abundance...and breeding habits” of particular species. N.M.S.A. § 17-1-26. And, like all New Mexico agencies, the Game Commission may not establish rules that are “not supported by substantial evidence” or that are enacted “arbitrary or capriciously.” N.M.S.A. § 39-3-1.1(D). Taken together, the statutory scheme authorizing this rulemaking requires evidence-driven, scientific management that seeks to sustainably maintain wildlife populations.

H. Conclusion. Because so many uncertainties exist with NMDGF’s proposed black bear rule, we provide these comprehensive comments, including **all journal articles cited herein as part of the administrative record and are available here: https://drive.google.com/drive/folders/1u_FIDR1428yw5ZInlPf3GqeTeorOfDJJO?usp=sharing**. This is done with the hope that the final rule will be informed by sound science and developed with clear objectives and goals, including for reducing human-bear conflicts, ensuring that black bear populations in New Mexico are genetically fit for long-term adaption in the face of so many threats to their persistence, including loss of habitats and travel corridors, extreme droughts, and severe, wholly unprecedented wildfires.

The Game Commission must reject the proposed black bear quota increases as they have no basis in science and could lead to the loss of New Mexico’s uniquely adapted bear populations. The Game Commission must include in its final quotas all sources of mortality. Given the immense uncertainties New Mexico black bears face, we request that NMDGF reduce their proposed bear-kill quotas by at least 50%.

To prevent the harm to non-target species including Mexican wolves, deer and domestic livestock the Game Commission must disallow the hounding of black bears. Hounding of bears is a controversial practice that is not fair-chase hunting, and has no place in New Mexico’s hunting regulations. The Game Commission must also disallow archery equipment to hunt bears because it does not result in quick, clean kills but prolongs a cruel death that can result in dead bears not being counted toward quotas. Black bears are ecologically important to their ecosystems. They hold inherent values and are much beloved by the public. The NMDGF must create a comprehensive rule supported by scientific justification for management of black bears and begin to work on a credible, long-term black bear management plan that outlines goals and objectives, including conserving New Mexico’s black bears for future generations. Additionally, we believe the public has the right to expect NMDGF to disseminate final draft rules, along with discoverable and detailed scientific justification for those rules using the best available science, rather than providing vague, indefensible, incomplete, and incoherent rules that shift throughout the comment process.

Thank you for considering our comments.

Sincerely yours,

Wendy Keefover

Senior Strategist, Native Carnivore Protection, Wildlife Department

wkeefover@humanesociety.org

She/Her

humanesociety.org



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From: [Wendy Keefover \(she/her\)](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Lisa Jennings](#); [Nina Eydelman](#); [Mary Katherine Ray](#)
Subject: [EXTERNAL] OPPOSE the NMDGF's cougar rule
Date: Tuesday, August 15, 2023 2:37:05 PM
Attachments: [8522264.png](#)
[8522277.png](#)
[HSUS et al NM-cougar-comments-15Aug23.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

Thank you for this opportunity to provide you with our comprehensive comments on New Mexico's cougar rule. Please see our comments attached. We respectfully ask that the Game Commission **not adopt** the proposed cougar rule as it is now written.

Based upon the best available information, New Mexico Department of Game and Fish has grossly over-estimated New Mexico's cougar population in cougar management zones A, C, D, E, G, H, I, J, K, L, M, N, O, P, R, S and is causing severe overkill of those populations.

Because so many uncertainties exist with NMDGF's proposed cougar rule, we provide these comprehensive comments, including all studies cited herein as part of the administrative record (which we will make available to you through a Google drive). We do this with the hope that the final rule will be informed by sound science and developed with clear objectives and goals, including the science about cougars and their prey, the paucity of livestock conflicts, and ensuring that cougar populations in New Mexico are genetically fit for long-term adaption in the face of so many threats to their persistence including loss of habitats and travel corridors, extreme droughts and severe, wholly unprecedented wildfires. We are in the midst of a climatic crisis, which NMDGF ignores at its peril.

We oppose attempts to use population models (e.g., IPMs) that the agency has already admitted are problematic because they inflate population estimates. Instead, it is essential that NMDGF estimate New Mexico's cougar populations using peer-reviewed, empirical research conducted in New Mexico (e.g., Murphy et al. 2019).

NMDGF must include all sources of mortalities including hunter kill ("harvest"), predator control (ostensibly to bolster wild prey populations or protect domestic livestock), poaching, disease, known natural mortalities and roadkill as part of their quotas to prevent overkill of New Mexico's rare cougars. This change in policy makes no sense, and serves to undermine cougar conservation in New Mexico.

Hunting or "controlling" cougars will neither bolster ungulate herds nor make people safer. Persecuting cougars, however, creates social chaos in their families resulting in even greater

mortalities from intraspecific aggression. Randomly killing cougars exacerbates conflicts between cougars and people, pets and livestock. Randomly killing cougars can even intensify losses of rare prey animals such as bighorn sheep.

This public process on the cougar and black bear rule has been nothing short of vexing. We ask that NMDGF, in the future, disseminate one final and thoughtful draft rule instead of giving the public a shifting ground upon which to comment. Doing so will facilitate more informed decision-making. Also, in the future, NMDGF must create a comprehensive management plan supported by sound, peer-reviewed science to justify its management of cougars that outlines goals and objectives, including conserving New Mexico's cougars for future generations.

Because the majority of New Mexicans value and appreciate cougars for their considerable intrinsic, social and economic value, we ask that the agency change course and work to further their conservation instead of facilitating their extirpation. NMDGF must disallow the hounding of cougars—because of the myriad of problems associated with this practice. Outdoor recreation in New Mexico was worth \$2.3 billion in 2021. Of that figure, hunting and trapping amounted to only 0.04% of that spending. It's time for NMDGF to step into the 21st century and work to conserve not dismantle wild nature.

Sincerely yours,

Wendy Keefover

Senior Strategist, Native Carnivore Protection, Wildlife Department

wkeefover@humanesociety.org

She/Her

humanesociety.org



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From: [Ronnie Borunda](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Official Comments / Statement on new Bear & Cougar rule
Date: Tuesday, July 25, 2023 11:57:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

My name is Ronald N. Borunda, a lifetime resident of New Mexico and big game hunter since I can remember. I wanted to provide an official statement on the new Bear and Cougar rule that could possibly go into effect soon. If both licenses become available to big game hunters, such as myself, then I will absolutely hop on board and learn everything I need to know to harvest a bear or cougar. Typically, I don't hunt bears or cougars and focus primarily on hooved animals like deer, elk, pronghorn, etc.

However, I've had two (2) encounters over the past 3 years of hunting, where I've called in a bear while hunting elk, during the September bow season. As you can imagine, this was quite scary and both times I wasn't necessarily frightened of the animal but, more of the repercussions if I had to defend myself if the animal had gone on the offense and attacked. Luckily, both instances led to zero action taken on my end as I tried my best not to be seen or heard. With that said, I can't help but wonder, "What If". It's a feeling I would not like to experience anymore because I don't ever intend to break any kind of laws or regulations. I try, and pride myself in being an honest hunter / angler when out in the field. And unfortunately this type of experience would put me in a challenging situation where I am outside the law and would have to plead my case and innocence.

So, I fully support the proposed change and allow big game hunters to harvest bears and cougars during drawn tag hunts or during "season". If granted and given the right to do so, I will gladly purchase tags and follow all rules and laws for bear and cougar hunts. I don't necessarily see this as a "trophy" opportunity but more of an opportunity to harvest while hunting for other species. All while not having to stress and feel like I'm somehow breaking a law for something I really don't have control of; bear or cougar coming in while hunting another species.

I sincerely appreciate you and your staff opening these rule changes to the public. And, I truly hope this passes so I can do what I love, without the worry or stress of possible litigation. Thank you for your time and please consider my witness accounts for the proposed change. This really is a grey area that has flown under the radar for so long now. I'm happy to call myself a hunter / angler from New Mexico again because I now see the efforts your team(s) put forth.

Best Regards,

Ronald N. Borunda

From: [Jonathan Shaw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Open Bear hunting on august 16th in unit 34 & 36
Date: Tuesday, August 15, 2023 2:56:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Considering I hunt in state of New Mexico and enjoy hunting bear and would like to see bear hunts open in unit 34 and 36 on August 16th. Complete ignorance on yalls department to not open them

Sent from my iPhone

From: ecologist2020@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opinion of a constituent
Date: Tuesday, July 18, 2023 5:26:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

All hunters should be banned from every state, but particularly the ten highest biodiversity endemism states, New Mexico rating number 4. NM Game & Fish is still championing the dark ages when Teddy Roosevelt and friends thought nothing of slaughtering tens-of-hundreds of innocents from Africa to the Amazon. Hunting in the 21st century is one of the greatest of evils, along with consumption of flesh - continued human cannibalism of every guise.

What state agencies charged with "management" of fellow wildlife SHOULD be presenting to its constituencies (the public) are immediate plans to implement medical crisis stations on this burning, hemorrhaging planet with food supplements and misters, and mobile swimming pools, as is done from Israel, to Poland to Madagascar.

To talk about killing and killing and killing in New Mexico is reason enough to boycott every aspect of the infrastructure and sick minds that perpetuate this continuing all-American horror story.

Misha Charles, PhD, Systematist and Ecodynamics specialist

From: [Matthew Chambers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opinion
Date: Thursday, August 17, 2023 10:13:23 AM

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Hello my name is Matthew and I wanted to voice my opinion. I am in favor of responsible predator hunts programs and the scientific management proposal submitted by game department biologists. These biologists have been doing a great job in managing healthy populations and insuring the future generations of these species. This is a livelihood of some people and it is being put in jeopardy. Please let them continue to do what they do best and listen to what they have to say. Thanks

[Sent from Yahoo Mail for iPhone](#)

From: [Karen G](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Oppose Bear and Cougar "Rule"
Date: Thursday, August 10, 2023 9:18:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing in opposition to the proposed "bear and cougar rule" which would increase quotas and hunting seasons for bears and the year-round cougar-hunting season.

Please do not implement this new rule. Instead, reconsider and reanalyze appropriate data taking into account the impacts of climate change, habitat loss, the reproductive rate for these large mammals and other factors to redraft a bear and cougar rule that genuinely protects these animals, ensures their long-term viability, and keeps New Mexico wild.

Karen Griego
Dixon, NM

From: [Brennan Cusick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Oppose a Cougar and Bear hunting ban!
Date: Wednesday, August 16, 2023 10:27:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I am writing to you today as a concerned sportsman, hunter, biologist and conservationist urging you to please continue to allow the pursuit and take of predatory animals in New Mexico. Bear and lion hunting, particularly with hounds, is a centuries old method of take, and one that allows careful selection of a target animal before harvest. Few other hunting methods allow you to be as selective of predator harvest as hound hunting, where the age-class, sex, and presence of young can be determined quite easily by being able to get close to your quarry and observe it at length before determining if a harvest is prudent.

By disallowing the hunting of predators you're taking away a vital part of management of all animal species in New Mexico via the North American Conservation model. Contrary to mainstream belief, preservationist tactics are not what America's stunning success of wildlife recovery are founded on. Fair use, recreational harvest with set limits and using ecological and biological surveying tools like tooth annuli analysis and size and weight estimates, coupled with regional harvest data allow for a more accurate survey of predator and all game species than virtually any other method. In addition, the pursuit of game animals is a multi-billion dollar industry across the nation, with lots of that money supporting both local economies and state wildlife agencies through hunter dollars spent in your communities and through excise taxes like the Pittman-Robertson Act.

In short, please support our hunting conservation model and continue the harvest and pursuit of predator species as a means of both recreation, wildlife management, and conservation.

--

Thank you for your time and careful consideration

Sincerely,
Brennan Cusick

From: [Rick Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Oppose department's proposed cougar/bear rules
Date: Thursday, September 28, 2023 6:24:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Department of Game & Fish:

The proposed cougar (mountain lion) and bear rules for the next four years are completely unacceptable. Not only do they increase allowed permits and/or extend previous increases, but they are a danger to the health and stability of these animal populations. Both cougars and bears are already under grave threat from climate change (drought/wildfires), habitat loss/fragmentation, and motor vehicle collisions.

Your own data on cougars shows how much of an increase there has been in their deaths since 2001.

Average # of cougar deaths per year from 2001/02 season to 2010/11 season = **203.8**

Average # of cougar deaths per year from 2011/12 season to 2020/21 season = **306.1**

Average # of cougar deaths over the past two seasons = **348.5**

We should be seeking to create thriving, healthy populations of cougars and bears in our beautiful state, not making them constant targets. As a result, lower hunting limits should be set for both cougars and bears.

Exactly when is the department going to take into consideration the feelings of those New Mexicans who love all our wildlife, including cougars and bears, but don't feel the need or desire to kill them? When is enough, enough?

Sincerely,

Richard Brown
Rio Rancho, NM 87144

From: [Chris Blessing](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Oppose extending current hunting limits for mountain lions.
Date: Sunday, October 15, 2023 10:16:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

My name is Chris Blessing and I am a resident of Albuquerque and I was told to contact you all via email in expressing that I oppose extending hunting limits of mountain lions. I do not feel it is right for the animal and extending it by over 200 is simply too much and not giving the animal enough of a chance.

Thanks,
Chris Blessing

From: [Sue Small](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Oppose hunting of cougars and bears in NM
Date: Wednesday, August 16, 2023 12:32:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Apex predators are essential to the health of our environment, and consequently to our human health. With Chronic Wasting Disease and other ungulate and hoofed herbivore diseases, it's necessary to protect predators such as bobcats, cougars and bears.

Humans killing cougars and bears do so not for food, but for blood sport.

Prohibit any and all sport hunting of cougars and bears.

Sue Small

7 Arnold Court

Los Lunas NM 87031

505.208.1753

Sent from my iPhone

From: [Barbara Arsenault](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposed to mountain lion hunting increase
Date: Saturday, October 14, 2023 4:39:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I read the ABQ journal article recently talking about an increase in mountain lion hunting in New Mexico. My family owns 140 acres that borders Cibola NF land and the Alamo reservation. I see cougars occasionally. Never had a problem with them. They run away. They eat the pack rats that are everywhere. Cougars need to be protected.

Barbara Johnson

From: [chase Wilbanks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposed to proposed changes!
Date: Thursday, August 24, 2023 8:15:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

As someone who hunts for bear and cougar every year, I do not want to see this OTC opportunity go away. Even when female limits have been met, hunters should be given the opportunity to continue the hunt for a male.

Respectfully,

Chase Wilbanks.

From: [dave kraig](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Dave Kraig](#)
Subject: [EXTERNAL] Opposing the Bear and Cougar rule
Date: Thursday, August 10, 2023 8:44:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing in opposition to the proposed "bear and cougar rule" invoking increased quotas and hunting seasons for bears and the year-round cougar-hunting season.

Not only is the proposed rule based on faulty science and analyses, it ignores the incredible stresses that prey animals are already under from fires, drought, habitat loss, and forage scarcity. It also ignores the collateral effect that killing adult cougars and bears has on their unprotected and unfed progeny. The rule would have a profoundly negative effect on cougar and bear populations and health.

The studies used to justify these hunting increases appear to have cherry picked data to support their case rather than rely upon balanced studies that accurately characterize the health of the target populations.

Please do not implement this new rule. Instead, reconsider and reanalyze appropriate data and make an honest assessment of the impacts of climate change, habitat loss, and other rapidly evolving factors and redraft a bear and cougar rule that genuinely protects these incredible animals and ensures their long-term viability.

Thank you for your consideration,

Dave Kraig

Pojoaque, NM

From: [Marcia Kellam](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposing the new proposed NM Game and Fish rule
Date: Tuesday, August 15, 2023 3:44:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time. Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory. Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel. The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars. NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them. Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars. Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting. 1

Sent from [Mail](#) for Windows

From: wechsji@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposition to raising kill quotas
Date: Sunday, September 10, 2023 12:47:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to voice my opposition to raising kill quotas for bears and other animals.
Please, act in a humane manner!
Enough is enough!
Judith Wechsler
Albuquerque

From: [Andrea Reser](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposition of marking bear and lion hunting with hounds
Date: Tuesday, August 15, 2023 6:44:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm writing you in opposition of the state wanting to make bear and lion hunting with hounds illegal in your state. Please don't make the same mistakes my state has made. I'm 2012 running bears and bobcats with hounds became illegal and some years before that hunting lions was banned. Our state is now over ran with predators and although we still have a legal bear season without hounds, they have yet to be able to meet quota every year. Our deer population suffers and it's doing more harm to our state than good. All these hounds that were bred for a job are suffering not being able to run their desired game that my family and I travel to New Mexico to run our hounds so they can still have that opportunity. Your state's revenue loss will be tremendous from those instate and out of staters like myself who will no longer travel there.

Please don't be like California.. please don't do to your people like they did to us..

Andrea Reser
AndreaReser26@yahoo.com
California resident

[Sent from Yahoo Mail for iPhone](#)

From: [Julie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposition to expanding Bear and cougar hunting numbers
Date: Tuesday, August 8, 2023 1:11:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We oppose the expansion of the number of kills of bear and cougars during hunting season and oppose the expansion of hunting season dates.

Current populations were impacted by the devastating fires of spring of 2022 during a critical time when young animals were unable to flee. In addition wildlife has surely suffered during the drought of 2023.

In 1931 there were no bears alive in Texas or New Mexico. New Mexico wildlife is the property of the citizens and taxpayers of New Mexico and is not the property of your department.

For more than 20 years of weekly long distance hiking in the high mountains of New Mexico I saw only 1 distant bear and never a cougar.

We urge you to limit the hunting of these animals.

Sincerely,
Nancy B Noyes and Julie N Long

Sent from my iPhone

From: [hilary spittle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposition to higher kill quotas and longer seasons on NM bear and cougar hunts
Date: Sunday, August 6, 2023 4:09:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Department of Game and Fish:

I oppose the proposed increase on kill quotas and longer hunting seasons for bear and cougar in New Mexico. Both the quotas and duration of seasons should be reduced to allow these important ecosystem members to recover following wildfires and drought in recent years.

Please revise NM laws accordingly.

Thank you,
Hilary Spittle
Santa Fe, NM
hroespittle@gmail.com

From: [Sarah Manges](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposition to proposed rules to increase hunting limits for Bear and Cougar
Date: Tuesday, July 18, 2023 5:44:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Members of the New Mexico Game Commission:

In the late 1980s I was the Assistant Attorney General who represented the New Mexico Department of Game and Fish and the Game Commission. Dr. Wayne Evans and James Santiago were wildlife biologists, both of whom the Game and Commission respected. What I learned from the Department's wildlife biologist and from observing the Commission at that time was that hunting limits were annually set based on a true and accurate consideration of the scientific evidence regarding the health of the species' population. The Commission often made difficult decisions to reduce the availability of hunting licenses even when there was public outcry or political pressure to provide more licenses to ever growing numbers of hunters who were not considering the future impacts of hunting that is scientifically unsustainable. The important role of the Commission was to consider the long term impacts its hunting regulations had on the species.

It is my understanding that the national Mountain Lion Foundation, which tracks the health and condition of mountain lion populations throughout the U.S. has found that "New Mexico's hunting quotas far exceed sustainable thresholds established by mountain lion experts and continue to threaten the health and stability of cougars." This is the assessment of New Mexico's cougar population even before the Commission considers further raising the limits on cougars. Accordingly, the Commission should follow the scientific evidence, and pass this year's regulation that reduces the number of cougars licenses issued. In years past, the science of game management was followed routinely by the New Mexico Game and Fish Commission, and hunting was reduced when the science warranted it. Moreover, one need not be a scientist to see the devastating impact that wildfires and sustained drought are having on New Mexico's bear population. Again, the Commission should look at the overall health of New Mexico's bear population in consideration when setting the new regulation; the Commission should reduce, not increase, the numbers of licenses it issues for the hunting of bears.

I respectfully urge this Game and Fish Commission to stay true to the mission of the Game and Fish Department, which is to "conserve" and to "protect" New Mexico's wildlife for future generations of New Mexicans.

Sarah Alley Manges

From: [Aria White](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Opposition to your kill quotas and lengthy trophy hunting seasons
Date: Monday, August 7, 2023 11:43:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear DGF,

After I read the New Mexican 8/6/2023 article called Hunting by Nina Eydelman and Mary Katherine Ray, I felt compelled to contact you with my extreme opposition to actions you have taken that put wildlife conservation at stake. Bears and cougars hold intrinsic value and ecological value and enhance biological diversity.

Please reduce your kill quotas for bears and cougars and the currently over-long trophy hunting season.

Sincerely,

Aria White
412 Calle Kokopelli
Santa Fe, NM 87501

From: [Ryan Chandler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Wednesday, August 23, 2023 6:01:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Ryan Chandler

From: [Luke Tingey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 7:38:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Luke Tingey

From: [Leslie Mikkelsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 7:11:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Leslie Mikkelsen

From: [Josh Caple](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Saturday, August 19, 2023 9:27:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Josh Caple

From: [Howard Drummond](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 12:18:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Howard Drummond

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 11:04:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Brian Carson

From: [Ken Farris](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 10:05:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I commend the New Mexico Department of Game and Fish biologists for their work on the bear and cougar rule. I support their proposed changes. The proposed changes in many instances reflect the success of game department management practices and resulting increased populations.

Thank you again for the opportunity to comment on this rule. I appreciate this commission's commitment to securing the future of hunting and conservation in New Mexico.

Sincerely,
Ken Farris

From: [Brian Salsbury](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 4:52:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Brian Salsbury

From: [Edward Mulvihill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 12:38:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Edward Mulvihill

From: [Owen Bacon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 12:09:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Owen Bacon

From: [Timothy Neagle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 11:43:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Timothy Neagle

From: [Hannah Mabbott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 10:11:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Hannah Mabbott

From: [Tim Sandau](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Sunday, August 20, 2023 9:47:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Tim Sandau

From: [Boyd Vander Kooi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our Wildlife: Benefitting from Decades of Hunter Support
Date: Wednesday, August 23, 2023 12:07:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Boyd Vander Kooi

From: [Janice Riordan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our ecosystem depends on Bears & Cougars...
Date: Friday, July 14, 2023 9:47:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.

Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates.

Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

It is a fact that intelligent, important animals such as these that have been hunted and are on the brink of extinction is

a direct result from these practices. You are catering to Hunting and Wildlife Associations, in addition to creating fear in people to support this cruelty.

It should not be up to humans to control populations of any species. Bears are a highly intelligent animal. I live amongst them and see them on a weekly basis.

We must remember that Animals can live without humans, but humans can not live Without animals, and the earth will not produce without animals such as these.

Protect the cougars and save our Bears for our earth and our children. Not one Bear should ever be killed or harmed. We should worship the ground they walk on.

Please stop using animals for sport and entertainment on the grounds of overpopulation and creating fear. Chasing & Hunting with dogs, and high weaponry is a form of lynching and bullying of the animal and is very unfair and cruel. This is not fair game.

We all need each other on this earth to survive. Please be fair and do what's right for our children. Save the Bears and the Cougars. With all the craziness going on...They are watching us.

Sincerely,
Janice and Kevin Riordan

From: [Lura Brookins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Our wildlife
Date: Saturday, October 7, 2023 10:50:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs,

It is time that governments stop killing our animals in New Mexico! Our wildlife is struggling to survive already due to overwhelming natural challenges, let alone prescribed burns in our forests.

Oversight of wildlife can be valuable if the concern is to keep human intrusion (including climate change) from limiting the life of our cougars, mountain lions, wolves, elk and more.

Lura Brookins
Santa Fe

From: [Estrella Bebefideo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Outlaw bear and cougar hunting
Date: Sunday, August 20, 2023 9:41:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife deserves to be conserved. Please uphold our commitment to professional, scientific stewardship and permanently OUTLAW bear and cougar hunting. Rarely do people eat these animals or practice fair chase ethics. They use hounds, traps, bait and torture the animals before they kill them. No wildlife deserves this.

Sincerely,
Estrella Bebefideo

From: carwinltd@icloud.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PLEASE DO NOT RAISE the kill quotas of bears and cougars.
Date: Friday, July 14, 2023 10:22:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- ***Game and Fish has not provided sufficient or coherent information about bear or cougar populations that allows the public or even wildlife biologists to judge whether their recommendations are sound.***
-
- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both

reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM

Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

- Thank you for allowing public comments.

Signed,

Cathy Elizabeth Levin, Esq.

From: [gary newton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PLEASE SUPPORT BEAR / COUGAR HUNTING
Date: Wednesday, August 16, 2023 2:58:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

From: [jh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PLEASE adopt hunting rules that ban the use of dogs in cougar and bear hunting.
Date: Wednesday, July 19, 2023 10:16:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- PLEASE adopt hunting rules that ban the use of dogs in cougar and bear hunting.
- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these

species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. PLEASE adopt hunting rules that ban the use of dogs in cougar and bear hunting.
- Sincerely,

Jana Harker

From: [K. Beebe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PROPOSED BEAR-COUGAR RULES
Date: Wednesday, August 23, 2023 7:44:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I was shocked to read in a recent *Sunday Journal* that the NM Department of Game and Fish has proposed raising the kill quota on black bears and cougars from 10% to 25% of those populations and to lengthen the hunting season. It has been suggested that the State's population estimates are not based on sound science or corroborated by independent experts. Both species are ecologically crucial, but populations of almost all species are now under extreme long-term duress from the climate crisis, which will only accelerate.

Also, while it's possible that licensed hunting can limit that harvest, to my knowledge there is no limit on the number of bears that can be euthanized or relocated (which ends often in death) arising from complaints by residents in the wildland-urban-interface. With bird feeders, garbage, water features, fruit trees, and outdoor cooking among other attractants, exurb residents are luring bears into developments at an alarming rate, then calling for DGF to euthanize or relocate "problem bears." This is not the fault of DGF, but of the behaviors and life-styles of residents. However, this unregulated cull is yet another threat to bear populations. At an estimated 18 bears per 100 sq. kms., small local populations can be temporarily wiped out in just a few years. Between 2010 and the present my tiny community exterminated about 26 bears, and only this summer, we have already dispatched two sows and four cubs—30% of the estimated population.

Finally, there is the cruel and unsportsmanlike method of bear and cougar hunts using dogs to tree trophy animals, electronic beacons to find the dogs, then to pick off the exhausted quarry at close range. I understand this violates the principles of fair chase. New Mexico should ban this shameful practice. As just about anyone with enough money can summit Everest these days, anyone with enough technology can bag a cougar or a bear. No intelligence or courage required.

For all these reasons, I strongly object to the proposed 250% increase in kill quota and lengthened season as radically inappropriate. It makes me wonder if New Mexico's wildlife are on the block for tourism and revenue.

Thank you.

From: [Peter Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PROTECT, DON'T KILL, BEARS AND COUGARS!
Date: Friday, August 11, 2023 2:20:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I *oppose* the proposed trophy hunting rules for bears and cougars!

These magnificent animals should be protected from trophy killers!

Thank you.

Sincerely,

Peter Wood

From: [RONALD S. JOHNSON](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PUBLIC COMMENT
Date: Wednesday, August 16, 2023 5:08:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I am informed about a campaign to mess up the ecosystem even more by so called "environmental" anti-hunting groups.

While they are very vocal, they seldom go out in nature like hunters, fishermen and land owners do. We care more about the total environment rather than a single issue at hand.

Balance is key and removing a tool like hunting will remove the balance. What happens when there are too many predators?

Lifelong NM resident.

Ron Johnson
161 Road 6100
Farmington, NM 87401

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PUBLIC COMMENTS -- I strongly OPPOSE bear and cougar quotas and long trophy hunting seasons
Date: Thursday, August 10, 2023 10:04:05 AM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Officials,

As a resident, I write to strongly urge you to protect our precious, iconic and essential wildlife (especially wolves, bears and cougars) at all costs and restrict/ban hunting and trapping our state. **I strongly OPPOSE bear and cougar quotas and long trophy hunting seasons!**

I note the following key points below:

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers.

Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time. Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.

Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory. Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected.

Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel. The hunting proposals lack scientific rigor.

There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars. NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and

intensify into the next four years.

There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them. Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited.

Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

WE MUST PROTECT OUR PRECIOUS ICONIC ESSENTIAL WILDLIFE ESPECIALLY WOLVES, BEARS AND COUGARS AT ALL COSTS! IT IS TIME TO CO-EXIST WITH NATURE AND BAN ALL HUNTING/TRAPPING IN OUR STATE. WE RECEIVE MORE TOURISM DOLLARS FROM KEEPING THESE ESSENTIAL WILDLIFE ALIVE!

--Dr. Nicolas Duonn, Taos, NM

From: [Nic D](#)
To: DGR-Bear-Cougar-Rules@state.nm.us
Cc: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] PUBLIC COMMENTS -- I strongly OPPOSE bear and cougar quotas and long trophy hunting seasons
Date: Thursday, August 10, 2023 11:09:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Officials,

As a resident, I write to strongly urge you to protect our precious, iconic and essential wildlife (especially wolves, bears and cougars) at all costs and restrict/ban hunting and trapping our state. **I strongly OPPOSE bear and cougar quotas and long trophy hunting seasons!**

I note the following key points below:

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers.

Therefore, erring on the side of killing fewer of these animals is not problematic.

Killing too many can impact their populations for a long time. Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.

Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory. Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected.

Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel. The hunting proposals lack scientific rigor.

There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars. NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years.

There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them. Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited.

Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

**WE MUST PROTECT OUR PRECIOUS ICONIC ESSENTIAL WILDLIFE
ESPECIALLY WOLVES, BEARS AND COUGARS AT ALL COSTS! IT IS TIME TO
CO-EXIST WITH NATURE AND BAN ALL HUNTING/TRAPPING IN OUR STATE.
WE RECEIVE MORE TOURISM DOLLARS FROM KEEPING THESE ESSENTIAL
WILDLIFE ALIVE!**

--Dr. Elsa Knutson, NM

From: [Mike Valerio](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Pending Bear and Cougar Rule
Date: Wednesday, August 16, 2023 8:47:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

It is extremely concerning to hear about the pending rule to outlaw bear and cougar hunting in our state.

Predator hunting, such as bear and cougar hunting, plays a crucial role in wildlife management and maintaining ecosystem balance. By regulating predator populations, it helps prevent overgrazing by herbivores, which can lead to habitat degradation and reduced biodiversity. Outlawing such hunting could lead to increased predator populations, causing imbalances that disrupt the natural food chain.

Unchecked predator populations can lead to declines in prey species, affecting their numbers and distribution. This, in turn, impacts vegetation and alters ecosystems, potentially leading to cascading effects on other wildlife and even human activities such as agriculture.

Landowners might experience increased conflicts with predators, resulting in livestock losses and compromised property security. Moreover, reduced control over predator populations could disrupt delicate coexistence between humans and wildlife.

In summary, responsible predator hunting supports healthy ecosystems by preventing overpopulation and maintaining ecological equilibrium. Outlawing it could trigger negative consequences for biodiversity, habitat health, and human-wildlife interactions. A balanced approach to wildlife management is crucial for the long-term sustainability of both ecosystems and the well-being of human communities.

Mike Valerio - Landowner, Rancher, Farmer
505-929-3389

Sent from my iPhone

From: [Doug Hagee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Pending Bear and Cougar rule
Date: Wednesday, August 16, 2023 11:34:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

If the state is going to have any kind of game management it is imperative that they continue to manage the predator populations at a reasonable level. Additionally, when people begin to move into the habitat of the cougars and bears, the predator attacks on livestock and humans will increase as the have over the years in California. If the hunters don't stand together against the anti-hunters in all areas of hunting, then they will just chip away at our hunting rights until they no longer exist. Stopping managed hunting would very likely result in all of our wildlife disappearing, since there would be no funding to manage the game populations.

Douglas Hagee
A lifetime hunter

From: darawayne@everyactioncustom.com on behalf of [Dara Mark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please protect New Mexican wildlife
Date: Monday, August 14, 2023 11:52:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Why are we killing off our native wildlife? The predators are crucial to a balanced ecosystem.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dara Mark
Lamy, NM 87540
darawayne@cybermesa.com

From: [Todd Simba](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please And Thanks
Date: Saturday, October 14, 2023 10:14:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mountain lions mean so much more to us than being a target — they are a keystone species that other wildlife depends upon and without which New Mexico would certainly lose a significant part of its enchanting charm. For the NMDGF to maintain such high hunting limits on our majestic mountain lions is just plain wrong and totally unacceptable.

Todd Eagle

Sent from [Mail](#) for Windows



Virus-free. www.avast.com

From: [Jaben Richards](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please Continue to Allow Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 11:54:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello New Mexico Game Commission,

Please continue to allow bear and Cougar Hunting in New Mexico.

Please do not allow comments from anti-hunters to persuade you from filling the scientifically driven north American model of wildlife management. Hunting is a conservation and population management tool for the New Mexico Department of Fish and Game to utilize to help manage wildlife populations. Please do not remove this tool from their toolkit. States that have banned bear hunting now spend millions of dollars having government employees kill bears as opposed to the public paying for the opportunity to do the same.

Additionally, since trapping was banned (based on pure emotions) on public land in New Mexico, meso predator populations have increased dramatically and the populations of quail in my area have been drastically reduced. In a similar manner, losing bear and cougar Hunting privileges will likely result in many unattended consequences including reduction of other big game species and an increase in human-bear or human-cougar conflict.

Thanks!
Jaben

From: lillianmakeda@everyactioncustom.com on behalf of [Lillian Makeda](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please Reject the Bear and Cougar Rule and Protect Our State's Animals
Date: Monday, August 14, 2023 11:20:44 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I was shocked today to learn about the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through allowing elk and deer hunters to opportunistically shoot bears and cougars, making unspecified increases to hunting quotas, and lengthening the hunting season for bears in some areas.

Our Department of Game & Fish does not have a good estimate for how many bears and cougars live here and without that information, we must be cautious in how we regulate hunting. Your proposal gives no consideration to the effects our most recent droughts have had on bear food sources and habitat. As you are probably aware, the Southwest is the driest it has been since 800 B.C., making the food and water sources for bears and other animals increasingly difficult to access.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts other animals in danger and risks human safety.

Please reject the bear and cougar rule and instead I urge you to focus on:

- a) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- b) Refraining from increasing the lengths of their hunting seasons.
- c) Prohibiting the use of hounds in bear and cougar hunting.

I cannot for the life of me imagine how this new rule is beneficial in any way except to people who feel they must kill these majestic animals for sport. And the "needs" of those individuals should not govern your policies which are intended to serve the highest good for everyone.

Thank you

Sincerely,
Lillian Makeda
Gallup, NM 87305
lillianmakeda@yahoo.com

From: [nmflicker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please change this policy
Date: Sunday, July 30, 2023 5:11:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mr. Fox's column provides reasoned answers to my questions about the state's game policy. Who benefits when low-priced hunting licenses are granted to people planning to kill bears and cougars—native animals who struggle to survive in the 21st century? The answer: hunters, many from out of state, and the “guides” who create opportunities for easy kills. These animals don't die to feed people or to protect livestock—they are simply trophies. It's time for the Game and Fish Department to acknowledge its mission: to serve the citizens as stewards of the animals who deserve a chance to live.

Melissa Howard
Cedar Crest, NM

From: [Robert Gonzales](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please continue science based wildlife management
Date: Thursday, August 24, 2023 5:25:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

In addition to the continuation of science based wildlife management, I'd like to voice that lawful bear and cougar hunting is a tradition in my family. It would be a great loss to myself and my loved ones should this opportunity be diminished on grounds other than science based research.

Thank you

Robert Gonzales

Santa Fe, NM

From: [Sharon Bice](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please decrease the hunting of bears & cougars
Date: Wednesday, August 23, 2023 5:16:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern at the NM Game Commission:

Thank you for your time to read my email and hopefully take our family's opinion into account when meeting on Friday, August 24th. Our family is against the hunting of bears and cougars in our state; please do not increase the numbers, in fact we would hope you consider decreasing them.

We feel that there is not scientific evidence stating that their populations need to be reduced and that the killing of them for trophy reasons is unjustifiable and cruel. Please let these animals self-regulate their population and let them coexist with us in our state.

Thank you!

Sharon & William Bice & family, Sandia Park, NM 87047

From: Lurabrookins@everyactioncustom.com on behalf of [Lura Brookins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please do not allow ANY killing of bears and cougars in New Mexico!! They are not game but valuable wildlife is that is vital to our forest ecologies!! peject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:46:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lura Brookins
Santa Fe, NM 87505
Lurabrookins@gmail.com

From: [Alison Nylund](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please do not increase the kill of bears and cougars that you allow,
Date: Thursday, August 10, 2023 10:14:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

at least not before you take a census and the totals show a big surge in populations.

Sincerely,
Alison P. Nylund
nature lover

From: [Sandra Giltner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please do not increase the number of Bear/Cougar licences or change the rules
Date: Monday, October 23, 2023 7:43:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir or Madam:

I write to ask you not to increase the number of Bear/Cougar licenses in New Mexico or change the rules to allow more hunting. In the last two years I have seen three instances of starving cubs wandering on to ranch lands or other places bordering land where hunting is allowed. Killing females at all--especially if they have cubs--is heinous enough.

I cannot believe that numbers of wildlife are so large as to permit the killing of 864 bears in total and 563 cougars is in any way warranted. Actually it would be better to have them starve than to be shot for "sport". I have personally witnessed hunters using dogs to track bear, which seems an indefensible practice.

I expect you will just dismiss my objections and bow to whatever pressure is coming from hunters but at least wanted to register strong objections.

Sincerely

Sandra Giltner

Taos County

From: [Ken Henson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please do not take away my predator hunting privileges
Date: Wednesday, August 16, 2023 12:15:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I enjoy predator hunting immensely with my family. Please don't let people who have never hunted before or understand the benefits to hunting take my privilege away!

--

Thanks,
Ken Henson

From: [Nancy King](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please don't hunt cougars
Date: Friday, October 6, 2023 11:39:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it May Concern

Please don't hunt mountain lions . We need predators to keep a n equitable natural wildlife balance. They are a keystone species, which means other wildlife depend on their presence for a healthy ecosystem.

thank you,
Nancy King
Santa Fe, NM 87501

From: [Jayson Davis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please don't listen to the
Date: Monday, October 16, 2023 1:48:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hippies.

Cougars are in fact an important part of our wildlife ecosystem.

But these people don't understand the roles big Tom's play in slowing the growth of populations by killing other cats.

Keep up the good work.

From: [Mark Margiotta](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please don't increase the limits on Mountain Lions to hunters.
Date: Sunday, October 15, 2023 6:37:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The mountain lion is a majestic and ecologically important apex predator. Its low birth rates make it to bounce back from low population numbers. There is no food value to killing a mountain lion. It's 100% trophy hunting. Not going off the rails here to suggest a full hunting ban, only asking that the current limits not be changed. With only 3500 left in the wild for the entire state, and no clue to how many die each year of natural causes, this is an animal that could easily drop into endangered territory if over hunted. Please consider leaving the hunting untouched.

Thank you for your consideration,

Mark Margiotta DPM, ACFAS
Albuquerque NM

From: [Virginia Mendez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please help! :)
Date: Friday, July 14, 2023 2:28:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Thank you for your time,
Virginia M

From: [Nick Layman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please keep the cougar and bear rules in place
Date: Wednesday, August 16, 2023 2:39:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

The stopping of bear and cougar hunting will destroy a way of life and many income streams of people in New Mexico.

It will hurt tax revenues and put people out of business.

This is a coordinated attack of the current system but well funded groups. Please speak to people who actually do this type of activity to understand the way of life.

Best,

Nick Layman

From: [Janet](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please oppose the new game rules
Date: Friday, August 11, 2023 12:54:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The current draft of the proposed rule recommends raising the kill quotas for bears, extending the bear hunting season, and continues indefensibly high cougar quotas for cougars. Please oppose the new game rules. We should be protecting wildlife not killing it.

Thank you

J Cameron

Tell the game commission you oppose the direction of the new game rules.

Sent from my iPad - JC
Be the change you want to see in the world - Ghandi

From: [corey sexton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please read
Date: Wednesday, August 16, 2023 8:28:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Thank You!

From: [Janet Davis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please reduce quotas in hunting bears and cougars throughout New Mexico
Date: Thursday, August 17, 2023 2:25:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In the spirit of compassion, ecological balance, and our precious New Mexico wild life, i appeal to you to reduce and more strictly limit the number of bear and cougar allowed to be hunted and killed.

The human footprint and intrusion on the natural habitat of wildlife has exceeded reason and threatens to destroy what has made New Mexico “enchanted”.

Hunters motivations (hubris and greed) are at the very least not in sync with our state’s harmonious natural environment.

Thank you for your advocacy.

Janet Johnson Davis
Cloudcroft

Sent from my iPhone

From: [Brandon Scott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please reinstate the august bear seasons in the southern zones.
Date: Wednesday, August 16, 2023 5:20:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Texas Real Estate Commission requires all licensed Realtors to provide Information about [Brokerage Services](#) and [TREC Consumer Protection](#) to all potential clients.

Brandon Scott
Associate Broker
(210) 421-8181

The Texas Ranch Company LLC
www.texasranchco.com

From: [Talley Ho](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please reinstate the august bear seasons in the southern zones.
Date: Thursday, August 17, 2023 9:52:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the august bear seasons in the southern zones.

From: michael_keller76@everyactioncustom.com on behalf of [Michael Keller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:06:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Please reject the bear and cougar rule to protect New Mexican wildlife.

I oppose the Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

The department has only a hazy notion of how many bears and cougars live in the state, since the estimate is extrapolated from limited study areas to much broader regions.

Despite these questionable numbers, the department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Michael Keller
Santa Fe, NM 87501
michael_keller76@yahoo.com

From: rvk36@everyactioncustom.com on behalf of [Richard Von Kaenel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please reject the bear and cougar rule to protect New Mexican wildlife. 1 step forward and 2 steps back is not progress.
Date: Monday, August 14, 2023 10:01:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Richard Von Kaenel
Santa Fe, NM 87508
rvk36@hotmail.com

From: [Ketra Bock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please spare the Bears and Cougars
Date: Wednesday, July 19, 2023 5:43:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not allow Ranchers in alliance with Hunters to systematically eradicate Bears and their cubs; and Cougars and their young.

The ranchers are in the right to not want feral cows killed, now they need to allow the wildlife to live in their native environment. There are other ways to handle overpopulation this is not one of them.

Thank you for hearing my thoughts and consideration on this issue that should not be an issue if the Endangered Species Act was reinstated as it should be.

Sincerely,

Ketra DeAnn Bock

Rio Rancho, NM

87144

Sent from my iPhone

From: [Gale Hannigan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please
Date: Sunday, July 30, 2023 6:17:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Do not allow recreational killing. Period

Gale G Hannigan

From: [Diane Stayner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Please
Date: Tuesday, October 17, 2023 1:36:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

don't extend hunting limits on cougars, who knows what makes people think that killing is fun, but please limit it as much as you can. Thanks and God Bless.

Respectfully,
Diane Stayner
McIntosh

From: amychilderslewis@earthlink.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Poor public outreach-please decrease kill limits
Date: Sunday, August 6, 2023 9:06:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not increase the bear hunting limits as presented in the proposed Bear and Cougar Rule ([BEAR-AND-COUGAR-RULE-PROPOSED-CHANGES-SUMMARY_2nEd_08032023.pdf \(state.nm.us\)](#)).

The summary of the proposed rules does not include a map of the zones, something that is necessary for understanding the tables included in this summary. No explanation is provided for increasing the limit of animals killed. This is a terribly dry year and our wildlife do not need the added stress of hunters. The kill limits should be reduced for bear and cougar. Let the ecosystem reach its own balance.

Thank you,

Amy C. Lewis
HydroAnalytics LLC
505-982-0405

From: [Judy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Precious Wildlife
Date: Wednesday, August 2, 2023 12:02:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello --

I understand you're taking comments about the planned bear and cougar killings.

Charles Fox of Santa Fe wrote an opinion piece in Sunday's Albuquerque Journal. He made some good points, such as ... it's not necessary and it's cruel to chase them down just to give hunters a thrill.

I don't see how anyone can kill a cougar. They're beautiful animals. I don't understand how anyone could just shoot one or why they think they have a moral right to do so. Also, we've had a mama bear and 2 cubs in our yards out here in the East Mountains this summer. We all care about them. I don't understand destroying life so wantonly.

My comment is, please just leave out wildlife alone.

Judy Crane

From: [Josef Sablatura](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunt Programs
Date: Saturday, August 19, 2023 4:25:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We desperately need responsible predator hunt programs and scientific management of those species. Vr, Joe Sablatura

Sent from my iPhone

From: [Daniel Rudd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunt Programs
Date: Wednesday, August 16, 2023 11:36:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I am writing in favor of responsible predator hunt programs. Please do not take away the hunting privileges of responsible hunters.

Please enact the scientific management proposal submitted by game department biologists. These scientists understand what is best. Please do not allow for the vocal few to let their emotions determine policy.

Sincerely,

Daniel Rudd

--

Rudd Orthodontics
Daniel Rudd, DDS, MsD
4320 Ridgcrest Dr SE, Suite E
Rio Rancho, NM 87124
505-891-1151

From: [Curt Teaster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Tuesday, August 22, 2023 4:59:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Curt Teaster

From: [Logan Lewis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 7:11:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Logan Lewis

From: [James Koepsell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 6:54:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
James Koepsell

From: [Jory Hicks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Friday, October 13, 2023 8:20:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Jory Hicks

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Tuesday, August 29, 2023 3:01:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us.

I believe in a balanced ecosystem and as a scientist myself, I trust science-based analysis over knee-jerk, emotion-based reactions. Even though I am an avid hunter, if the science says that we need to reduce hunting pressure on certain species, then I am all for it. Conversely, if hunting limits/quotas need to be increased to control populations, I am all for it. I personally will never hunt cats and hate to see them hunted, but I can understand if it is needed since other species such as wolves and grizzlies are missing from our New Mexico ecosystems to balance cougar populations.

Thank you.

Sincerely,
Kimberly Klain

From: [Matt Hagan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 7:49:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I trust this email finds you well. I am reaching out to express my support for the continued incorporation of bear and cougar hunting as integral components of New Mexico's comprehensive wildlife management system. I recognize the importance of striking a balance between conservation and sustainable wildlife management, and I believe that responsible hunting can play a constructive role in achieving these goals.

New Mexico boasts a diverse range of ecosystems and an array of wildlife species, which contributes to the unique beauty and ecological significance of the state. However, with the delicate balance of nature in mind, it is imperative that we adopt proactive measures to ensure that wildlife populations remain in equilibrium with their habitats and with each other. Responsible hunting of species such as bears and cougars can contribute positively to this delicate balance in several ways:

Population Regulation: An uncontrolled increase in bear and cougar populations can lead to habitat degradation and an overabundance of these predators. Managed hunting helps maintain appropriate population levels, reducing the strain on resources and promoting a healthier ecosystem.

Species Interaction: The presence of apex predators like bears and cougars has a cascading effect on prey populations and the overall health of the ecosystem. By controlling predator numbers through hunting, we can prevent overgrazing and ensure that the intricate web of species interactions remains intact.

Human-Wildlife Conflict: As urban areas expand into natural habitats, the potential for human-wildlife conflicts increases. Managed hunting can help mitigate these conflicts by keeping predator populations at levels that minimize interactions with people and domestic animals.

Funding for Conservation: Revenue generated from hunting licenses and fees can be directed towards conservation efforts, habitat restoration, and scientific research. These funds provide critical support for maintaining the state's biodiversity and natural heritage.

Cultural and Economic Benefits: Hunting is deeply ingrained in the culture and heritage of New Mexico. Additionally, well-regulated hunting contributes to the local economy through tourism, outdoor recreation, and the businesses associated with these activities.

I understand that implementing a hunting program requires careful planning, scientific research, and robust regulations to ensure the sustainability of both wildlife populations and the natural environment. It is crucial that any hunting activities adhere to ethical practices and

are guided by the best available scientific knowledge.

In advocating for the inclusion of bear and cougar hunting within New Mexico's wildlife management strategy, I encourage a balanced approach that respects the intrinsic value of wildlife while also addressing ecological needs and human safety.

Thank you for your dedication to the preservation of New Mexico's diverse ecosystems. I appreciate your consideration of this viewpoint and the effort you invest in the future of our state's natural resources.

Warm regards,

Sincerely,
Matt Hagan

From: [Jake Durand](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Monday, August 21, 2023 3:59:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that when we listen to the voice of science, our ecosystems flourish. As we contemplate changes to the bear and cougar rule, let's ensure we're not only preserving traditions but also taking actions rooted in empirical evidence and research. Keep the hunts!

Sincerely,
Jake Durand

From: [John Barnes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Monday, August 21, 2023 8:08:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
John Barnes

From: [Phillip Fresquez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Monday, August 21, 2023 7:48:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Phillip Fresquez

From: [Tom Meine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 3:18:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Tom Meine

From: [Scott Boggs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 2:12:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Scott Boggs

From: [Derek Lollis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 10:42:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Derek Lollis

From: [Emily Frid](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 8:46:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Emily Frid

From: [Matt Chappell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Sunday, August 20, 2023 7:14:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Matt Chappell

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting is Law
Date: Tuesday, August 29, 2023 7:20:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Drew Hatter

From: [Arthur Garcia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunting
Date: Sunday, September 17, 2023 3:56:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

If we DON'T have control on predators we WILL NOT have any Big Game animals left. Bears and cougars WILL WIPE OUT THE Deer and Elk population

[Sent from Yahoo Mail on Android](#)

From: [Tom Schafer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Hunts
Date: Monday, August 21, 2023 10:01:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is my outlook that Predator Hunts are critical to the overall game management program. We are seeing an increase number of both Bear and Lion interactions with humans. For the safety of the public and the animals it is important that we manage the population.

Tom Schafer

From: [KEVIN KOPPENHAVER](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator Legislation
Date: Wednesday, August 16, 2023 11:30:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm a landowner, hunter, fisherman, and trapper. I vote. It is critical to maintain a predator harvesting program without further restrictions or reductions. Thank you.

Kevin Koppenhaver
5052806231

Sent from my T-Mobile 5G Device
Get [Outlook for Android](#)

From: [Rick Cheney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator control
Date: Wednesday, August 16, 2023 5:27:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been going into Gila wilderness both to hunt and packing trips back into the wilderness ever year for the last 36 years. I have seen a decline in both elk and mules deer especially in the last few years and increase in bear and all other predators.

It seems to me that fish and game departments have an obligation to find a logical balance for hunters, wildlife lover and not to the extreme on either side seems common sense management is the only way going forward into the future. Tradition is being destroyed at ever turn for the benefit of a small minority. Thank you for for your efforts and work in this regard. Rick cheney kerrville Texas

Texas law requires all real estate licensees to provide the following: [Texas Real Estate Commission Information About Brokerage Services](#) and the [Texas Real Estate Commission Consumer Protection Notice](#) to prospective buyers, tenants, sellers, and landlords.

Thank you,

Rick Cheney, REALTOR
Cell: 830-377-9609
Office: 830-895-7771

RE/MAX Kerrville
1835 Sidney Baker
Kerrville, TX 78028

From: [jason.tuttle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator control
Date: Wednesday, August 16, 2023 11:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I support the harvest of mountain lions and bear in the state of New Mexico. Maintain predator control in our state is very important for the public and wildlife balance.

Best regards,
Jason Tuttle

From: [Paul Layer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator controls
Date: Wednesday, August 16, 2023 3:23:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMG&F,

Please stand firm on continuing predator controls in our state. Fewer hunters seem to be interested in cougar hunting and bear and wolf populations seem to be growing. Please prevent folks who no nothing about what you do and the entire ecosystem to set policy. Thank you.

Paul Layer

Hunter and Environmentalist

Sent from my iPhone

From: [James Mattmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator hunting When the cougars start hunting the anti hunters like they did in California yowill hear them whining to game and fish for cougar conrol
Date: Wednesday, August 16, 2023 7:29:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [buzzmora7](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator hunting bear and cougar
Date: Sunday, August 20, 2023 6:40:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to say cougars and bears need to be in balance because of food sources and territory you guys have all the studies and data to show it so don't listen to these anti hunters that don't even paid a dime to conservation when I read hunters paid 45 million annually to wildlife so make the right choice and keep hunting alive and our future

Sent from my Verizon, Samsung Galaxy smartphone

From: [Dr Denny Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator hunting program
Date: Wednesday, August 16, 2023 12:09:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Legal hunting of predators is becoming a critical issue. As predator numbers rise, big game numbers suffer. Competition for food brings more predators into populated areas when their numbers are not managed.

Dennis R Miller DMD, MS

From: [art aragon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator hunting
Date: Wednesday, August 16, 2023 11:29:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I Art Aragon an active hunter in New Mexico for over 20 plus years is in favor of predator hunting
Sent from my iPhone

From: [Haverde Warner, R.Ph.](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator hunting
Date: Wednesday, August 16, 2023 9:30:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

PLEASE follow the recommendations of the game biologists! NOT the anti-hunting agenda of the Disney “biologists.”

Dr. Haverde Warner, R.Ph. (B.S. Pharm), DNM, NMD——OK, cool! Hook ‘em!

From: [Stephen Darmitzel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator management
Date: Wednesday, August 16, 2023 3:48:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

I am lifelong resident of New Mexico and currently live in Santa Fe.

We need managed predator (bear and cougar) control in New Mexico. Controlled hunting of those species plays a vital role in their management. To discontinue controlled hunting of these predators will have trickle down effects on all other species and will also increase risk of dangerous predator/human interactions.

Continue to allow the professional biologists employed by New Mexico Department of Game Fish manage our wildlife. Please do not give in to special interest groups presenting emotional and non-evidence based arguments.

Respectfully,

Stephen Darmitzel

Sent from my iPhone

From: [Christopher Horton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator management
Date: Sunday, August 20, 2023 8:58:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In California we have seen the problems that happened when we ban hound hunting. Bear quota's have not been met since.

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Christopher Horton

From: [Kirk Bonds Insurance](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator proposal
Date: Thursday, August 17, 2023 8:11:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I just got off an antelope hunt in 36&37 where i saw 1 antelope buck on public property. If you can't manage a herd then how are you going to manage a predator that you rarely see? The state already does a poor job at management so don't make it worse by increasing the amount of predators. I strongly oppose this proposal.

Thanks

Kirk Bonds

Kirk Bonds

Kirkbondsinsurance.com

From: [Brooks Gentry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predator/Bear/Cougar Management
Date: Wednesday, August 16, 2023 12:46:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in New Mexico.

Brooks Gentry

From: [Zachary Merzlak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predatory Management as Enshrined in Law
Date: Sunday, August 20, 2023 7:35:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Throughout the globe, traditional hunting practices have been crucial for maintaining ecological balance. New Mexico's proposed bear and cougar rule adjustments are in line with this worldwide perspective. Prioritizing expert recommendations is imperative for the preservation of the state's rich biodiversity. Protect the hunts!

Sincerely,
Zachary Merzlak

From: [joe keathley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Predatory Management as Enshrined in Law
Date: Thursday, August 24, 2023 1:02:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
joe keathley

From: [Robert Fritchey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Friday, August 25, 2023 7:15:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Robert Fritchey

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Saturday, August 19, 2023 9:50:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
John C

From: [John Teichert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Wednesday, August 23, 2023 1:04:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
John Teichert

From: [Robby Denning](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Tuesday, August 22, 2023 10:28:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

While I don't live in NM, I'm an avid hunter and know that without the funding that hunters provide to state's game and fish departments, the North American conservation model will not succeed. I ask you to defend the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Robby Denning

From: [John Wappler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Monday, August 21, 2023 3:58:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
John Wappler

From: [Robert Mowen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Sunday, August 20, 2023 12:45:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Robert Mowen

From: [Matt Jeffs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Sunday, August 20, 2023 8:17:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please keep the bear and cougar hunts. Short-sighted decisions in wildlife management can lead to unintended consequences. By using the scientific expertise of trained biologists and relying on historical data, we ensure that our actions today won't harm our wildlife tomorrow. I urge the commission to continue prioritizing a long-term vision for New Mexico's wildlife.

Sincerely,
Matt Jeffs

From: [Leland Reinier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Sunday, August 20, 2023 8:00:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Leland Reinier

From: [James Hood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Sunday, August 20, 2023 7:08:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
James Hood

From: [Joseph Hauss](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Saturday, August 19, 2023 11:40:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Joseph Hauss

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Preserving a Legacy: Hunting in NM's Culture
Date: Monday, August 28, 2023 8:57:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts!

Sincerely,
Thomas Rumney

From: [Gloria Picchetti](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Prevention of harm to large carnivores
Date: Friday, October 20, 2023 2:28:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears, cougars, and all large carnivores are essential to preventing large animals from eating foliage that shades creeks, rivers, and lakes. Without our large carnivores droughts.

Thank you,
Gloria Picchetti
3920 N Clark ST
Chicago IL 60613

From: [Daniel Spellicy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Pro Hunting with Use of Dogs
Date: Wednesday, August 16, 2023 1:04:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

As an out of state resident and avid big game hunter I am in favor of continued use of hounds and dogs in the use to pursuit game like cougar and bear. I have a hunt booked in 2024 and have children that can't wait till they get old enough to go with me, so I fully intend to go in the future. Heritage would be lost and so will income from me and the other out of state hunters that spend good money licensing fees, guide fees, hotel and lodging, plane tickets and the whole 9 yards that goes into taking a trip like this from half way around the country. Please take this into consideration.

From: [Travis Scott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Pro Predator managment
Date: Wednesday, August 16, 2023 3:51:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I just wanted to voice my concern. I am very for predator control. Bears and cougar must be managed in accordance to our biologist recommendations. I support all wildlife, and hunting is our best management tool to ensure that wildlife is managed and protected. Hunters provide the necessary funding to protect and restore our renewable resource.

Sincerely,

Travis Scott
104 Cumberland St
Alma NE 68920

From: [Brad Yoakam](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Pro hunting
Date: Wednesday, August 16, 2023 3:18:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Please leave the predator hunting laws as they are.

From: [Logan McGarrah](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposal Comments
Date: Wednesday, July 26, 2023 10:20:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Comments on 2023 proposed changes to bear and cougar rules:

- I support the continued sustainable consumptive use of all wildlife, including large predators.
- I support the continued use of hounds to hunt bears and lions.
- I applaud the department's efforts to better understand population dynamics of large predators within the state and support the continued study in this area.
- I support all of the proposed changes as outlined by the department during the meeting in Roswell.
- I support separating GMU's 26 & 27 into their own BMZ. I believe this is a unique population of bears that is not closely tied to the greater Gila. Creating a separate BMZ for this area would increase hunter opportunity and better distribute hunting pressure across the landscape.

Thank you for your consideration. -Logan McGarrah

From: [Jennifer K](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposal for Bear & Cougar Hunts
Date: Friday, July 14, 2023 2:25:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it May Concern,

I am writing regarding the proposal to hunt bears and cougars for the next four years. Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years. The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. In addition, there has been no external review of those population estimates by independent outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars. It is because of this and many other reasons that I ask that you reevaluate the proposal and request the lowering or elimination of these hunts.

Thank you for your attention in this matter!

Jennifer Keys

jenniferk123@hotmail.com

From: [christina.gonzalez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposal re: hunting of bears and cougars
Date: Friday, July 14, 2023 1:19:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the NM Game Commission,

I am writing you to share my concerns with your draft proposed rule that governs the hunting of bears and cougars in NM for the next four years.

Have you accounted for the severe drought and wildfires, both of which will most certainly be continuing and intensifying, in your habitat and/or population estimates? It seems more reasonable to lower the kill quotas with these serious conditions, not raise them.

Have there been any external reviews of the population estimates? Independent, outside experts need to weigh in to give any credit to the figures you use. Is there a management plan?

The manner in which these animals are hunted and killed (i.e. using dogs to tree them and then shooting the exhausted animals at point blank range) is cruel and inhumane...most people do not support this kind of "hunting" which simple surveys will show. Please adopt hunting rules that ban the use of dogs in the hunting of bears and cougars.

Bears and cougars are top (apex) predators who are extremely important to the health of our ecosystems. Since both species self-regulate their own numbers, erring on the side of killing fewer animals is not a problem, but killing too many will impact their populations for a very long time.

Thank you,
Christina Gonzalez
7419 Via Cometa SW
Albuquerque, NM 87121

From: [Janene Habers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposal to extend hunting limits on mountain lions
Date: Wednesday, October 25, 2023 12:18:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This new proposal by the New Mexico Department of Game & Fish is a dreadful one. Clearly they have been listening to the ranchers whose agenda has always been to decimate the predators in our state. This is an age old fight that does not deserve the attention or demands that it has always engendered. I hope that the NMDGF can be reminded that they need to protect and preserve the wildlife in our state as seriously as they do the “meat producers”. They squawk incessantly but that should not add weight to their demands.

I hope that this proposal is discarded as it should be.

Janene M, Habers
Bernalillo, NM

From: [Patricia Fordney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposal to raise hunting limits on Bear and Mountain lions
Date: Tuesday, July 18, 2023 8:53:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

This proposal is outrageous!

Are the hunters hunting for food? Are they going to eat the bears and cougars?

If not, then leave them alone.

This proposal should not be considered at all. All of you need to read Dan Flores' book, Wild America. He talks about the wholesale slaughter of America and how the needless killing of wildlife upsets nature's balance.

It is so wrong to willfully slaughter animals for fun, or to prove their 'manhood.'

The hunting already legal is entirely too generous as it is. Shame on all of you for even thinking of raising or suggesting to raise the limits. If ranchers are complaining about cougars attacking their herds, then tell them to go into another line of business: Wildlife conservation!

Thanks
Patricia Fordney
Santa Fe

From: [Scott Milton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposal.
Date: Monday, October 16, 2023 7:51:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of the proposed changes. In the past 2 years I have seen more lion than I have in my previous 30 years, I believe there is more lion than estimated and I believe they are taking a larger tole on deer that estimated.

Thanks.

Scott Milton | Superintendent
Bradbury Stamm Construction...since 1923

[7110 2nd Street NW | Albuquerque, NM 87107](#)

Mobile: [505.604.3529](#) | Main: [505.765.1200](#) | Fax: [505.842.5419](#)

smilton@bradburystamm.com | WWW.BradburyStamm.com

From: [Barbara Van Ruyckevelt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Propose harvest rules for bears and cougars
Date: Sunday, July 30, 2023 9:31:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am opposed to any increases in harvest of bears and cougars. I live in the Jemez mountains and have only seen one bear plus one cougar in 15 years. These animals are losing their habitat at alarming rate and harvesting should be reduced, not increased. They should definitely not be killed by deer hunters. That is not fair at all.

I thought with the democrats in power, this assault on wildlife would abate. But no, you want to kill more. It is truly disgusting what you are planning and I don't support the increases.

Barbara Van Ruyckevelt
586 Los Griegos Rd
Jemez Springs, NM 87025
575 829-4569

Please
Sent from my iPad

From: [Jeffry Hanus](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Hunting Rules
Date: Friday, July 28, 2023 3:33:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Department of Game and Fish Game Commission:

My name is Jeffry Hanus. Raising kill quotas for bears, extending the bear hunting season and "adjusting" kill quotas for cougars is a terrible idea for many reasons, including the following:

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. NM Game and Fish needs to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

The hunting proposals lack scientific validity. There is no management plan detailing measurable objectives for these species, and no attempt to address the

uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in these hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Thank you for reading my comments. If you have any questions, or would like to discuss this in person with me, I have included my phone number below.

Jeffrey Hanus
505-660-0509

From: [Carolyn Acree](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rule
Date: Saturday, August 5, 2023 4:55:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a resident of NM, I wish to register my opposition to the proposed rule. I think it's outrageous that you would make this proposal without a firm grasp of how many there actually are in NM. Recent wildfires, drought, and the general effects of climate change may well have taken/be taking an alarming toll on these creatures. The game department's primary focus should be on preserving these wildlife resources for the benefit of the general population and future generations—not creating opportunities for a small number of hunters (so-called "sportsmen") to decimate those resources. People don't hunt bear and cougar for sustenance. They do it solely to gain the right to brag about their ill-gotten trophies. I know hunting provides income to the Game & Fish, but the measly \$40+ license fees hardly compare to the taxpayer dollars that go toward supporting your agency.

Please do not move forward with this proposal.

From: [Cole Burns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rule.
Date: Thursday, August 17, 2023 10:32:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMGF

I would like to comment my opinions on the proposed rules for bear and cougar.

First of all on the cougar, I would love to see in the future that trapping for cougars would be legal again in our lower elevation/plains areas, like units 32, 31, 40 and 39 and such like. Due to our drier conditions it is extremely hard to harvest the amount of lions, by use of hounds, that need harvested to keep ranchers from having calves killed and to help keep them from knocking the deer numbers so bad.

On the bear glad to see all the dept is doing for the bear population. I would just like to caution that we don't allow too high of harvest rates and decline our trophy size bear population too badly.

Bear and Cougar hunting with hounds is definitely the most strenuous hunting I've ever done. The picture the anti-hunters like to paint is so wrong and off. We hound hunters have the ability to better field judge a bear or lion by treeing it as well. Instead of looking at it with binos from a half mile away and such. Therefore we can harvest more older mature animals.

Thankyou for your time and all you do for New Mexico and it's wildlife.

Sincerely Cole Burns

From: [Susan Meadows](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: andrea@andrearomero.com; [Gonzales, Roberto J.](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rule
Date: Sunday, August 6, 2023 9:54:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Below please find the stated Mission of the New Mexico Department of Game and Fish as it appears on the Department's website:

"It is our mission "To conserve, regulate, propagate and protect the wildlife and fish within the state of New Mexico using a flexible management system that ensures sustainable use for public food supply, recreation and safety; and to provide for off-highway motor vehicle recreation that recognizes cultural, historic, and resource values while ensuring public safety."

Note that "to conserve" wildlife and fish is the first stated mission of the Department. In the middle of a summer drought caused by global climate change and just after a couple of the largest most devastating wildfires in the recorded history of New Mexico, the Department proposes based upon completely inadequate data to increase trophy hunt quotas for two of our apex predators - cougars and bears. In other words at a time when their current populations are most vulnerable.

It is common knowledge among scientists that biodiversity is crashing globally due to habitat loss, global climate change, environmental pollution and other anthropogenic factors. New Mexico remains one of the few relatively sparsely populated regions with a diverse and spectacular environmental heritage.

I urge the Department to withdraw their proposed ruling, which is at odds with the Department's mission to protect and conserve New Mexico's unique wild natural heritage.

Susan Meadows, M.S.
Environmental Scientist
4 County Road 113 South
(4 Kaa Tay Poe)
Santa Fe, New Mexico 87506

Sent from my iPhone

From: [DONALD BLACK](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Tuesday, August 29, 2023 6:18:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
DONALD BLACK
16 Las Casitas
Las Cruces, NM 88007

From: [Jessie Carter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 9:15:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Jessie Carter
73 Madole Rd
Edgewood, NM 87015

From: [Taylor Streit](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 9:14:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

IT SHOULD ALSO BE CONSIDERED THAT TURNER RANCHES SHOULD NOT GET TO CALL THE SHOTS ABOUT LIONS AS THE MASSIVE PROPERTIES INFLUENCE MUCH OTHER GROUND. THEY ARE MUCH TOO FOND OF THEM AND I HAPPEN TO LIVE BETWEEN LADDER AND ARMENDARIS AND THE DEER NUMBERS HAVE DROPPED BAD

Sincerely,
Taylor Streit
1 Lake Front Dr
Caballo, NM 87931

From: [Travis Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 8:37:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Travis Brown
1585 Trails End Rd
Las Cruces, NM 88007

From: [Dennis Hamilton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 8:29:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Dennis Hamilton
335 Del Norte Ct
Bosque Farms, NM 87068

From: [Jacob Archuleta](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 8:28:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Jacob Archuleta
105 County Rd 3566
Flora Vista, NM 87415

From: [Robert Adelman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:42:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. M

Sincerely,
Robert Adelman
8 Oso Dr
Tijeras, NM 87059

From: [Robert Garcia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:37:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Robert Garcia
10464 Bilboa St NW
Albuquerque, NM 87114

From: [Wesley Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:35:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Wesley Moore
9205 Galaxia Way NE
Albuquerque, NM 87111

From: [Kathryn Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:35:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Kathryn Payne
7809 Hendrix Rd NE
Albuquerque, NM 87110

From: [Warren Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:34:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Warren Payne
7809 Hendrix Rd NE
Albuquerque, NM 87110

From: [Ken Holbrook](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Thursday, August 24, 2023 9:31:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Ken Holbrook
395 NM-228
Mesquite, NM 88048

From: [Alexis Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:33:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Alexis Payne
12501 Eagle Rock Ave NE
Albuquerque, NM 87122

From: [Kodiak Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:32:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Sincerely,
Kodiak Payne
12501 Eagle Rock Ave NE
Albuquerque, NM 87122

From: [Jessica Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:31:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

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As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Jessica Payne
4824 San Timoteo Ave NW
Albuquerque, NM 87114

From: [Croft Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:30:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

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Sincerely,
Croft Payne
4824 San Timoteo Ave NW
Albuquerque, NM 87114

From: [Delight Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:29:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Delight Payne
4824 San Timoteo Ave NW
Albuquerque, NM 87114

From: [Brian Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:28:44 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Brian Payne
4824 San Timoteo Ave NW
Albuquerque, NM 87114

From: [Joseph Polisar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:26:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Joseph Polisar
1000 Camino Ranchitos
Albuquerque, NM 87114

From: [Gilbert Aldaz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:21:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Gilbert Aldaz
1605 Blair Dr NE
Albuquerque, NM 87112

From: [Brian Bailey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:09:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Brian Bailey
1114 S Union Ave
Roswell, NM 88203

From: [Ray Milligan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:08:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

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Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Ray Milligan
HC 75 Box 87
Chama, NM 87520

From: [Rosemary Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 3:28:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Rosemary Smith
2202 S Baylor Ave
Roswell, NM 88203

From: [Brent Taft](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 7:03:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Brent Taft
15 Osito Rd
Sandia Park, NM 87047

From: [Robert Dodson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 1:46:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Robert Dodson
5082 W Country Club Rd
Roswell, NM 88201

From: [Margaret Lane](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 1:46:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Margaret Lane
PO Box 982
Cloudcroft, NM 88317

From: [Herb Atkinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 10:47:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Herb Atkinson
110 W Country Club Rd
Roswell, NM 88201

From: [Steve Pitle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 9:39:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Steve Pitle
3070 N Brown Rd
Roswell, NM 88201

From: [Brian McKay](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 9:31:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Brian McKay
2 John Deere Rd
Mimbres, NM 88049

From: [Clayton Johnston](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 9:28:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Clayton Johnston
302 NM-511
Blanco, NM 87412

From: [Clayton Johnston](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Wednesday, August 23, 2023 9:27:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Clayton Johnston
302 NM-511
Blanco, NM 87412

From: [Bill Clark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and Cougar Rulemaking
Date: Sunday, September 3, 2023 5:29:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a proud hunter and conservationist, thank you for the opportunity to comment on the Bear and Cougar rulemaking.

The proposed bear and cougar rulemaking generally demonstrates responsible and sustainable management of bears and cougars, while maintaining high levels of opportunity for hunters. I believe that sound science-based conservation involving hunting as the primary management tool, while maximizing opportunities for all huntable species, including carnivores such as bears and cougars, is necessary to the long-term health of wildlife. Hunters have long paid the way for conservation, both game and non-game wildlife, and maximizing opportunity for hunting is also key to long-term funding for all conservation. Hunting benefits wildlife conservation.

Please stand on the side of hunting and conservation and accept the recommendations of the Department's wildlife professionals on bear and cougar rulemaking. Thank you for the opportunity to comment on this important issue. SCI is always First for Hunters!

Sincerely,
Bill Clark
9521 Woodland Ave NE
Albuquerque, NM 87112

From: [Tucker Haltom](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: haltom@aol.com
Subject: [EXTERNAL] Proposed Bear and Cougar killing Increase in New Mexico
Date: Wednesday, August 9, 2023 5:19:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NM Fish and Game is a department owned by the people of New Mexico, Your primary charge is to protect the wild animals of our state. You have a terrible reputation for taking care of our animals. This proposed increase in bear and cougar kills is just another sad chapter in your history. This won't make you much money and it will absolutely damage our bear and cougar families. Your training should tell you this is very destructive.
Publish your data that supports this proposal..
Tucker and Donna Haltom

From: [S.S](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Bear and cougar rules
Date: Thursday, August 10, 2023 1:39:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want hunting quotas and seasons reduced, and NOT increased. Living predators are better environmentally and are a draw to our state. Trophy hunting is old and outmoded and I know some anachronistic people enjoy it, but it is cruel and selfish. It is time to join modern times and enjoy our wildlife alive and not slaughter it.

Thank you for considering my views.

Sallye Sibbitt
99 Tewa Loop
Los Alamos, NM 87544

From: [L.S.Crumpler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Changes in Bear and Cougar Game Limits
Date: Monday, July 31, 2023 3:27:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am opposed to the changes that increase the number of bears and cougars that could be killed for game purposes. These are relatively rare animals, especially the cougars, whose habitats are already under stress from encroachment by civilization. I believe that increasing the limits on numbers available for game hunters is irresponsible in the light of the fact that these proposals are made without a documentation of the existing numbers in cougars. These are resources that are in the public trust and should not be used for the entertainment of a very small number of hunters at the expense of the public of New Mexico.

L.S.Crumpler

Albuquerque, New Mexico 505-841-2874 505-980-8702c

From: [Sali Evans](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Hunting Plan for Cougars
Date: Sunday, October 22, 2023 1:47:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

I read about your proposal to extend hunting limits on mountain lions/cougars (October 15, Albuquerque Journal). Under current limits, hunting amounts to about 10% of cougar deaths. Isn't this enough where the cougar population in the entire State is only about 3500? Extending the limits for the pleasure of hunters is unfair when cougars and other animals are further imperiled by changing climate, disease, wildfires, and attacks from other animals. We all know that hunters maintain a formidable lobby in local and State politics, but the rest of us have interests in New Mexico wildlife, too. Please hear US on this issue and act in the best interest of the cougars by NOT extending hunting limits. Thank You

Respectfully,
Sali Evans

From: [Linder, Ann Katelynn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Hunting Quotas for the 2023/24 Season
Date: Thursday, August 24, 2023 7:47:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it May Concern,

I am as a frequent visitor of New Mexico, who travels there for the specific purpose of wildlife watching, to express my concern and disappointment at the expansive proposed hunting quotas for bear and cougar. These numbers must be informed my science and at present they risk undermining the health of the greater ecosystem as a whole. I would strongly ask that you reconsider and lower these limits to protect these populations for the long term, and avoid any expensive and protracted law suit that will no doubt follow from inadequately considered estimates.

Thank you for your time,
Ann

From: [gregory.sandoval](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Hunting of Cougars & Bears in NM
Date: Friday, August 25, 2023 9:25:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it concerns on the NM Gaming Commission:

I am a lifelong NM resident and I am writing to voice my opposition to the proposed plans to allow hunting of more cougars and bears.

I am very concerned in the climate crisis we are experiencing that the proposed kill quotas for both bears and cougars cannot be scientifically justified. How the quotas were determined is not very well studied and unclear how the results were determined at best. No consideration has been made for rising temperatures, extreme drought, or habitat loss from catastrophic fire.

Bears and cougars both evolved to be self regulating. There are not too many. But over-hunting can cause them serious harm and damage.

Please oppose this plan for more quotas on killing these wild animals

Regards

Gregory Sandoval

Architect C: 505.200.1219

From: [Danny Thomas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Killing of Bears and Cougars
Date: Thursday, August 3, 2023 8:13:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In a Albuquerque Journal article on Sunday 7/30/23 there was an article of paying hunters to chase/scare bears and cougars up trees and then shoot them. The practice is wrong, inhumane, and unethical. Bears and cougars take care of their numbers.

A cougar was mentioned in the Albuquerque Journal on Tuesday, 8/2/23 about a cougar spotted by a sliding glass door home in Rio Rancho. The cougar was tranquilized with a dart by the New Mexico Department of Game and Fish along with Animal Control and taken away to a less populated area. Why can't a more humane solution like this be performed more often?

Lana
West Side Albuquerque

From: [ken.logan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed NMDGF Cougar Rule August 2023
Date: Friday, September 1, 2023 9:34:48 AM
Attachments: [Comments on the NM Cougar Rule August2023.pdf](#)
[Comments on the NM Cougar Rule July2023 KLogan LSweanor.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico Department of Game and Fish,

Please consider our comments on the proposed Cougar Rule as presented at the August 2023 State Game Commission meeting, attached below. We are also attaching our comments on the proposed Cougar Rule that we sent to you in July 2023, because we reference those in our current comments.

Thank you for your consideration,
Ken Logan & Linda Sweanor

From: [marianna breton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Rule Change Bear/Cougars
Date: Thursday, August 24, 2023 9:18:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a New Mexico resident and business owner, I am writing to express my opposition to a proposed change in kill quotas and extension of the hunting season in the state. I understand that comments are being accepted and a final vote will occur later this year in Farmington. The Dept of Fish and Game has not submitted a thorough evaluation of the current population of the wildlife targeted, bears and cougars which are difficult to count. Data required to make a sound conclusion is available in limited areas of the state when an extensive survey is required maintaining strict scientific protocol.

Wildlife is a public trust and the trustee has a duty to protect and manage the asset for all beneficiaries not just trophy hunters and the gun lobby. The Dept of Game & Fish must recognize the inherent value of a species to live without having to meet the needs of some entity. If broad public opinion were considered this rule change proposal would not be entertained yet the pleas and desires of the public are ignored by wildlife agencies.

The hunting of bears and cougars using dogs, sometimes radio collared, is not true hunting and such barbaric "hunting" methods should be outlawed. Chasing a bear or cougar to exhaustion then shooting it out of a tree, point blank is horrific and cruel. Such killing for trophy and sport recreation is reckless and disrupts the social structure of bears and cougars and other wildlife. Young are left to starve when their provider is slaughtered.

Due to the continuing changes to our environment with more extreme heat and drought, it is impossible to believe that population of bears and cougars has increased and hence raise the kill limit and extend the hunting period. A much more conservative figure should be established and the modality used must be transparent. A lower quota must be set for bears and cougars due to our climate trends and frequent wildfires. The number of hunting permits issued should not be increased as it is not warranted based on the flimsy accounting that is not transparent. The hunting season should not be extended allowing more wildlife to be killed in the summer months. With the existence of healthy populations remaining unestablished it is imperative that a conservative quota be maintained regarding wildlife, bears and cougars.

M. Breton
ABQ, NM

From: [Craig Fischbach](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Rule Changes
Date: Wednesday, July 19, 2023 5:50:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi

I believe there are 4 changes that are being proposed for 2024-2028.

Bear: I am fully in support of increasing the harvest numbers in the proposed zones. I also support disbanding zone 7.

Cougars: I support going to the actual limit number for the female sub-limit. I do believe that all cougar pelts need to be tagged. I Do Not support the use of elk or deer tags to harvest a cougar or bear in any circumstance. They should have to purchase an additional game specific tag. I Do Not want units disclosed for cougar harvests like it was in the past on the harvest report. The harvest report is good the way it is.

I would like to propose that all game meat for bear and cougar has to be taken out of the field.

Thank you

Craig Fischbach

Sent from my iPhone

From: [joanie berde](#)
To: [DGF-Bear-Cougar-Rules](#); [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed Rule-public comment
Date: Friday, October 20, 2023 4:13:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I wrote comments on the proposed rule previously, however remain concerned that this amended rule continues to not address the miles of bear and lion habitat lost to fires in New Mexico last year, particularly in the Pecos Wilderness and Santa Fe and Carson National Forests. Those units should be completely dropped from bear and lion hunts until new population studies are conducted and new data analyzed regarding the approx. number of animals using this habitat and the health and reproductive success of those animals within and adjacent to recent burn areas.

We continue to be concerned regarding the high quotas being proposed for bear and lion in New Mexico, and the lack of recent population studies to support these high numbers. Like many New Mexicans- we urge the Dept. to withdraw the current proposed and amended rule and develop a rule after new data is collected and analyzed and peer reviewed, and to truly manage out state's wildlife populations in a sustainable way, based on sound data and emphasis on the future - taking into consideration a changing climate, ecosystems, and increasing large wildfires.

Thank you and hope you will listen to the concerns of the public this time and to sound wildlife science.

From: [Justin Park](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed bear and cougar changes
Date: Wednesday, August 23, 2023 4:19:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Justin Park

From: [T. Sibbitt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed bear and cougar hunting rules
Date: Thursday, August 10, 2023 3:48:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern:

I was born and raised here in New Mexico. I live in Los Alamos and I have a black bear in my backyard often and a cougar killed a deer about three houses away. I do not believe the department's proposed increase of hunting quotas will do anything to reduce human and animal friction. Sounds to me like somebody's pockets are getting lined. The use of dogs for hunting is not only cruel and unfair to the wild animal, it shows that the hunters are incompetent. And not able to do it on their own. I believe the surveys that the department claims shows increased number of these animals are tainted and unreliable. We have these animals more in town now because we have had tremendous, out of control wildfires in the mountains, in our case the Jemez Mountains, that have destroyed the food for the bears and the cougars and also they are desperate for water. The fires have destroyed our mountains and these animals' habitats. The so-called survey does not account for these results, and I bet there are less bears and cougars now than there were since before the fires. I am absolutely against any increase in hunting quotas and all trapping and use of dogs to hunt should be prohibited as anachronistic and cruel activities, the same as dog fighting and cockfighting. It's time to eliminate these useless and damaging activities of a few people who want to kill animals. Hunting by out of states should be prohibited or severely restricted. Eco tourism is New Mexico's future, and primitive hunting behavior is its past. I am not against all hunting, such as hunting deer and elk for food on the table, but hunting of apex predators is ridiculous. My voting and my support for candidates will reflect my views. Thank you.

Tina R Sibbitt
923 Tewa Loop
Los Alamos, NM

Sent from my iPhone

From: [Ken Hughes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed bear and cougar quotas
Date: Thursday, August 24, 2023 9:14:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am opposed to the proposed kill quotas for both bears and cougars that cannot be scientifically justified. How the quotas were determined is murky at best. No consideration has been made for rising temperatures, extreme drought, or habitat loss from catastrophic fire. Bears and cougars both evolved to be self regulating. There are not too many. But over-hunting can cause them serious harm and damage.

Ken Hughes
Santa Fe

From: jonprst@yahoo.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed bear and cougar rule
Date: Sunday, July 30, 2023 3:44:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am a life long resident of the state of New Mexico. I am an outdoorsman who loves to hunt and fish.

Every animal I have ever taken fed my family and friends.

I am 100% opposed to hunting animals for sport or because they are on land which the, ever increasing, human "civilized" communities are now encroaching.

Hunting these animals into extinction over the next few generations is the most likely outcome of these sorts of proposals.

It's a sad day when we are even considering this in our state.

I would love to discuss options and ideas other than destroying these animals

Best regards,

Jon Priest

Sent from my iPhone

From: [Gwen Gilligan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed change in hunting limits on bears and cougars
Date: Wednesday, July 19, 2023 8:55:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to express my opposition to the proposed increase in hunting limits for cougars and bears. I do not think New Mexico should increase these limits. I think this science is weak in the studies that have been performed and I would strongly encourage the people making this decision to hold off on increasing these limits at this time.

Thank you for your consideration.

Gwen Gilligan

headshot



Gwen Gilligan

Associate Broker | Lic # 13502

p: (505) 660-0500

e: gwen@gwengilligan.com

530 S. Guadalupe St.
Santa Fe, NM 87501

santaferealestate.com



logo



From: [B. Pennington](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed changes
Date: Tuesday, August 15, 2023 7:44:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

let the the NM Game biologists and daily users (hunters, ranchers, farmers) drive and make changes to the proposed revision in hunting bears and cougars. The active hunting and use of hound in tracking and trailing of bears and cougars keeps a respectful balance between human wildlife interactions. When this balance is removed completely certain wildlife populations then set new habitat boundaries in urban areas leading to increased wildlife conflict. Again leave the decisions to the active wildlife biologists and users (hunters ranchers farmers) that know the real situation the best.

Bryan Pennington
Prescott, AZ
Sent from my iPhone

From: [David Rice](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed changes in rules governing hunting of bears and cougars
Date: Saturday, July 15, 2023 2:37:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To: The NM Department of Game and Fish

From: David Rice

It has come to my attention that the NM Department of Game and Fish has proposed new rules for the hunting and killing of bears and cougars.

I oppose the proposal at this time because the Department has not published sufficient information to enable the general public or wildlife biologists to judge the soundness of the proposed rules.

Please delay acceptance to the proposed rules for the hunting/killing of bears and cougars until the public has been effectively informed on the consequences of the changes.

Thank you for considering my input,

David P. Rice, 4074 La Purisima Drive, Las Cruces NM 88011 (dr45236@gmail.com)

Sent from [Mail](#) for Windows

From: [colleen.dougherty](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed legislation
Date: Thursday, July 20, 2023 11:14:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings,

My comments are directed at the proposed changes to the DGF's policy for Bear and Cougar management here in New Mexico.

I know that you all have a big job to do in helping balance out the co-existence of people and animals (wildlife) here in our state. I must, however, ask that at this time, the proposed increases in zone areas, kill limits ("harvest" as in the legislation) numbers of hunters, and timing of season closures, be suspended.

Firstly, our state is suffering so much now with the drought and subsequent wildfires. We are all suffering - humans and animals alike. Opening up the field for more killing at this very vulnerable time has so many consequences; including the aftereffect of a decline in the species altogether if they lose more of their populations.

I know that cubs, kittens and obvious mothers of those are "off limits" to kill, but a hunting dog will not know the difference, and I also know that once a person has in mind to kill something, they will likely kill it. Adrenalin is a powerful drug. So is stress and frustration...

Working as a therapist in the corrections industry, I'm very aware of the atmosphere of violence in our Nation - I'm immersed in it every day. We see the manifestation of violence as directly related to anger, stress, and frustration; issues we are all dealing with more and more these days, and it frightens me to see policies that encourage and allow more killing. I don't eat animals, but I respect those who ethically hunt and feed their families, teaching their children about respect and ethics at the same time. Hunting for "sport" is not the same. To me, as a therapist, it is an expression of dominance in service of ego, anger, frustration, misinformation, and lack of respect for life itself. I know it's never going to stop, but keeping limits on this activity is a way to at least keep things in perspective. We witnessed what happens when this process fails a year and a half ago with the wolf slaughter in Wisconsin.

Our government agencies can be beacons of restraint, respect, compassion, and co-existence. We desperately need role models for these behaviors and mindsets. The DGF is a strong agency that inherently already models practices of intelligent and respectful management between ourselves and our wild neighbors. I urge you to continue to be this beacon of restraint and

respect for the welfare of us all.

Thank you very much for reading and considering my thoughts.

Warm Regards,

Colleen D., Licensed Mental Health Counselor, newspaper columnist, artist, writer, educator, animal welfare volunteer.

From: glidezone@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed revisions to the Bear and Cougar Rule (19.31.11 NMAC)
Date: Thursday, August 3, 2023 3:59:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Re: Proposed revisions to the Bear and Cougar Rule (19.31.11 NMAC)

Gentlemen:

I am writing in strong opposition to the proposed increase to the kill quotas for bears, extension of the hunting season for bears, and to "adjusting" the kill quotas for cougars.

Thank you.

Catherine Krug

From: [Elaine Willits](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [jbrayman49@gmail.com](#); [ejudy3111@gmail.com](#); [csmith8888@comcast.net](#)
Subject: [EXTERNAL] Proposed rule authorizing increased killing of bears and cougars
Date: Friday, August 11, 2023 12:55:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

I read the article in the Albuquerque Journal by Charles Fox, in which it says the State Game and Fish Department wants to increase the number of cougars and bears that can be killed in hunting. The headline "unethical and unscientific" perfectly summarizes this proposed action.

On what basis is this increase proposed? Is there a dangerous overpopulation of either animal? Has there been some sort of survey done? It does not seem that there has been. The writer of this article makes a very accurate statement: The game department does not own the state's wildlife. So what are the reasons for this proposed increase? Are we to host increased numbers of hunters, many from out of state, who just want to kill something and mount the head on their wall?

I understand the need for controlled hunting of species such as deer and elk, which if allowed to overpopulate can become subject to disease and starvation. What is the rationale for killing more bear and cougar? Do they not control themselves through the availability of food and habitat?

More importantly, does the department have any idea of the population of bear and cougar? If so, this fact should be made public. Otherwise, the motivation for this increase seems to be a focus on hunting and killing and not on the proper balance of our wildlife. We as citizens of this state all have a right to have these animals present in our state. And the method of the "sport" described in the article is most certainly cruel and unjust and in no way fits the definition of true hunting. The hunters I know pursue their deer or elk in a sportsmanlike way, and then plan to eat their prey. I doubt the hunters of bear and cougar plan to consume their kill. They just want to kill something.

I am planning to message the governor as well. There needs to be better balance on the State Game and Fish Department between hunting and conservation. I hope the department

considers
their proposal after more careful thought and definitely after assessing the population of bears
and
cougars. I am also contacting friends in New Mexico who should be aware of this drastic
proposal.

Thank you.
Elaine Willits
Albuquerque

From: [Raymond Watt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed rule changes
Date: Sunday, July 30, 2023 4:58:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game and Fish Department,

My family and I are opposed to the proposed rule changes with regard to the taking of bear and cougars in New Mexico. We enjoy the wildlife of New Mexico and feel that already, too many of these animals are being hunted. We would like to see the Game and Fish department adopt a more pro conservation agenda. Many New Mexicans are happy to simply see a bear or cougar in the wild and have no desire to hang a trophy on a wall.

Sincerely,
Raymond Watt

Sent from [Mail](#) for Windows

From: [Jaclyn R Sinclair](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed rule governing the hunting of bears and cougars
Date: Friday, July 21, 2023 12:36:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This undersigned and her husband are opposed to increasing the kill quotas for bears, extending the bear hunting season and adjusting kill quotas for cougars. The proposed rule mentions how population data was compiled, but does this data give any more than a snapshot in time? There is no reliable information available to the public concerning what the populations of bears and cougars are and what the objectives are for these species. Furthermore, there has apparently been no external review of the population estimates by independent, outside experts. There is also no mention of climate trends which include severe drought and wildfires which would likely indicate that kill quotas should be decreased, not increased.

Both species are top predators crucial to the health of our ecosystem. Because they regulate their own population numbers, killing fewer of these animals is not problematic. However, If too many are killed, their populations could be negatively impacted for a very long time.

It seems as if the proposed rule changes which will add more bear hunting permits and will start the season earlier is motivated by a desire to appease hunters. Yet, it is my understanding that these species are generally hunted using dogs who chase them until they climb a tree for rest. When the hunter arrives at the scene, having found their dogs by using electronic collar beacons, the hunter shoots the animal at point blank range. Where is the sport in that? My husband, who was an active hunter for many years, thinks this practice is contrary to Fair Chase hunting principles. It is abhorrent to many New Mexicans that bears and cougars are killed in this manner only for trophies or recreation.

Please do not adopt the proposed rule and if a modified version is proposed, please provide more specific and credible data to justify increasing kill limits.

Sincerely,

Jaclyn Sinclair

From: [Rae Sikora](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed rule...Public comment.
Date: Sunday, August 6, 2023 11:36:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to express my strong opposition to the proposal of raising the kill quotas for bears and cougars in New Mexico. As a concerned citizen and a lover of wildlife, I firmly believe that such a decision would have detrimental consequences on our local ecosystems, biodiversity, and the overall balance of nature.

Bears and cougars are essential apex predators that play a crucial role in maintaining the ecological equilibrium of our region. By regulating prey populations, these magnificent animals help control disease outbreaks and prevent overgrazing of vegetation, which in turn benefits a multitude of other species in the food chain. Increasing the kill quotas would disrupt this delicate balance, leading to potential ecological imbalances and cascading effects on our natural environment.

Furthermore, these majestic creatures contribute significantly to our state's cultural heritage and draw ecotourism, providing an economic boost to local communities. Many tourists and nature enthusiasts visit New Mexico specifically to catch a glimpse of these iconic animals in their natural habitats. By increasing the kill quotas, we risk diminishing the chances of encountering these creatures in the wild, which may negatively impact tourism revenue and local businesses dependent on wildlife-related activities.

It is essential to remember that non-lethal methods of wildlife management exist and should be prioritized over lethal control whenever possible. Promoting coexistence and implementing proactive measures, such as public education about living safely alongside wildlife, deploying deterrents, and enhancing habitat preservation, can be more effective in mitigating human-wildlife conflicts without resorting to lethal measures.

I urge the New Mexico Department of Game and Fish to explore alternatives that foster harmonious coexistence between humans and wildlife while promoting conservation efforts. There is no management plan detailing measurable objectives for these species and it is nearly impossible to accurately measure current populations. Adding more hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless, cruel and short sighted.

In conclusion, I respectfully request that you carefully reconsider the proposal to raise the kill quotas for bears and cougars. It is important that we protect and preserve the rich biodiversity of New Mexico for the benefit of present and future generations.

Thank you for your attention to this matter.

D.Rae Sikora
31a Camino La Cueva
Glorieta, NM 87535

From: [Linn Tytler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed rule
Date: Sunday, July 30, 2023 7:07:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am very much opposed to your proposal to allow hunters to kill 25 percent of our state's bears and cougars.

As a former State Representative who fought proposals to allow indiscriminate shooting of predators, this wholesale slaughter of bears and cougars goes against the best interests of biodiversity in our state. Count me as a very emphatic NO.

Linn Tytler

Sent from my iPhone

From: [Mark Welch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed rules regarding the increase in killing of bears and cougars
Date: Wednesday, August 2, 2023 1:02:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi Folks,

I recently became aware of the proposed rule changes regarding the increase in issuance of licenses to take bears and cougars. An article in the Albuquerque Journal dated July 30th, 2023 by Mr Charles Fox of Santa Fe very lucidly described the rule changes and his opposition to any increase in harvesting of these animals.

I am, or really was, a hunter for 70 years and have hunted big and small game in East Africa, India, Nepal and here in the US especially New Mexico for elk. Time has started to wear me down physically, but I still consider myself a hunter.

Having said that, I agree totally with Mr Fox's article in the paper. Frankly, I have issues with harvesting bears and cougars at all. For what purpose? Just to be able to kill an animal? With elk and deer, etc, the animal is put to good use in the form of food. But that is not a valid reason to kill a bear or a cougar.

If the rules were changed due to animal population control or for safety reasons, then I can understand the taking of a bear or cougar. But only for these reasons.

I suggest you re-read Mr. Fox's letter as he summarizes the issue very well. I have pasted a copy below.

In summary, I oppose any increase in the harvesting of bears and cougars, and in fact, would support the reduction of the number of licenses issued

Regards,

Mark R. Welch
Lt Col, US Army (ret)

13601 Crested Butte Dr NE
Albuquerque, NM 87112

**Proposed rule authorizing killing of bears and
cougars is unethical and unscientific**

The New Mexico Department of Game & Fish authorizes the killing of an estimated 10% of the state's bears and cougars every year without actually knowing how many there are. This policy is highly questionable, but now the game department wants to kill up to a quarter of our bears and cougars every year without any coherent reason. This is a reckless and destructive proposal lacking scientific rigor and ethical competence. The game department's continuing focus on expanding the recreational killing of our wildlife is another clear example of why state wildlife management must be reformed and modernized.

Bears and cougars are both native to New Mexico and belong on this landscape in ecologically significant numbers. These species manage their own populations based on the availability of food and habitat. There is no credible evidence that either species needs to be lethally "managed."

Autumn in New Mexico is one of the best times to enjoy our natural areas. But anyone who has been in the forest when hunters are chasing bears or cougars with packs of dogs knows how chaotic it is. Radio-collared hunting dogs pursue bears and cougars for miles. Nursing mothers and young are especially vulnerable. Exhausted and badly outnumbered, bears and cougars will climb trees to try to escape.

Hunters then shoot the animals at point-blank range in what is essentially an execution-style killing. This is unsportsmanlike behavior that violates the most basic hunter ethic of "fair chase," an ethic the game department claims to uphold. Hypocrisy makes a poor foundation for any public policy.

The game department does not own the state's wildlife. Wildlife is a public trust in which everyone holds a legitimate interest, not just those who destroy it or encourage its destruction. The vast majority of New Mexicans do not hunt or fish but have essentially no say in wildlife policy. The game department is supposed to be the keeper of the wildlife public trust but in this duty,

it fails miserably, selling off the state's wildlife as "products" on its website, charging just \$47 to kill a bear and \$43 to kill a cougar.

New Mexico should not be managed as a pay-to-shoot game farm. State wildlife policy should reflect our values as a society. Social attitudes toward wildlife have evolved enormously over the past century. We are largely a mutualistic society now, which means live and let live in some manner of respectful coexistence.

It's difficult to justify the continued recreational killing of wildlife in an age of mass extinctions, megafires, and persistent drought. We need a state wildlife agency whose mission is genuine conservation, whose methods are humane, and whose agency culture reflects a deep appreciation for the value of a unique, vulnerable, and dwindling public asset.

Please speak up on behalf of our state's bears and cougars. The New Mexico

Department of Game & Fish is currently accepting comments on the proposed bear and cougar rule. Email: DGF-Bear-Cougar-Rules@state.nm.us.

A juvenile New Mexico black bear is seen in the Manzano Mountains in Albuquerque. The New Mexico Department of Game & Fish is proposing a new rule regarding harvest limits, zone boundaries and season start dates.

JIM THOMPSON

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From: [Sali Evans](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Proposed rules
Date: Sunday, August 13, 2023 4:57:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reconsider the proposed rules to increase the recreational killing of bears and cougars in our beautiful State. I read the article by Charles Fox (Journal, July 30) and agree wholeheartedly with his view. We are a changing culture! Most of us do not condone killing these beautiful animals for sport at all, much less increasing the allowance. Moreover, these animals face enough threat with drought, wildfire, and climate change. Please don't add to their misery. Cancel these rules!

Respectfully,
Sali Evans
Corrales

From: [Hildegard Adams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Bears and Cougars
Date: Thursday, August 10, 2023 7:50:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Agency Representatives:

I am saddened and distressed to hear that your agency is considering raising kill quotas for bears and cougars and to prolong the trophy hunting season . I urge you to reconsider these policies. As you know these animals are already suffering due to habitat loss, drought, and wildfires.

I have never understood why your agency is not in the business of protecting wildlife, rather than figuring out more ways to kill and create suffering . This is wrong, it is just wrong. It is 18th & 19th century thinking , where destroying predators was done in egregious numbers.

Please - come into the 21st century with your policies. It is way past time to make some better changes. Surely you understand that predators are necessary to our ecosystem, that's just basic good 'management' .

Thank you for your attention,

Hildegard Adams
7720 Oakland Av NE
Albq. NM. 87122

Sent from my iPhone

From: [Wendy Leighton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Bears and Cougars in New Mexico FROM INCREASED KILL QUOTAS
Date: Saturday, July 29, 2023 1:07:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please consider protecting our ecosystem and our wildlife in New Mexico by refraining from increasing kill quotas.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be **reduced, not raised**. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their population for a long time.

New Mexico has recently experienced **severe drought and wildfires**, both of which will almost certainly continue and intensify into the next four years. There is no indication the New Mexico Game and Fish has accounted for these factors in their habitat or population estimates. **Our climate trends weigh in favor of lowering kill quotas, not raising them.**

As an educator and lover of our precious wildlife & ecosystems, I am asking the NM Game and Fish NOT to increase kill quotas for bears and cougars. My middle school history students will be conducting a project in August on these topics and the significance of these wild animals to indigenous communities in our beautiful state.

Thank you for your consideration.

Wendy Leighton
Santa Fe Resident
Educator



Baby Bear in New Mexico



Wild Cougar in New Mexico

From: [Asher vigil](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hound Hunting of Predators
Date: Wednesday, August 16, 2023 9:34:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir or Madam,

Please protect the hunting of bear and cougar by dogs. We need to protect the deer and elk populations for our future generations. When these predators go unchecked it's sure to ruin the wildlife population that many of us New Mexicans depend on year after year. I strongly oppose any rule change or legislation that limits the hunting of these dangerous predators.

Thank you,

Asher Vigil

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From: [Amanda Peltier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Tuesday, August 22, 2023 11:33:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue.

Sincerely,
Amanda Peltier

From: [Johnmark Eneks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 7:38:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Johnmark Eneks

From: [David McGee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 6:14:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
David McGee

From: [David Birkoski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Saturday, August 19, 2023 11:17:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
David Birkoski

From: [Stephen Paulazzo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Monday, August 21, 2023 3:47:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Stephen Paulazzo

From: [Jim Piotter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Monday, August 21, 2023 2:28:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's rich biodiversity is a testament to the success of its wildlife management programs. The proposed changes in the bear and cougar rule indicate a dedication to maintain this balance. Recognizing the essential role played by hunters, anglers, trappers, and recreational shooters across the country, it's vital that decisions be based on the insights and data provided by New Mexico's dedicated department biologists.

Sincerely,
Jim Piotter

From: [Corby Fausett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Monday, August 21, 2023 7:36:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay! We absolutely need the hunts to stay especially with hounds it is the best way to properly manage the species. Listen to science please not just anti hunters sending emails.

Sincerely,
Corby Fausett

From: [Francis Steward](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 11:48:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Francis Steward

From: [Cameron Ziesak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 10:04:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Cameron Ziesak

From: [Brett Harvey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 8:31:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Brett Harvey

From: [Terry Bessett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 8:31:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Terry Bessett

From: [Brian Colunga](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Sunday, August 20, 2023 8:00:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The law is clear in its directive: New Mexico's wildlife must be managed scientifically to ensure both recreation and sustenance for its people. The proposed changes to bear and cougar management are in line with this directive. It's not merely a matter of tradition but of legal and ethical responsibility. Cat and bear hunts must continue!

Sincerely,
Brian Colunga

From: [Lucas Hurt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect Hunting With Hounds
Date: Friday, August 25, 2023 9:18:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Lucas Hurt

From: studio50@everyactioncustom.com on behalf of [Rebecca Walding](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect New Mexican wildlife...Reject the bear and cougar rule
Date: Monday, August 14, 2023 11:44:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rebecca Walding
Cerrillos, NM 87010
studio50@swcp.com

From: [karen.hulsey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect cougar/bear hunts
Date: Thursday, August 17, 2023 5:27:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Anti-hunters do not understand the value of hunting .although I don't hunt cougar or bear I understand what will happen to the deer & elk population if you allow the anti hunters to make decisions about hunters rights . Here we go again anti hunters grab hold of a bad incident & make all hunters look as if we are blood thirsty murderers. I am a woman & have hunter NM unit 15 going on 23-24 yrs for cow elk , it IS MY MEAT SOURCE FOR MY FAMILY ! This is almost a complete parallel of 2nd amendment rights , the ones who don't own firearms & only focus on the crimes of criminals want to take firearms & rights from people Who are responsible firearm owners who train & educate to be safe & proficient . Help Keep NM heritage of hunting all the wild Game & keep the anti hunting group out of the decision making process of something they don't even comprehend . Please protect ALL OUR HUNTING PRIVILEGES! If you don't next they will be attacking ranchers for killing beef for the cheeseburgers they enjoy ! Oh yeah ??? They already are doing that ! Stop their insanity ! Keep All hunters safe & our heritage protected & continue education of all hunters & firearm owners ! Thank you Karen hulsey
Sent from a thousand miles from nowhere!

From: [Peter Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protect, don't kill bears and cougars.
Date: Friday, July 14, 2023 2:00:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

- **Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised.** Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophy’ and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Thank you.

Peter Wood

From: [Lisa L.](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Protest Against Raising the Hunting Quotas for Bear and Cougar in New Mexico
Date: Wednesday, July 19, 2023 12:56:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern Game and Fish Commission,

I am writing to express my concern for and protest against the potential increase in kill numbers of Bears and Cougars in New Mexico for the upcoming hunting seasons. As my views are in agreement with the points made below, I respectfully request this letter be accepted in protest. Thank you for your consideration,

Lisa Logsdon

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of

summer will likely result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using

these methods for 'trophies' and recreation. Please consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Lisa Logsdon
Toscana Marketing Group
(505) 239 - 3793

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment Submission
Date: Friday, October 13, 2023 2:10:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Officials,

I write to strongly urge you to protect our precious iconic essential wildlife at all costs. We must co-exist with nature. Please use NON lethal methods to manage wildlife!

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

—Dr. Nicolas Duonn
Sent from my iPhone

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment Submission
Date: Tuesday, October 17, 2023 11:06:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Officials,

I write to strongly urge you to protect our precious iconic essential wildlife at all costs. We must co-exist with nature. Please use NON lethal methods to manage wildlife!

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

—Dr. Nicolas Duonn
Sent from my iPhone

From: [R.L. Orth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment on Bear / Cougar Rules
Date: Wednesday, August 16, 2023 4:34:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in the state of New Mexico.

R.L. Orth

Sent from my iPhone

From: [April Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment on Draft Proposal
Date: Sunday, July 30, 2023 4:37:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

The very idea that hunting cougars and bears could be deemed an "opportunity" is abhorrent. Including such language in a draft proposal codifies that approach as reasonable. It isn't.

The draft proposal released to the public for comment is a nearly masterful exercise in squaring a circle. New Mexico Game & Fish (NMG&F) is basically claiming to generate "advanced" models, based on ambiguous kill data, derived from those who would happily kill every four-legged creature on national forest land. In so doing, the agency is basically saying, 'we (NMG&F) control the data from which we generate models, from which our data generates a self fulfilling prophecy (that 'there will always be four-legged things for us to shoot at, because we're so clever at "managing" it'), whereby we never have to question anything we do, or have it corroborated by parties who don't have a conflict of interest.'

Increasing the number of apex predators (both bear and cougar, from this draft proposal) to be killed, as a sadistic form of 'fun,' based on the self-reported "data" of those who would (and often do) kill any living creature, (with or without the imperceptive oversight of NMG&F) is irresponsible.

Those predators, when left to their own devices, eschew contact with people, and get on with the job of keeping the elk and deer (so prized by said sadists for wall hangings) populations healthy, in a way NMG&F doesn't even try to. In turn, this helps keep the ecology of the forests they inhabit healthy, and keeps trees alive and rivers flowing. NMG&F doesn't even pretend to have such in their purview/mandate. And the best bit is that they do it for free. You certainly can't say that about the bureaucratic behemoth that is NMG&F.

When your primary goal as an agency is to encourage a small, twisted subset of the human population to revert to neanderthal behavior with 'advanced' killing tools, your role is superfluous. The agency is an anachronism.

There is no demonstrable reason to kill a bear or cougar in this day and age. No one could claim to need the meat. Hunting is not a pauper's prerogative; much as NMG&F tries to romanticize it as such. You need a lot of money to buy a gun, ammunition, (the now ubiquitous Elmer Fudd ATV), and fuel for it and the truck and trailer you haul it into the woods

on. And I've never met a hunter that didn't stock up on alcohol and food to take hunting. Being a sod with enmity towards nature takes provisions, it would seem.

I reject the notions proposed in this draft proposal, on the grounds that they are based on hazy data, provided by individuals with a conflict of interest. Bearing in mind that it took Roxy's Law to stop NMG&F from encouraging the public on the decals on their official vehicles, to use irresponsible, cruel traps and poisons with impunity, should highlight how wasteful NMG&F is.

I am happy to go on the record and propose the dissolution of the New Mexico Game & Fish. It has proven itself to be the very model of corruption & bureaucracy in its dealings with the public, and its mismanagement of public wildlife. Big government run amok, if you will. The very idea of relying on individuals to 'report' truthfully to NMG&F (the staff of which make up a rather large block of hunters in the state) is absurd. Further, the idea that their 'reporting' is used as a basis for death modeling should frighten anyone with a natural or unnatural fear of AI being put to negative use.

The draft proposal claims that relevant data, (used as the basis for questionable modeling) will be "post[ed]" and that the draft proposal will change over time. Clarity is certainly called for. Either it's a final draft proposal, or the agency is trying to take the piss with the public. This is a disingenuous way to engage with the public, and comes across as *not in good faith*. A phrase that one could argue is the actual motto of NMG&F.

Sincerely,
April Lee
(Silver City, N.M.)

From: [Nic D](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment — NO hunting bears cougars !
Date: Monday, August 21, 2023 2:48:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Officials,

As a resident, I write to strongly urge you to PROTECT our precious iconic essential wildlife at all costs!

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill

quotas, not raising them.

- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation.
- I urge NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Dr. Elsa Knutson,
Taos, NM

Sent from my iPhone

From: [Pablo Davila](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment
Date: Monday, August 21, 2023 3:09:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a NM landowner, I applaud the NM Fish and Game Department for using sound science to make wildlife management decisions. For those who don't understand true conservation methods and oppose lawful, regulated hunting practices, I would suggest they volunteer to apply wildlife condoms to male bears and cougars to help regulate their reproduction rates. After successfully doing so for several years, I will be open to supplementing current hunting means/methods of wildlife management with a privately funded condom application program.

Sincerely,

Pablo Davila

From: [Elena Tillman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comment
Date: Tuesday, October 24, 2023 11:02:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NMDGF,

Respectfully requesting that given the immense value of bears and cougars to New Mexico, and the true uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised, by at least 50%.

As you are aware, accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. It lacks empirically sound and peer reviewed scientific method, randomized control or internal validity, free of internal bias. Furthermore, there is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends.

As you know as well, bears and cougars are highly intelligent and sentient species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

I advocate for a more balanced and sustainable approach to protecting New Mexico's wildlife. With its success, NM can become a model of democratic, effective wildlife policy-making.

Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

These decisions should not be determined solely by a select few but should be a matter of public interest and informed, democratic decision-making, consistent with the commitment to equitable representation.

Thank you,
Elena Tillman

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Friday, September 15, 2023 4:11:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely

result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophy’ and recreation.

I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Tuesday, July 25, 2023 10:28:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophy’ and recreation.

I ask the NM Game and Fish to consider broad public opinion and adopt

hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Thursday, July 20, 2023 7:48:20 PM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely

result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophies’ and recreation.

I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Wednesday, July 19, 2023 5:07:11 PM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
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I ask the NM Game and Fish to consider broad public opinion and adopt

hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Monday, September 11, 2023 1:51:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely

result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
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I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Monday, September 4, 2023 12:30:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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result in more bears dying. This is both reckless and cruel.

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I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Thursday, August 24, 2023 4:30:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
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I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Thursday, August 17, 2023 12:19:12 PM
Importance: High

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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I ask the NM Game and Fish to consider broad public opinion and adopt

hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Tuesday, August 15, 2023 10:30:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
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I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Thursday, August 10, 2023 8:30:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
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I ask the NM Game and Fish to consider broad public opinion and adopt

hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Saturday, August 5, 2023 11:32:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
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I ask the NM Game and Fish to consider broad public opinion and adopt

hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Wednesday, July 26, 2023 11:52:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

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hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments -- Your URGENT Action Required / Protect Wildlife
Date: Monday, September 18, 2023 4:01:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials,

I write to strongly urge you to PROTECT our precious, iconic and essential wildlife at all costs – it is time to co-exist with Nature and always resort to NON-lethal methods of wildlife management.

I note the following:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
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result in more bears dying. This is both reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for ‘trophy’ and recreation.

I ask the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

--Dr. Nicolas Duonn

From: [Nic D](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments Submission: protect wildlife!
Date: Wednesday, September 13, 2023 2:37:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear officials:

I write to strongly urge you to PROTECT our precious iconic essential wildlife at all costs. We must learn to CO-exist with nature and use only NON-lethal methods of management!

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

—Dr. Elsa Knutson

Sent from my iPhone

From: [Nic D](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Comments- protect our wildlife from cruel hunting!
Date: Friday, July 14, 2023 1:25:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I write to urge you to protect our essential wildlife!

The following are my key points:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no

management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation.
- I urge the NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and

bear hunting

Dr. Elsa Knutson

From: Nickie.Duong@infineon.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Feedback— Your urgent action required
Date: Friday, July 14, 2023 1:21:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Officials,

I written to strongly urge you to protect our precious iconic essential wildlife at all costs!

I note the following points:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- The hunting proposals lack scientific rigor. There is no

management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation.
- I urge NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear

hunting.

—Dr. Nicolas Duonn

From: [Vicki Ahl](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Input of bear and cougar hunting
Date: Sunday, August 6, 2023 11:41:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To: Public officials at the Department of Game and Fish

If I gave you my opinion of trophy hunters, you would no doubt quit reading. I will say that I believe the predator/prey balance was disturbed long ago by unrestricted Cougar hunting.

I strongly oppose any hunting of our remaining wild animals. I know we have taken their habitats so there is no easy answer.

I oppose your bear and cougar quotas and long trophy hunting seasons, .AND I don't think bears and cougars should be fair game during deer or elk season. I have hunted deer and birds in my time FOR FOOD, and we used every inch of meat and hide. So I'm not against hunting per se. I strongly feel you should reduce your kill quotas significantly as a step in the right direction.

Thanks,

Vicki Ahl

From: [Nic D](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public Submission — Protect Bears Cougars Wildlife
Date: Friday, October 13, 2023 2:21:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I write to urge you to protect our essential wildlife at all costs. Please use NON lethal methods to manage wildlife!

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

— Dr. Kellen Dunn

Sent from my iPhone

From: [William Lodermeier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comment LIONS/BEARS
Date: Wednesday, August 16, 2023 1:45:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it Concern,

I Agree with the science based information that you are proposing. Please keep up the great work with using science based information to determine the best practices to manage the game that we love! Also Thank You for allowing the public to be the main source of conservation to these animals. I believe that the hunters and Hounds man are the public figures that want to see these animals thrive more than any one else!

Thank you for your time,

Billy Lodermeier
320-493-1496

From: [Chadd Scott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comment bear and cougar rules
Date: Wednesday, August 23, 2023 8:03:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In regards to raising kill quotas on either bears or cougars in New Mexico, given the uncertainty of habitat and population estimates of species, the quotas for both should be reduced, not raised. Kill quotas for bears and cougars have been unjustifiably high for many years.

I am a regular visitor to New Mexico and one of the top reasons I choose to travel there is for the wildlife.

Chadd Charland
3046 B First Ave
Fernandina Beach, FL 32034

From: [Kurt Nolte](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comment on Bear and Cougar Rule
Date: Wednesday, August 16, 2023 12:48:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a New Mexico hunter for over 3 decades, I fully and unequivocally support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

I oppose any limitations to bear and cougar hunting, especially those being espoused by anti-hunters.

Sincerely,
Kurt B. Nolte, MD
Albuquerque, NM

From: [Shantel Keune](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comment
Date: Friday, September 8, 2023 11:03:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Thank you for the opportunity to comment on this proposed change. I have lived in Timberon, New Mexico, which is within GMU-34, for nearly 40 years. During this time, the number of deer has drastically decreased while the number of cougar has exponentially increased. I have been face to face with a cougar during daylight hours three times in the last 10 years, and seen them from a distance at least a dozen times. My last sighting was actually Tuesday, September 5th, 2023. This is not normal! They should not be in populated areas and they should be moving around at night! They should also be leery of humans, which they are not!! Two days ago two of my neighbors at the end of my road had a lion on camera right up against their homes and the next day I had tracks INSIDE the stalls where I feed my horses. The week before Labor Day one of my customers had three lions on their deck and one was looking in the storm door. Again, this is not normal!!

In my opinion, the quota should be increased, not decreased. There is definitely an abundance of cougar and this is going to be detrimental to humans, soon, if not addressed correctly! I pray that the commission will take this information into serious consideration. You are welcome to contact me with any questions.

Again, thanks for this opportunity!!

Shantel Keune

From: [Ernest Pohl](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comment
Date: Wednesday, August 16, 2023 12:28:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Have you ever been attacked by a dog? Scary isn't it! Bears and mountain lions are carnivores and are not choosy as to who is going to be their meal. The more bears and cougars, the less amount of food sources available. Thus; we are potential targets. Our game and fish department does an excellent job if maintaining the numbers allowed in each unit and supply hunt tags as needed.

Example: feral cows on federal land are damaging the food supply. The owners of such cows have not removed them so game and fish moved in and is working on this oversight as you read. We are now seeing bears and cougars in residential properties and I for one, have seen video and photos of such sightings, including a bear in a hospital.

As an avid hunter I pay my taxes, purchase licenses and commit to my goal on my trips spending a lot of time and money doing so. It's not for the kill, I know I'm doing my part in maintaining the population.

Now, as before, we have groups that want to ban hunting. Their dog and pony show sold you on banning traps. Ethical hunters do not use traps. I don't see them banning vehicles that kill more game than most people know of.

I understand a dog was trapped once and died; where was the owner? That person should be their target not traps but they got away with it and won...

I see bear and mountain lions in the mountains most times when I'm in their terrain. I've had one try to rob my frig because I left it outside empty but smelling like the trout I had in there. Respect them when not hunting them. If you allow banning hunting these animals, what's next? Are we going to ban jets, trains, ships, buses, etc. because they'll kill in mass numbers? No, because they're needed to keep us moving. Hunting is needed to keep the population of critters in check. Vote no, please!

[Sent from Yahoo Mail for iPhone](#)

From: [Claire Heywood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comment
Date: Thursday, July 27, 2023 2:51:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game Commission

I do not support any hunting of animals that are not eaten. Trophy hunting of any animal, and of bears and cougars in particular, is gratuitous killing and should not be permitted. If population control is necessary, it should be conducted by state employees for a specific, biologically necessary purpose.

Sincerely,

Claire Heywood
Albuquerque, NM

From: [Glenn Griffin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public comments on Bear-Cougar
Date: Sunday, September 3, 2023 3:35:11 PM
Attachments: [Bear cougar quotas public comment.docx](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear DGF Commissioners,

Please include the attached public comments on Bear-Cougar-Rules into your consideration. I am for decreasing limits.

Thank you from Silver City, NM.

Glenn Griffin

From: [Michael Tobias](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Public input on the issuance of permits to kill bears and big cats
Date: Saturday, September 23, 2023 12:19:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To New Mexico Game & Fish:

I am an ecologist who has lived with and studied bears and big cats throughout the world for over 50 years. Both taxa are in severe decline everywhere they struggle to survive.

Hunting is an insult to the alleged intelligence of the 21st century. For taxpayer dollars to go towards salaries of government employees who feel empowered to determine the life and death of other mammals is an outrage. As a family descendent of the Holocaust, your debate about numbers of licenses is equivalent in my mind and heart to discussing a quota on how many Jews, Catholics and intellectual dissidents can be slaughtered this year.

Hunting must be banned in New Mexico. If you seriously believe that the hunter constituency and their irrelevant fees for killing are meaningful, then you have all utterly lost your minds and your souls and represent a disgrace to this and future generations.

Michael Charles Tobias, Ph.D.
Santa Fe

From: [Elena Tillman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Quotas and trophy hunting
Date: Thursday, August 24, 2023 11:54:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Dept of Game and Fish,

I OPPOSE the bear and cougar quotas and long trophy hunting seasons. I am respectfully requesting that that kill quotas be significantly reduced to protect our valuable wildlife.

Firstly, states have a duty to manage the trust for the benefit of all the beneficiaries. At a minimum, that includes all NM residents, including the majority of the public that doesn't hunt bears or cougars, about 99% of the population.

Secondly, as trustees of the wildlife trust, the Game Commission and NMDGF has a duty to make decisions based on solid science. In this case, the data used by NMDGF to support the new rule has been widely criticized. Whether the science is adequate or not, the prudent thing for the GC to do as trustee is to hold off making a decision until more information is available. Making a decision based on questionable science is a violation as well.

Please consider the majority (non-consumptive stakeholders) in this decision-making.

Thank you,

Elena Tillman and family

--

Best,
Elena Tillman

From: [ALEX LESTER](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Quotas
Date: Friday, July 14, 2023 1:10:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reconsider your quotas on cougars and bears. It's not easy to number these animals as they are elusive, and shy. Reducing their numbers for sport seems ill-advised.

My thanks.

Alex Lester

From: [Karen L. Kahn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Quotas
Date: Sunday, July 16, 2023 8:48:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I urge you to reconsider or postpone your propose, lifting the quotas for both bears and cougars. The heat of this summer, and the prior kill involving bears, and cougars, I believe has reduce the population below what you are considering as available. In addition, the kind of hunting that people want to do, targets then wrong portion of the bear and cougar populations. There does not seem to be any need to be increasing quotas at this time when we are suffering from so many challenges to our animal populations.

Karen Kahn

Sent from my iPhone

This e-mail may be a confidential attorney-client communication. If you received it in error, please delete it without forwarding it to others and notify the sender of the error.

From: [dstark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] REGARDING THE HUNTING OF BEARS AND COUGARS
Date: Friday, July 14, 2023 7:18:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern;

Please listen to the voices of countless New Mexicans regarding raising the kill quota for both bears and cougars. We actually could be better stewards of the land and wildlife if we payed closer attention to the health of the environment and the wild animals that remain.

The hunting proposals that are up for review lack scientific rigour. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates.

Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Sincerely,

Deborah Stark
Tesuque

stark
agbartholomew@icloud.com

From: [Shelby Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] REINSTATE BEAR
Date: Tuesday, August 15, 2023 4:43:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello, i am sending this email in regards to bear hunting in units 34 and 36. We were looking forward to purchasing our bear tags for these units. Why have they been shut down? We would like to know if they can be reinstated or when we can purchase our tags?

[Sent from Yahoo Mail for iPhone](#)

From: [N.S](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] RE: Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 5:00:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commission Members

Regarding the rule being proposed by NM Game and Fish Biologists, I urge you to seriously consider their recommendations to effective game management and not emotionally charged special interest groups that are not founded on data collection and wildlife science best practices.

Too many times, special interest groups that are not New Mexico citizens interfere with what is best for the state's wildlife and hunting heritage. New Mexico is a state with deep rooted traditional values, hunting is one of them.

It is bad enough that the effective method of small predator control was compromised through the ban of trapping on public lands. Please do not allow the current methods for bear and cougar hunting to share this fate through inconsistent and emotionally charged preferences.

Sincerely,

Nathan Smith
Farmington, New Mexico

Get [Outlook for Android](#)

From: [Shawn Oleson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] RE: Response to Proposed Changes to Bear and Cougar Rule
Date: Thursday, August 3, 2023 9:15:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I respectfully disagree with the proposal to increase hunting of cougars and bears in New Mexico, especially since it is based on claims made without any science-based evidence. While it may seem like a solution to prevent human-wildlife conflicts, hunting these animals can actually do more harm than good. Research has shown that indiscriminate hunting can disrupt the balance of the ecosystem and lead to unintended consequences.

Furthermore, cougars and bears play a critical role in maintaining healthy ecosystems. They help control populations of prey species and their presence can even benefit other wildlife by creating habitat and providing food sources. Removing these animals can have negative impacts on the entire ecosystem.

Instead of resorting to hunting, we should focus on implementing non-lethal methods to prevent conflicts between humans and wildlife. This can include better education for the public on how to safely coexist with wildlife, implementing bear-proof garbage cans, and using hazing techniques to deter animals from approaching human settlements.

In addition, we should also consider protecting and preserving habitat for these animals to thrive in. This can include creating wildlife corridors and increasing protected areas for them to live in. By doing so, we can ensure that these magnificent creatures can continue to exist in our natural world for generations to come.

Sincerely,

Shawn Oleson

From: [Linda Kastner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Raising Kill Quotas
Date: Wednesday, July 19, 2023 6:08:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory. I wish we did not have a NM Dept of Game and fish but rather a Dept of Wildlife. That considered science and ecosystems rather than the money earned from hunting! Please do not raise the hunting quotas for cougar and bears.
Sincerely,
Linda Kastner

From: dianabegood@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Raising Kill Quotas
Date: Monday, August 21, 2023 5:44:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I Oppose Raising Kill Quotas for Bears and Cougars!
Please vote Against this.

Thank You,
Diana Grimaldo 505-554-4533

Sent from my iPhone

From: [Tyler Dale](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Tuesday, August 22, 2023 7:04:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Balancing the intricacies of wildlife management requires a nuanced approach. In places like New Mexico, the harmony between hunters, game species, and the environment forms a delicate yet resilient ecosystem. Recognizing the historical efforts of hunters in conservation is essential to make informed decisions about the future. Cougar and bear hunting must remain in place.

Sincerely,
Tyler Dale

From: [luca stallone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Monday, August 21, 2023 3:03:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
luca stallone

From: [Robert Hibbitts](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 11:43:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Robert Hibbitts

From: [Christine Koeppen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 11:17:07 AM

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Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Christine Koeppen

From: [Bryce Von Aesch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 11:11:08 AM

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Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Bryce Von Aesch

From: [Colton Richards](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 10:35:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Colton Richards

From: [Shaun Cochran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 8:42:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Shaun Cochran

From: [Philip Bischof](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 7:08:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Philip Bischof

From: [Jane Webster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Ranchers, Wildlife, and the Role of Hound Hunting
Date: Sunday, August 20, 2023 8:49:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

There is NO SCIENCE to support the hunting of predators on the landscape. Predators are one of three types of keystone species that provide stability to the environment-that is SCIENCE. The provision of hunting opportunity of bears and mountain lions is purely for 'sport' and no other reason. Do we really need to be encouraging people to enjoy pastimes that are little more than the terrorizing wild animals for bragging rights. There is no fair chase aspect to bear and lion hunting. Even when hunters claim to eat the meat, it is not their priority. As an apex predator, these animals are not consumed in the wild and as hunters claiming to be part of 'the wild' consuming only prey would be the logical end of being a human hunter. It is time for predator trophy hunting to be identified for what it is-a sport. A blood thirsty sport, with no basis in science. Over and over and over, research shows that deer populations are not saved by removing lions. (Hurley, Elbroch, Pierce, Hebblewhite) Lions, bears and ungulates have coevolved for millenia. Human degradation of habitat and stochastic events have had the greatest impacts on ungulate survival.

Sincerely,
Jane Webster

From: [Mark Mattaini](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rationale for supporting state proposal
Date: Wednesday, October 25, 2023 7:12:38 AM

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An analysis from the *Wildlife Society Technical Review states*:

“State management programs for carnivores enable wildlife managers to pursue a variety of objectives in the public interest, including conservation, hunting opportunity, human safety, reducing predation on wild ungulates, and mitigating damage to private property, including livestock. Moreover, big game hunting opportunities generate revenue from the sale of hunting licenses and taxes on hunting equipment, which help finance law enforcement, habitat improvements, monitoring, and research. Together, public involvement, associated revenue, and professional management are key components of a process known as The North American Model of Wildlife Conservation” (Organ et al. 2012).

All of these factors are important in wildlife management efforts provided by the NMDGF. To examine that work, I met with Nickolas Forman, the [Carnivore and Small Mammal Program Manager for the New Mexico Department of Game and Fish](#) on October 11, 2023, to discuss questions raised by some of our members related to the state management of cougars. State management in different regions of the country often vary, with goals ranging from reduction, stabilization, or increase of independent cougars over time. Mr. Forman clarified that the established goal of the New Mexico state game commission is maintaining stable healthy populations of game statewide; this is therefore also the stated goal of the NMDGF staff.

A central factor contributing to determinations of numbers of tags for each game unit is the availability of adequate cougar habitat. Statewide, there are approximately 2 cougars per 100 km², but this is significantly variable depending on geographic elements and human populations. Population estimates are localized primarily based on the harvest matrices collected annually. Appropriate harvest rates may increase or decrease over time, given changes in harvests and characteristics of land and populations within regions and game units. The state also considers all of the considerations noted in the Organ quotation above, including shifts that local people may indicate as desirable, by reviews of harvest and other data across multiple years, changing human and geographic changes, issues of excessive predation, or lack of opportunities for involvement for residents and visitors. (In the case of cougars, there are nearly always available tags, so predation can often be handled by those affected, ranchers for example.)

GPS tracking collars, trail cameras, and advanced Spatial Mark-Resight models contribute to the available data used to determine harvest limits in ways consistent with current research. Additional critical data about populations within, across, and among game units including age, sex, and elements of health and parturition for harvested cougars are also provided by the conservation officers and other NMDGF staff. The NMDGF has recently initiated additional statistical analyses identifying more advanced bayesian inferences for constructing the best models for understanding data, adjusted for time. All of these data sources inform and support the new Integrated Population Model recently adopted by the NMDGF, potentially allowing data integration across up to 20 years, and will also be helpful in clarifying the impact

of climate change over time. ^[1] More research and collaborations with university programs would of course be useful, but the combination of methods and analyses currently used appears to be consistent with current science and provides considerable high quality information and breadth useful for game management.

Over the past five years, given the state's estimated total population of 3494 independent cougars, the number of tags available has averaged 620; the number harvested has averaged 338 (10% per annum of a population of 3494). The average annual number of female tags available has been 174; the average actual female harvest has been 88 (26% of the harvest but only 3% of the indicated 3494 total state population). Given these numbers, current harvests and the minor changes prop do not seem excessive.

References

Organ, J. F., V. Geist, S. P. Mahoney, S. Williams, P. R. Krausman, G. R. Batcheller, T. A. Decker, R. Carmichael, P. Nanjappa, R. Regan, et al. 2012. The North American Model of Wildlife Conservation. The Wildlife Society Technical Review 12-04. The Wildlife Society, Bethesda, Maryland, USA.

NMDGF, 2023: Bear and Cougar Rule – Proposed Changes Summary.

https://www.wildlife.state.nm.us/download/commission/rule-development/BEAR-AND-COUGAR-RULE-PROPOSED-CHANGES-SUMMARY_2nEd_08032023.pdf

NMDGF: Research Summary 2018-2021 Estimating Cougar Density and Population Size in New Mexico using Spatial Mark-Resight Models. <https://www.wildlife.state.nm.us/download/publications/wildlife/Cougar-SMR-Research-Summary-2018-2021.pdf>

Considerable other data and information are available through the NMDGF website.

Prepared by Dr. Mark Mattaini
Northwest Regional Representative
New Mexico Backcountry Hunters and Anglers

^[1] In an example provided by Mr. Forman indicating where collecting data over time can be important, many have worried that recent severe forest fires would dramatically reduce the presence of wildlife in those regions. Over a period of just one or two years however, many types of wildlife have returned due to the extremely rich growth that

is emerging in those areas.

Mark Mattaini, DSW
(mattaini@uic.edu)



From: [Johnnye Lewis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re change in Bear/Cougar hunt limits
Date: Sunday, July 30, 2023 10:14:49 AM

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Reading the proposed rule, I am not seeing any justification for the proposed changes that will expand ranges, increase allowable hunting of females, and open hunting dates. As all three of these changes would likely increase the numbers of each species lost, I think they need to be justified before any rule-making occurs, with allowable time for the public to assess those justifications.

As climate change and increased heat stress the ecosystems throughout the state, I cannot support human efforts to reduce any population and further disrupt the balance without clear and evidence-based justification for such a proposal.

I do applaud the use of more evidence-based approaches in deriving the limits by expanding the efforts to estimate populations. But if more accurate estimates of population are being obtained, it is even more puzzling why the proposed changes are not justified by clarifying the need. Without that justification this appears to be a process more heavily slanted to short-term hunter needs than to long-term species protection. Such an approach ultimately hurts goals of all in the long-term.

*Johnnye Lewis, Ph.D., Professor Emerita
Director, UNM METALS Superfund Research Center
Co-Director
Community Environmental Health Program - UNM HSC COP NBCS ECHO
Center for Native EH Equity*

From: [Nina Eydelman](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Lisa Jennings](#); [Mary Katherine Ray](#); [Wendy Keefover \(she/her\)](#)
Subject: [EXTERNAL] Re: OPPOSE black bear rule
Date: Tuesday, August 22, 2023 4:39:52 PM
Attachments: [image002.png](#)
[image003.png](#)
[image005.png](#)
[HSUSetalNM-BB-comments-22Aug23.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

We just noticed that the email below did not have the full comment attached. Please find it attached now.

Thank you so much for your consideration,

Nina Eydelman
Chief Program & Policy Officer – Equine & Wildlife
Animal Protection New Mexico: apnm.org
Animal Protection Voters: apvnm.org
(505) 934-3911



From: Wendy Keefover (she/her) <wkeefover@humanesociety.org>
Date: Tuesday, August 22, 2023 at 2:59 PM
To: DGF-Bear-Cougar-Rules@state.nm.us <DGF-Bear-Cougar-Rules@state.nm.us>
Cc: [Lisa Jennings](mailto:lisa@apnm.org) <lisa@apnm.org>, [Nina Eydelman](mailto:nina@apnm.org) <nina@apnm.org>, Mary Katherine Ray <mkrscrim@gmail.com>
Subject: OPPOSE black bear rule

To Whom It May Concern:

On behalf of the Humane Society of the United States, Animal Protection New Mexico, the Rio Grande Chapter of the Sierra Club, and our members and supporters in New Mexico, we thank you for this opportunity to comment on New Mexico Department of Game and Fish's four-year, proposed rule for black bears. Given the immense uncertainties New Mexico black bears face, we request that NMDGF reduce their proposed bear-kill quotas by at least 50%. We provide a summary overview of our comments and full, cited comments follow.

Summary:

- A. New Mexico's black bear population density and abundance determinations made by department of Game and Fish personnel have been wholly insufficient, are undiscoverable and therefore must be assumed to be scientifically indefensible. Since the public has not been provided with tangible

reasons to trust the department's conclusions, the Game Commission must lower statewide black bear quotas. The NMDGF has redacted (blacked out) population data from our public information requests, making a study of their population calculations (peer review) impossible. The process involving NMDGF's proposal to raise the black bear quotas has been unnecessarily secretive, and the public has been kept in the dark. Instead, NMDGF initially developed a document totaling 1.5 pages that encompassed both its proposed black bear (*Ursus americanus*) and cougar (*Puma concolor*) rule changes and then suddenly updated that document with a few more pages in early August. NMDGF will accept comments on its proposed rules until an unknown date in September, at which time it will prepare final draft rules for both bears and cougars that will be posted to its website. It is uncertain if the public will have an opportunity to review and comment on these final draft rules before the Game Commission makes its decision in October. The public has little information about the studies NMDGF relies upon to make population determinations, and we have seen no population management objectives (other than implicit hunter satisfaction and future hunting opportunities). In other words, the process by which these rules were drafted and the public engaged, is a failed course of action.

NMDGF's bear-population determinations are based upon an unscientific and crumbling foundation because New Mexico's bear studies are woefully outdated. Those old studies were conducted in New Mexico's best bear habitats. Then NMDGF took those high-density numbers and mysteriously generalized them statewide—artificially inflating estimated population figures that likely have no basis in reality.

NMDGF has not embarked on year-to-year population studies so it is not possible to know how bear populations are trending and thus whether current hunting is sustainable, much less whether increasing hunting quotas will be. NMDGF's claims, that New Mexico bear management is sustainable, are not backed up by current empirical data.

NMDGF has not factored in climate instability into its bear hunting proposals. It has not considered the 20-year *megadrought*—a drought not seen since 800 A.D.—and the historic wildfires which killed bears and destroyed their habitats, including last year's wildfires (the largest in New Mexico's recorded history), into its quota-setting process. Because New Mexico's bear population suffers from low genetic diversity, because those populations are poorly connected to others and because the climate crisis will only worsen, New Mexico's bears face a bleak future that will not be able to withstand over-hunting.

When an activity potentially threatens the environment, the *precautionary principle* warns that the proponent of that activity assumes the burden of proof and must act with restraint. NMDGF has not met this burden but rather has thrown caution to the wind with bear quotas that are likely to damage New Mexico's black bear populations. **For those reasons, the Game Commission must lower statewide black bear quotas to prevent inbreeding and the loss of bear populations that are uniquely adapted to New Mexico's arid habitats.**

B. NMDGF proposes not to count all sources of bear mortality as part of its quotas, including disease, predator-control kills, human-bear conflict kills, road-killed bears and the significant amount of annual bear poaching. Black bears are slow to reproduce and can only withstand **between 4% and 10% total mortality**, and failing to include total mortality amounts to flawed wildlife management. For all of these reasons, **the Game Commission should not only reject any increase in hunting quotas but also should call for quota reductions statewide.**

C. Hounding bears with packs of radio-collared hounds is not fair chase hunting and using archery equipment is cruel and results in uncounted wounding losses. Hounding harms non-target species, including deer and domestic livestock and results in deaths and injuries to *federally protected Mexican wolves*, bear cubs, and results in deadly fights between bears and hounds. It causes both bears and hounds to die from heat exhaustion. Using archery equipment to hunt bears results in prolonged deaths

of bears and wounding losses that are never counted in bear quotas. For these reasons, **the Game Commission must abolish hound hunting of bears and the use of archery equipment to hunt bears.**

D. Researchers have found that black bear hunting does not resolve human-bear conflicts, and, may in fact, worsen them. Also, trophy hunting bears does not reduce attacks on humans—but keeping dogs on leashes in bear country does. NMDGF must engage Bear Wise or Bear Smart strategies to prevent future conflicts in both urban and rural areas—because human-bear conflicts are entirely preventable with planning.

E. New Mexico’s wildlife managers should develop a comprehensive management plan informed by the best available science. That management plan should clearly spell out goals and objectives so the public and decisionmakers alike are not kept in the dark. No such plan currently exists. The public is being kept in the dark about even the most basic aspects of the department’s bear management plans in New Mexico.

F. Family oriented black bears hold intrinsic, social and economic values, and provide incalculable benefits to their ecosystems. Highly intelligent, devoted black bear mothers spend up to two years raising their very few cubs they produce. Among other myriad benefits they provide, bears also spread more seed than birds. Furthermore, the public loves viewing and photographing bears. For these reasons, the Game Commission must conserve and protect black bears for future generations.

G. New Mexico law confirms that black bears must be conserved for all citizens. It is axiomatic that “agencies are created by statute, and limited to the power and authority expressly granted or necessarily implied by those statutes.” *Qwest Corp. v. New Mexico Pub. Reg. Comm’n*, 140 N.M. 440, 446 (N.M. 2006). Thus “the Legislature, not the administrative agency, declares the policy and establishes... standards to which the agency must conform.” *State ex rel. Taylor v. Johnson*, 125 N.M. 343, 349 (N.M. 1998). Here, the New Mexico Legislature created the Game Commission in order “to provide an adequate...system for the protection of the game and fish of New Mexico” and “to provide for their... protection, regulation, and conservation...” N.M.S.A. § 17-1-1. In promulgating rules and regulations pertaining to hunting, the Legislature expressly directed the Commission to give “due regard” to “the distribution, abundance...and breeding habits” of particular species. N.M.S.A. § 17-1-26. And, like all New Mexico agencies, the Game Commission may not establish rules that are “not supported by substantial evidence” or that are enacted “arbitrary or capriciously.” N.M.S.A. § 39-3-1.1(D). Taken together, the statutory scheme authorizing this rulemaking requires evidence-driven, scientific management that seeks to sustainably maintain wildlife populations.

H. Conclusion. Because so many uncertainties exist with NMDGF’s proposed black bear rule, we provide these comprehensive comments, including **all journal articles cited herein as part of the administrative record and are available here: https://drive.google.com/drive/folders/1u_FIDR1428yw5ZInlPf3GqeTeorOfDJ0?usp=sharing**. This is done with the hope that the final rule will be informed by sound science and developed with clear objectives and goals, including for reducing human-bear conflicts, ensuring that black bear populations in New Mexico are genetically fit for long-term adaption in the face of so many threats to their persistence, including loss of habitats and travel corridors, extreme droughts, and severe, wholly unprecedented wildfires.

The Game Commission must reject the proposed black bear quota increases as they have no basis in science and could lead to the loss of New Mexico’s uniquely adapted bear populations. The Game Commission must include in its final quotas all sources of mortality. Given the immense uncertainties

New Mexico black bears face, we request that NMDGF reduce their proposed bear-kill quotas by at least 50%.

To prevent the harm to non-target species including Mexican wolves, deer and domestic livestock the Game Commission must disallow the hounding of black bears. Hounding of bears is a controversial practice that is not fair-chase hunting, and has no place in New Mexico's hunting regulations. The Game Commission must also disallow archery equipment to hunt bears because it does not result in quick, clean kills but prolongs a cruel death that can result in dead bears not being counted toward quotas. Black bears are ecologically important to their ecosystems. They hold inherent values and are much beloved by the public. The NMDGF must create a comprehensive rule supported by scientific justification for management of black bears and begin to work on a credible, long-term black bear management plan that outlines goals and objectives, including conserving New Mexico's black bears for future generations. Additionally, we believe the public has the right to expect NMDGF to disseminate final draft rules, along with discoverable and detailed scientific justification for those rules using the best available science, rather than providing vague, indefensible, incomplete, and incoherent rules that shift throughout the comment process.

Thank you for considering our comments.

Sincerely yours,

Wendy Keefover

Senior Strategist, Native Carnivore Protection, Wildlife Department

wkeefover@humaneociety.org

She/Her

humaneociety.org



Fight for all animals. The Humane Society of the United States is the nation's most effective animal protection organization, fighting for all animals for more than 65 years. To support our work, please make a [monthly donation](#), give in [another way](#) or [volunteer](#).



From: [Arts Science](#)
To: [dave kraig](#)
Cc: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re: Opposing the Bear and Cougar rule
Date: Thursday, August 10, 2023 8:47:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Thanks Dave. Mine submitted Tuesday

On Thu, Aug 10, 2023 at 8:44 AM dave kraig <dharry686@gmail.com> wrote:

I am writing in opposition to the proposed "bear and cougar rule" invoking increased quotas and hunting seasons for bears and the year-round cougar-hunting season.

Not only is the proposed rule based on faulty science and analyses, it ignores the incredible stresses that prey animals are already under from fires, drought, habitat loss, and forage scarcity. It also ignores the collateral effect that killing adult cougars and bears has on their unprotected and unfed progeny. The rule would have a profoundly negative effect on cougar and bear populations and health.

The studies used to justify these hunting increases appear to have cherry picked data to support their case rather than rely upon balanced studies that accurately characterize the health of the target populations.

Please do not implement this new rule. Instead, reconsider and reanalyze appropriate data and make an honest assessment of the impacts of climate change, habitat loss, and other rapidly evolving factors and redraft a bear and cougar rule that genuinely protects these incredible animals and ensures their long-term viability.

Thank you for your consideration,

Dave Kraig

Pojoaque, NM

From: mikesauber@everyactioncustom.com on behalf of [Mike sauber](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re: bear and cougar quotas. Where is the science?
Date: Monday, August 14, 2023 1:46:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Game management is a science, and therefore, you cannot propose a new management strategy without doing the science first. The effects of climate change on habitat has and will continue to make life harder for bears, cougars and all species survival. While I hunted bear, with dogs when I was a kid, I no longer believe in the shooting of any predators for trophy purposes (we did eat the bear meat) with or without dogs. I consider it a gift to see these animals in the wild now and oppose any increase in quotas for them.

Sincerely,
Mike sauber
Silver City, NM 88061
mikesauber@gmail.com

From: [Elise VanArsdale](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re: helping cougar/bear populations
Date: Monday, September 4, 2023 1:14:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I belong to PATHWAYS :WILDLIFE CORRIDORS OF NEW MEXICO. Our mission is to seek connectivity for our AMAZING wildlife focusing on Placitas and the Sandias. However, every opportunity must be taken to ensure the safety and well being in our state of our cougar and bear populations as they are diminishing. Trophy hunting on private lands should be illegal, large spaces need to be protected for these incredible predators, habitat monitored to keep it healthy and thriving (albeit difficult with climate changes). We need to acknowledge the importance of other species --their purposes--as we move forward.
Elise Van Arsdale

From: abigney@everyactioncustom.com on behalf of [Alyson Bigney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re: quotas on bear and cougar
Date: Monday, August 14, 2023 11:51:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I do not support extending quotas of hunting seasons on bears or cougars in New Mexico. These are not animals hunted for sustenance and they have important roles in the ecosystem, such as helping to keep herds of prey animals healthy and populations in check. Therefore I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Alyson Bigney
Albuquerque, NM 87110
abigney@comcast.net

From: [Andres Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re:
Date: Wednesday, August 16, 2023 5:00:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

On Wed, Aug 16, 2023, 5:41 AM Andres Montoya <upcloseoutdoorsllc@gmail.com> wrote:
| We completely appose the new cougar and bear rule. Please do not change the rule!

From: [George Lopez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Re:
Date: Wednesday, August 2, 2023 6:35:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I don't agree with your mandate on killing defenseless bears. The game and fish doesn't own the bears and has no right to kill the bears, let nature take it's course. It's unethical.

On Wed, Aug 2, 2023, 6:32 PM George Lopez <glope1941@gmail.com> wrote:

From: rlard@tularosa.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reasonable regulations
Date: Monday, August 21, 2023 1:15:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As commissioners it is your responsibility to enact reasonable regulations to control the predatory animals including Bear and Cougar. These two species have probably the most impact on our deer and elk populations as well as presenting the most danger to our human population.

Please enact reasonable and sensible regulations to control the population of predators.

Respectfully

Ronald Lard

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Tuesday, August 22, 2023 1:09:10 PM

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Dear Commissioners,

In the constantly shifting landscape of wildlife management, one thing remains constant: the importance of informed, science-based decisions. This ensures that traditions are respected, ecosystems are preserved, and future challenges are anticipated. The proposed adjustments to the bear and cougar rule, rooted in both science and historical context, embody this approach.

Sincerely,
John C

From: [Nick Elsbree](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Monday, August 21, 2023 9:34:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Nick Elsbree

From: [Mark Pratt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Monday, August 21, 2023 7:36:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Mark Pratt

From: [Troy Hoffman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Monday, August 21, 2023 1:04:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Troy Hoffman

From: [Jeff Harwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Sunday, August 20, 2023 9:12:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Jeff Harwood

From: [William Lehmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Sunday, August 20, 2023 5:36:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
William Lehmann

From: [Evan Yunker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Sunday, August 20, 2023 11:25:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the constantly shifting landscape of wildlife management, one thing remains constant: the importance of informed, science-based decisions. This ensures that traditions are respected, ecosystems are preserved, and future challenges are anticipated. The proposed adjustments to the bear and cougar rule, rooted in both science and historical context, embody this approach.

Sincerely,
Evan Yunker

From: [Louden Drake](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Sunday, August 20, 2023 6:54:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Louden Drake

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Department Achievements in Game Management
Date: Thursday, September 7, 2023 5:38:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Anthony Mazotti

From: [Michael Strong](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Wednesday, August 23, 2023 9:08:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Michael Strong

From: [Chris Strole](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 20, 2023 7:41:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Chris Strole

From: [Stuart Mobbs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 20, 2023 7:00:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Stuart Mobbs

From: [Benjamin Schraeder](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Tuesday, August 22, 2023 10:04:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Benjamin Schraeder

From: [Dave Bushey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Tuesday, August 22, 2023 9:51:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Dave Bushey

From: [Thad Fuller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Monday, August 21, 2023 5:43:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Thad Fuller

From: [Tyler Kiess](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Monday, August 21, 2023 2:34:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Tyler Kiess

From: [Tony Mcneeley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 20, 2023 7:53:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Tony Mcneeley

From: [Jason Wisniewski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 20, 2023 12:36:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Jason Wisniewski

From: [James Burgess](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 20, 2023 11:46:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
James Burgess

From: [MD Rider](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 20, 2023 9:08:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
MD Rider

From: [Mark Zastrow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing Hunters as the True Conservationists
Date: Sunday, August 27, 2023 6:24:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Mark Zastrow

From: [Wayne Merhoff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 9:04:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Wayne Merhoff

From: [Ryan Kemp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 8:59:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Ryan Kemp

From: [Michael Schubert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 8:57:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Michael Schubert

From: [Justin Pritchard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 7:46:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Justin Pritchard

From: [Johnny Casarez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 7:12:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Johnny Casarez

From: [Coy Thrash](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 7:04:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Coy Thrash

From: [Caden Groves](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Saturday, August 19, 2023 9:10:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Caden Groves

From: [Deborah A Elliott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 8:24:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Deborah A Elliott

From: [Daniel Epperson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Sunday, August 20, 2023 8:17:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

As a California resident and hunter, I have watched as lion and bear populations have exploded, decimating many other wildlife populations. More mountains are depredated annually than were ever killed by hunters. More death not less is what unnecessarily restricting hunting and especially hound hunting. We are many people protest and complain about hunters but they do not pay for the consequences of unscientific opinion.

Sincerely,
Daniel Epperson

From: [JACK Moore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Heritage and Dedication of Hunters
Date: Tuesday, August 22, 2023 2:43:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
JACK Moore

From: [William Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Lawful Imperative of Predator Hunting
Date: Sunday, August 20, 2023 1:44:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
William Walker

From: [Werner Neubauer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Lawful Imperative of Predator Hunting
Date: Sunday, August 20, 2023 1:15:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Werner Neubauer

From: [Ken Swasey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Lawful Imperative of Predator Hunting
Date: Sunday, August 20, 2023 8:54:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Ken Swasey

From: [David Keener](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Lawful Imperative of Predator Hunting
Date: Sunday, August 20, 2023 12:10:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife management policy emphasizes a well-balanced approach. The state's commitment to ensuring an adequate game supply while conserving our natural habitats is commendable. Incorporating scientific strategies in predator management is not just a best practice, it's mandated by law. Let the bear and cougar hunts continue!

Sincerely,
David Keener

From: [Brant MacDuff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Lawful Imperative of Predator Hunting
Date: Sunday, August 20, 2023 2:56:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am a conservation historian and wildlife economist. Wildlife management is not a one-size-fits-all domain. It is an adaptive science. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs (as do all management programs.) Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions/ culture, ensures sustainable coexistence. Nobody wants predators gone, but they need to be managed just as all species being squeezed by human expansion.

Sincerely,
Brant MacDuff

From: [Nathan Peterson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 6:40:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Observing the repercussions of hound bans in places like California has been alarming. Predator populations must be managed responsibly for the health of the ecosystem. Let's learn from others' mistakes and maintain the balance here in New Mexico. Continue with cougar/bear hunting!

Sincerely,
Nathan Peterson

From: [Cody Brandes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 9:29:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Cody Brandes

From: [Ji Montgomery](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 9:18:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Ji Montgomery

From: [Westly Richardson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 9:13:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
Westly Richardson

From: [Matthew Mahony](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 9:02:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
Matthew Mahony

From: [Dave Vore](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 8:14:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Dave Vore

From: [Joe Haezebrouck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 7:27:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Joe Haezebrouck

From: [Fisher Neal](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Sunday, August 20, 2023 7:16:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Fisher Neal

From: [Joseph Lehman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Saturday, August 19, 2023 11:49:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a one-size-fits-all domain. New Mexico, with its unique terrains and ecosystems, needs policies that are tailored to its distinct needs. Drawing from the vast reservoir of knowledge and research available, and blending it with the state's storied hunting traditions, ensures sustainable coexistence. Let the hunts continue!

Sincerely,
Joseph Lehman

From: [Garth Jenson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Recognizing the Pioneers of Wildlife Management
Date: Tuesday, August 22, 2023 2:55:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Garth Jenson

From: [Saraswati Khalsa](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce Bear and Cougar hunting season and permits
Date: Monday, August 7, 2023 9:20:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I strongly oppose the currently proposed bear and cougar hunting permits and seasons. In fact, trophy hunting is in itself a heinous and cruel “hobby” and has no place in New Mexico, where we all depend on our natural environment, biological diversity and intact wilderness areas to survive.

Bears and cougars are an integral part of the ecosystem, keeping populations of ungulates under control and most importantly enriching our lives with their existence. They have as much right to live as any trophy hunter does.

All of wildlife is now under critical threat from extreme heat, wildfires and drought. Fish and game regulations should recognize that there is no safe level of hunting that will allow these beautiful beings to thrive in our state. Every species will now struggle to survive.

Your proposed regulations must be changed to assume that bears and cougars are critically endangered by climate change and protect them accordingly.

Sincerely,
Saraswati Khalsa, Espanola

From: [KEVIN BEAN](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: mkrscrim@gmail.com
Subject: [EXTERNAL] Reduce Bear/Cougar hunting quotas
Date: Friday, August 25, 2023 7:19:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am writing to request that you reduce the proposed hunting quotas for bears and cougars in light of the very challenging environmental conditions facing our state's wildlife after a summer of unprecedented heat and drought. Thank you for your consideration.

Sincerely,

Kevin Bean
Carnuel, NM

From: [Janice Convery](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce Hunt, Kill, & Adopt Fair Chase Rules
Date: Friday, July 14, 2023 1:24:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello NM Dept of Game & Fish,

I have a proposal which I hope you will consider – – rather than extending the hunting season and increasing hunting permits for bears and cougars, how about a moratorium completely of hunting bears and cougars this season, so that the populations can be properly assessed, and the effects of this blood sport can be evaluated.

Also, the idea of fair chase practices could stand a refresh – – I understand dogs are used to chase these already drought and heat-stressed animals to exhaustion and then the hunter, once they locate their dogs, has the exhausted animal in his snares. Is this really something worthwhile to engage in and promote?

I also understand that the killing of adult mature animals can leave a power void in the pack and thereby contribute to conflicts with human residential areas.

So, to clarify – – as a resident of Albuquerque, I am opposed to extending the hunting season for bears and cougars, I am opposed to increasing permits for such killing, and I am opposed to the use of artificial means (dogs, beacon locator collars) to track and eventually kill these wild animals.

Thank you.

Janice Convery
Albuquerque, NM 87102

From: [Jenny Sprague](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce Killing Quota if NM's Bears and Cougars
Date: Tuesday, July 18, 2023 7:09:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Game Commission,

I am deeply concerned for the well-being of our state's bears and cougars given the proposed raising of killing quotas for both. Please consider the following significant points, and take reasonable, compassionate action for these creatures who gravely need your protection:

- Given the uncertainty of habitat and population estimates of both bears and cougars, the **quotas for both should be reduced**, not raised. Kill quotas for both species have been unjustifiably high for many years.
- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
- Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both

reckless and cruel.

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM

Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Thank you for caring about wildlife and for your consideration with this very important issue concerning these creatures.

Sincerely,

Jennifer Sprague

From: [Ellen Taylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce Quotas and Hunting Season Length
Date: Sunday, August 6, 2023 1:00:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Given the long-standing drought in New Mexico's, the two record-breaking forest fires last year, and the hottest July on record, both people and animals are struggling, but humans, at least, don't have to face being further decimated by hunters with radio-collared hounds killing for trophies.

The basis for this year's inflation of bear and cougar populations to justify an increase in quotas and to establish longer hunting seasons for bears and a year-round cougar-hunting season is ludicrous. It is obvious to me that in the huge area affected by last year's fires, as well as the entire state of drought and heat-stricken New Mexico, bear and cougar populations cannot be thriving and increasing, and this needs to be factored into the Game and Fish Department's calculations. A science-based analysis must be undertaken and rules then based on that analysis. The Department must figure out how many bears and cougars there are, really, and how climate change will affect those numbers.

The climate is changing. We are losing trees and species and green chile crops and the Rio Grande, and animals are more endangered now than ever. I'd like to think that in a few generations, children will still be able to see a cougar or a bear in the wild, but it is increasingly unlikely. Instead, I believe that humans in the future (if there is a future for humans) will look at our actions and say, "How could people be allowed to hunt bears and cougars, and not even for food or because it was necessary to reduce populations, but purely for trophies - and it only cost the hunter \$43 per cougar and \$47 for a bear - and now there are no more bears and cougars?"

As Charles Fox said in his Albuquerque Journal piece of July 30, 2023, "New Mexico should not be managed as a pay-to-shoot game farm." Future generations, I fear, will be horrified by our embrace of recreational killing. I'd love to see it banned, but that's not very likely, so let us, at least, base the quotas on scientific evidence and not guesswork. The bear and cougar rule this year must reduce - not increase - the quotas and length of hunting seasons based on the evidence that is right in front of our eyes.

Thank you for this opportunity to comment.

--

Patricia Ellen Taylor
14 Alcalde Road
Santa Fe, NM 87508

505-466-6684 (home)

505-920-1295 (cell)

alcaldeellen@gmail.com

From: [Sharon Dogruel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce cougar hunting quotas
Date: Friday, July 21, 2023 3:46:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game % Fish Commission,

The recent news that the Department of Game & Fish is considering increasing the hunting limits for cougars (and bears) is really distressing - at best.

In fact, it is not supported by research and policies designed to protect and improve our natural wildlife environment.

Cougars help maintain a healthy balance in nature as they prey upon deer and elk that can rapidly overgraze fragile forest lands. Cougars do not multiply quickly and many cubs are lost to natural causes yearly.

Increasing hunting limits does not help control a cougar population - rather it targets helpless cubs and females when they are most vulnerable. Increasing the hunting limit also decreases the genetic pool for these incredible animals.

We owe a lot to future generations and there is absolutely no need to further destroy what special creatures we still have left in an environment that is under tremendous threat.

Please do not increase hunting limits on behalf of all young people who want a world rich with wildlife and beauty!

Sincerely, Sharon Dogruel

Santa Fe, NM 87506

From: [Natalie Paynter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce cougar hunting quotas
Date: Thursday, July 27, 2023 9:24:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

Please consider the guidance from top researchers at fish and game agencies is that all sources of human-caused mountain lion deaths should not exceed 12%-16% of the adult mountain lion population, not 17-24%.

- The agency should set quotas lower than that to account for lions killed by traffic or in response to depredations.
- Mountain lions are beloved animals, necessary for the wellbeing of New Mexico's wildlife and its wild lands.
- Excessive hunting can make conflict with livestock and human populations more likely.

Thank you for your time and consideration in creating sustainable relationships with our earth kin.

Sincerely,
Natalie Paynter

Natalie Paynter, LPCC
Pronouns: she/her/hers

CONFIDENTIALITY NOTICE: The information in this email, including any attachments, is confidential and intended only for the use of the individual or entity to whom it is addressed. It may contain confidential information which is legally protected by law from disclosure. You are notified that if you are not the intended recipient, then reading or disclosing this communication is prohibited. If you have received this email in error, please immediately notify me by "Reply" command and permanently delete the original and any copies or printouts thereof. Thank you.

From: wechsji@comcast.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce kill limits
Date: Sunday, October 22, 2023 1:18:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs and Madames,

I am one of the voices for the voiceless. I urge you to reduce kill limits on cougars and bears by 50%. All human caused deaths of these species should be included. Please do the right thing for and by these animals. In the longer run, this will be the right thing for us..

Respectfully,
Judith Wechsler
APS, Retired

From: [Israel Sushman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reduce quotas on bears and cougars, don't raise them.
Date: Monday, July 31, 2023 12:10:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a New Mexican voting resident, tax payer, and non-hunter, I am opposed to the proposed raising of quotas to kill more bears and cougars. Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures.

Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in each area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great

caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the public also show opposition to killing bears and cougars using these methods for 'trophies and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

Don't raise limits for bear and mountain lion hunting

Also see this article in the Sunday Santa Fe New Mexican for further facts and opinions with which I agree:

https://www.santafenewmexican.com/opinion/editorials/dont-raise-limits-for-bear-and-mountain-lion-hunting/article_40651e26-24d9-11ee-981f-b7fc5ff9a70e.html

Israel Sushman
32 Cerrado Loop
Santa Fe, NM
Isushman@isushman.com
505.780.8876 Office
310.497.3337 Mobile

From: [jeff.soule](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Regarding bear and cougar rules
Date: Wednesday, August 16, 2023 11:50:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Subject: Maintaining Equilibrium: Upholding the Importance of Consistent Bear and Cougar Regulations in New Mexico

To Whom It May Concern,

I am writing to express my strong support for maintaining the current rules and regulations concerning the management of bear and cougar populations in New Mexico. As stewards of our natural environment, it is essential that we strike a delicate balance between conservation efforts and public safety. The rules in place that govern these apex predators have demonstrated their effectiveness, and any alterations could potentially disrupt the equilibrium that has been established.

Bears and cougars are integral components of New Mexico's diverse ecosystems. They play critical roles in maintaining ecosystem health and biodiversity by controlling herbivore populations and influencing the structure of plant communities. Altering the current regulations could disrupt these roles, leading to unforeseen consequences such as overpopulation of prey species and habitat degradation.

Furthermore, consistent rules regarding the management of bear and cougar populations are essential for public safety. By keeping these regulations uniform, citizens can be better educated about how to coexist with these predators, thus reducing the potential for conflicts and promoting responsible outdoor behavior. This is especially important in a state like New Mexico, where outdoor recreational activities are a significant part of the culture and economy.

Maintaining the current regulations is also vital for research and data collection. These regulations have been developed based on a thorough understanding of the behavior, ecology, and population dynamics of bears and cougars. Any changes could disrupt ongoing research efforts and hinder the ability to accurately assess the impact of these predators on their ecosystems. Consistency is key for building a robust body of knowledge that guides informed decision-making.

In conclusion, I urge the New Mexico Department of Game and Fish to maintain the importance of consistent bear and cougar regulations. These rules have been carefully crafted to strike a balance between conservation and public safety, and any alterations could upset this equilibrium. By upholding the existing regulations, we can continue to protect the state's natural heritage and promote responsible interaction between humans and wildlife.

Thank you for your dedication to preserving New Mexico's unique and precious ecosystems.

Sincerely,

Jeffrey Soule

Sent from my iPhone

From: [Peggy Froelich](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Regarding the new rules
Date: Friday, August 25, 2023 7:23:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Game and Fish,

The proposed kill numbers for cougars and bears aren't scientifically supported. These animals' numbers are better off self-regulated. Do not allow overkill of these animals who are already at risk from extreme heat, drought, and habitat loss. Vote no to this proposal.

Thank you,
Peg Froelich, Jemez Springs

From: [mykel gillins](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Regards to the cougar and bear hunting bill
Date: Wednesday, August 16, 2023 5:44:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not move this bill though

From: [Don](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Regulations pertaining to Bear and Courgar
Date: Thursday, August 17, 2023 8:19:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am an avid outdoors man and I strongly support the department of Game and Fish to regulate the hunting of Bear and Cougar. Both species must be monitored on a yearly basis as to their numbers or they can become a problem for farmers and ranchers and their livestock. Cougars especially should be watched closely not only to the livestock but to Elk and Deer. Cougars can deplete populations of Mule deer in a very short time span by killing mature bucks every week. This is a fact and not an opinion. I will continue to support our Game and Fish officials and their guidance. Thank You

Don Duewall

6917 Sandalwood Pl NE

Albuquerque, NM 87111

From: [T.J.Haynie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reinstated bear august
Date: Tuesday, August 15, 2023 4:29:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I want the august bear season reinstated

Sent from my iPhone

From: [Edward Lachendro](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Monday, August 21, 2023 1:01:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Edward Lachendro

From: [Matthew Chilcoat](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 6:57:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Matthew Chilcoat

From: [Jesse Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 8:42:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Jesse Young

From: [Dwight Guynn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Thursday, August 24, 2023 12:47:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please keep the bear and cougar hunts. Follow the biology and don't cave to a liberal agenda like California has. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Dwight Guynn

From: [Lyndsey Knudtson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Monday, August 21, 2023 12:36:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Lyndsey Knudtson

From: [RON BROWN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 11:00:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
RON BROWN

From: [Jeff Bautista](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 10:14:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's rich biodiversity is a testament to the success of its wildlife management programs. The proposed changes in the bear and cougar rule indicate a dedication to maintain this balance. Recognizing the essential role played by hunters, anglers, trappers, and recreational shooters across the country, it's vital that decisions be based on the insights and data provided by New Mexico's dedicated department biologists.

Sincerely,
Jeff Bautista

From: [Justin Jaeger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 11:21:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Justin Jaeger

From: [matt lumley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 11:21:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
matt lumley

From: [Robert Pierpoint](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 9:39:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Robert Pierpoint

From: [Clinton Bline](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 7:51:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Clinton Bline

From: [Grant Riquier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Sunday, August 20, 2023 6:58:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts!

Sincerely,
Grant Riquier

From: [Dalton Richards](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reiterating the Legal Mandate for Predator Management
Date: Wednesday, September 20, 2023 11:18:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Dalton Richards

From: jenny@everyactioncustom.com on behalf of [Jenny Lapetina](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear & cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 4:52:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jenny Lapetina
Cerrillos, NM 87010
jenny@lapetina.net

From: colleenrd.64@everyactioncustom.com on behalf of [Colleen Denny](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar hunting we need to stop rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 7:08:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Colleen Denny
Tijeras, NM 87059
colleenrd.64@gmail.com

From: jroland@everyactioncustom.com on behalf of [Jelica Roland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 22, 2023 6:48:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jelica Roland
- State - 52420
jroland@email.t-com.hr

From: leiahays.nm@everyactioncustom.com on behalf of [Leia Hays](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Saturday, August 19, 2023 11:50:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leia Hays
Albuquerque, NM 87104
leiahays.nm@gmail.com

From: nancywnm@everyactioncustom.com on behalf of [Nancy Williamson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 8:02:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Nancy Williamson
Hanover, NM 88041
nancywnm@yahoo.com

From: yvette@everyactioncustom.com on behalf of [Yvette Tapp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 7:58:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Yvette Tapp
Santa Fe, NM 87506
yvette@mountainairfilms.com

From: sharonandkurtz@everyactioncustom.com on behalf of [Sharon Kurtz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 7:54:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sharon Kurtz
Albuquerque, NM 87122
sharonandkurtz@gmail.com

From: jamie_alyse02@everyactioncustom.com on behalf of [Jamie Peters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 7:51:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jamie Peters
Aztec, NM 87410
jamie_alyse02@yahoo.com

From: tdparsons@everyactioncustom.com on behalf of [Don Parsons](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 7:30:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Don Parsons
Las Vegas, NM 87701
tdparsons@msn.com

From: vclement00@everyactioncustom.com on behalf of [v c](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:50:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
v c
Albuquerque, NM 87106
vclement00@comcast.net

From: jerrybassalleck@everyactioncustom.com on behalf of [Jerry Sue Bassalleck](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:36:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety. The whole idea is preposterous!

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jerry Sue Bassalleck
Albuquerque, NM 87106
jerrybassalleck@hotmail.com

From: 1iengle@everyactioncustom.com on behalf of [I.Engle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:31:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
I. Engle
Tularosa, NM 88352
1iengle@gmail.com

From: v.burgelin@everyactioncustom.com on behalf of [Valerie Burgelin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:26:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Valerie Burgelin
Las Cruces, NM 88005
v.burgelin@gmail.com

From: peregrine@everyactioncustom.com on behalf of [Charlotte Cooke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:25:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Charlotte Cooke
Santa Fe, NM 87508
peregrine@kewa.com

From: kristin_vyhna1@everyactioncustom.com on behalf of [Kristin Vyhna1](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Saturday, August 19, 2023 1:38:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kristin Vyhna1
Albuquerque, NM 87122
kristin_vyhna1@hotmail.com

From: dancersandy@everyactioncustom.com on behalf of [Sandy Rasich](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:20:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sandy Rasich
Santa Fe, NM 87507
dancersandy@gmail.com

From: dogruel@everyactioncustom.com on behalf of [Sharon Dogruel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:13:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sharon Dogruel
Santa Fe, NM 87506
dogruel@earthlink.net

From: apache@everyactioncustom.com on behalf of [Joe Saenz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:09:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Joe Saenz
Arenas Valley, NM 88022
apache@wolfhorseoutfitters.com

From: dtwoshoes32@everyactioncustom.com on behalf of [Kirk Delaplaine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 6:00:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kirk Delaplaine
Santa Fe, NM 87508
dtwoshoes32@aol.com

From: rrose0817@everyactioncustom.com on behalf of [Rebecca Rose](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:56:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rebecca Rose
Las Cruces, NM 88011
rrose0817@yahoo.com

From: mgabrielle77@everyactioncustom.com on behalf of [Maria Gabrielle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:55:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Maria Gabrielle
Santa Fe, NM 87508
mgabrielle77@comcast.net

From: lesliedwilbur@everyactioncustom.com on behalf of [Leslie Wilbur](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:54:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leslie Wilbur
Las Cruces, NM 88005
lesliedwilbur@yahoo.com

From: hjpendragon@everyactioncustom.com on behalf of [Heather Knight](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:49:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Heather Knight
Rio Rancho, NM 87124
hjpendragon@hotmail.com

From: jnr200396@everyactioncustom.com on behalf of [Roger Southward](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:49:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Roger Southward
Placitas, NM 87043
jnr200396@yahoo.com

From: Ouilani@everyactioncustom.com on behalf of [B eth Coombs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:45:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
B eth Coombs
Bosque, NM 87006
Ouilani@yahoo.com

From: fmackiewic@everyactioncustom.com on behalf of [Frances Mackiewicz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Saturday, August 19, 2023 1:34:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Frances Mackiewicz
Beachwood, NJ 08722
fmackiewic@msn.com

From: jamiebe@everyactioncustom.com on behalf of [Jamie Silverman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:41:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jamie Silverman
Santa Fe, NM 87506
jamiebe@earthlink.net

From: mccarteram1@everyactioncustom.com on behalf of [Angel McCarter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:39:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Angel McCarter
Albuquerque, NM 87110
mccarteram1@aol.com

From: mgwright@everyactioncustom.com on behalf of [Maureen Wright](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:38:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Maureen Wright
Albuquerque, NM 87110
mgwright@comcast.net

From: joycecasey@everyactioncustom.com on behalf of [Joy Cadey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:25:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Joy Cadey
Santa Fe, NM 87501
joycecasey@gmail.com

From: orcinous@everyactioncustom.com on behalf of [David Whitley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:16:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
David Whitley
Albuquerque, NM 87192
orcinous@yahoo.com

From: josephbottone@everyactioncustom.com on behalf of [joseph bottone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:05:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

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The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
joseph bottone
Rowe, NM 87562
josephbottone@yahoo.com

From: ritalink9@everyactioncustom.com on behalf of [Rita Glasscock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:55:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

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The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rita Glasscock
Santa Fe, NM 87507
ritalink9@gmail.com

From: pjxcal@everyactioncustom.com on behalf of [Paul McDaniel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:47:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Paul McDaniel
Albuquerque, NM 87109
pjxcal@yahoo.com

From: 30fieldoflowers@everyactioncustom.com on behalf of [Merilynn Hidalgo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:45:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Merilynn Hidalgo
Albuquerque, NM 87114
30fieldoflowers@use.startmail.com

From: cynthia_mcnamara@everyactioncustom.com on behalf of [Cynthia McNamara](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:40:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Cynthia McNamara
Albuquerque, NM 87125
cynthia_mcnamara@yahoo.com

From: LSYoung@everyactioncustom.com on behalf of [Linda Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Saturday, August 19, 2023 12:45:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

New Mexico, my home, is a uniquely beautiful state and the variety of wildlife here is something to value, preserve and protect. I would assume that the New Mexico Dept. of Game and Fish has, as its reason for being, a certain responsibility to act as stewards of the environment. The proposed changes addressed below regarding hunting of cougars and bears in no way reflects any sense of stewardship. Rather it would seem to pander to a specific portion of the population that calls what they do "hunting," but which is, in reality, no more than blood sport. To chase an animal to exhaustion, tree it and then shoot it so its head or pelt can be hung on a wall may have been standard practice in the days of the Wild West but today reflects an inhumane, even cowardly behavior that one would hope we have evolved beyond but which, shamefully, is still tolerated--even promoted.

Cougars and bears are not over populating the state. They actually self regulate their numbers and their intrinsic value to the environment is not debatable. Every animal, humans included, has the right to water, food, shelter and space. Unfortunately we humans have abused that right by always placing ourselves above the natural world and the current climate disaster, fires, droughts, etc. can be attributed in very large part to our disconnect from that world. Every species is part of an environmental whole that exists to keep this planet in balance. Because of human activity too many species are struggling as their habitats shrink year after year. Bears and cougars are part of that struggle. Proposing to kill more of them, for little more than the sake of killing, is illogical, unconscionable and totally irresponsible. New Mexico Game and Fish should instead set itself up as an example for the rest of the country as a state that promotes protection of its wildlife and does everything possible to ensure peaceful, balanced co-habitation with all species. No bear, no cougar, no animal is expendable just to suit us.

I strongly oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.

2) Refraining from increasing the lengths of their hunting seasons.

3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Young
Albuquerque, NM 87110
LSYoung@comcast.net

From: millionfinches@everyactioncustom.com on behalf of [Deanna Draudt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:15:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Deanna Draudt
Santa Fe, NM 87594
millionfinches@outlook.com

From: marytcord@everyactioncustom.com on behalf of [Mary Cord](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:02:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mary Cord
Santa Fe, NM 87501
marytcord@gmail.com

From: marciakellam@everyactioncustom.com on behalf of [Marcia Kellam](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:58:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Marcia Kellam
Santa Fe, NM 87507
marciakellam@hotmail.com

From: cgentry439@everyactioncustom.com on behalf of [Carol E Gentry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:56:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carol E Gentry
Albuquerque, NM 87102
cgentry439@gmail.com

From: cspencer29@everyactioncustom.com on behalf of [Charlotte Spencer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:44:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Charlotte Spencer
Albuquerque, NM 87114
cspencer29@comcast.net

From: smagee@everyactioncustom.com on behalf of [Susan Magee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:43:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Susan Magee
Albuquerque, NM 87105
smagee@unm.edu

From: taosk9five@everyactioncustom.com on behalf of [L.L. Wilkinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:30:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
L.L. Wilkinson
Taos, NM 87571
taosk9five@gmail.com

From: vsinghdesimone@everyactioncustom.com on behalf of [Vijay Anastasia De Simone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:30:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Vijay Anastasia De Simone
Albuquerque, NM 87112
vsinghdesimone@gmail.com

From: abateand@everyactioncustom.com on behalf of [Andrew Abate](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:10:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Andrew Abate
Albuquerque, NM 87108
abateand@mail.com

From: zoe.viles@everyactioncustom.com on behalf of [zoe viles](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:10:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
zoe viles
Santa Fe, NM 87505
zoe.viles@gmail.com

From: cyberkedi@everyactioncustom.com on behalf of [Freya Harris](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Saturday, August 19, 2023 7:18:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Freya Harris
Atlanta, GA 30310
cyberkedi@hotmail.com

From: dantjack@everyactioncustom.com on behalf of [Jack Dant](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:03:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jack Dant
Santa Fe, NM 87501
dantjack@gmail.com

From: mbe3900@everyactioncustom.com on behalf of [Dennis Parker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:01:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

LET MOTHER NATURE SORT IT OUT!

Thank you.

Sincerely,
Dennis Parker
Pecos, NM 87552
mbe3900@aol.com

From: dsaylors@everyactioncustom.com on behalf of [David Saylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:59:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
David Saylor
Albuquerque, NM 87123
dsaylors@acm.org

From: LanaGreen742@everyactioncustom.com on behalf of [Lana Green](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:57:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lana Green
Taos, NM 87571
LanaGreen742@gmail.com

From: jocharmon@everyactioncustom.com on behalf of [Jo Harmon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:54:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jo Harmon
Rio Rancho, NM 87124
jocharmon@gmail.com

From: 007rKurth@everyactioncustom.com on behalf of [Robinson Kurth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:44:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Robinson Kurth
Santa Fe, NM 87508
007rKurth@gmail.com

From: cheyenne-bodie@everyactioncustom.com on behalf of [Harriett Clementson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:44:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Harriett Clementson
Placitas, NM 87043
cheyenne-bodie@live.com

From: jvbethel@everyactioncustom.com on behalf of [JoAnn Bethel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:43:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
JoAnn Bethel
Santa Fe, NM 87507
jvbethel@mac.com

From: Terri-Toney@everyactioncustom.com on behalf of [Terri Sheldon-Toney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:42:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Terri Sheldon-Toney
Albuquerque, NM 87104
Terri-Toney@comcast.net

From: woolley22002@everyactioncustom.com on behalf of [April Woolley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:38:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
April Woolley
Springer, NM 87747
woolley22002@yahoo.com

From: uphoriahb@everyactioncustom.com on behalf of [Uphoria Diaz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 11:21:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Uphoria Diaz
Albuquerque, NM 87112
uphoriahb@gmail.com

From: zopilotelwy@everyactioncustom.com on behalf of [Landon Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:32:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Landon Young
Santa Fe, NM 87501
zopilotelwy@gmail.com

From: offthe02@everyactioncustom.com on behalf of [Janis Chambers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:28:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Janis Chambers
Kirtland, NM 87417
offthe02@aol.com

From: sunmntsft@everyactioncustom.com on behalf of [PETER ROCHE](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:25:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
PETER ROCHE
Santa Fe, NM 87507
sunmntsft@aol.com

From: ralive9@everyactioncustom.com on behalf of [RAL West](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:20:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
RAL West
Taos, NM 87571
ralive9@gmail.com

From: millerlogan1995@everyactioncustom.com on behalf of [Logan Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:18:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

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The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Logan Miller
Jamestown, NM 87347
millerlogan1995@gmail.com

From: drlucy7@everyactioncustom.com on behalf of [Lucy Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:16:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

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The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lucy Smith
Santa Fe, NM 87507
drlucy7@mac.com

From: aragon64@everyactioncustom.com on behalf of [Maria Aragon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:01:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Maria Aragon
Alamogordo, NM 88310
aragon64@yahoo.com

From: pwilcox@everyactioncustom.com on behalf of [Phyllis Wilcox](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:00:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Please pay attention. I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Phyllis Wilcox
Albuquerque, NM 87106
pwilcox@unm.edu

From: evangelinasserrano36@everyactioncustom.com on behalf of [Evangelina Serrano](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:54:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Evangelina Serrano
Albuquerque, NM 87111
evangelinasserrano36@gmail.com

From: victoriabaldwin58@everyactioncustom.com on behalf of [Victoria Baldwin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:54:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Victoria Baldwin
Ruidoso, NM 88345
victoriabaldwin58@gmail.com

From: carribugthompson@everyactioncustom.com on behalf of [Carrie Thompson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 7:49:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carrie Thompson
Tres Piedras, NM 87577
carribugthompson@gmail.com

From: 5000wave@everyactioncustom.com on behalf of [L. Watchempino](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:52:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Sincerely,
L. Watchempino
Pueblo Of Acoma, NM 87034
5000wave@gmail.com

From: ed.ashmead0@everyactioncustom.com on behalf of [Edward Ashmead](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:51:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Edward Ashmead
Santa Fe, NM 87505
ed.ashmead0@gmail.com

From: dian1465@everyactioncustom.com on behalf of [Diana Zelnio](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:49:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Diana Zelnio
Albuquerque, NM 87105
dian1465@hotmail.com

From: antz72@everyactioncustom.com on behalf of [Michael Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:45:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Michael Miller
Santa Cruz, NM 87567
antz72@windstream.net

From: chacoabq@everyactioncustom.com on behalf of [Charles R. Shelly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:41:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I strongly oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy and likely flawed notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Charles R. Shelly
Albuquerque, NM 87108
chacoabq@aol.com

From: satarbet.02@everyactioncustom.com on behalf of [Shari Tarbet](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:39:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Shari Tarbet
Albuquerque, NM 87120
satarbet.02@gmail.com

From: peggynichols1@everyactioncustom.com on behalf of [Peggy Nichols](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:37:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Peggy Nichols
Albuquerque, NM 87114
peggynichols1@mac.com

From: dawngaitis@everyactioncustom.com on behalf of [Dawn Gaitis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:35:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dawn Gaitis
Silver City, NM 88061
dawngaitis@aol.com

From: mesawolflady@everyactioncustom.com on behalf of [Patricia Callaway](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:32:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Patricia Callaway
Rowe, NM 87562
mesawolflady@gmail.com

From: stellamaris222@everyactioncustom.com on behalf of [Reeve Love](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:30:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Reeve Love
Albuquerque, NM 87110
stellamaris222@yahoo.com

From: robhnm@everyactioncustom.com on behalf of [Robert Hays](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 4:36:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Robert Hays
Santa Fe, NM 87505
robhnm@comcast.net

From: crmaddy@everyactioncustom.com on behalf of [CR Maddy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:22:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
CR Maddy
Rio Rancho, NM 87144
crmaddy@hotmail.com

From: sandra.almand@everyactioncustom.com on behalf of [Sandra Almand](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:17:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sandra Almand
Albuquerque, NM 87107
sandra.almand@gmail.com

From: dbradb4@everyactioncustom.com on behalf of [DAVID BRADBURY](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:12:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
DAVID BRADBURY
Santa Fe, NM 87501
dbradb4@comcast.net

From: svanslooten@everyactioncustom.com on behalf of [Shirley Van Slooten](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:05:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Shirley Van Slooten
Santa Fe, NM 87501
svanslooten@aol.com

From: halli@everyactioncustom.com on behalf of [Halli Bourne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:05:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Halli Bourne
Rio Rancho, NM 87144
halli@hallibourne.com

From: slt1952@everyactioncustom.com on behalf of [Stephen Thomas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 1:03:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Stephen Thomas
Albuquerque, NM 87108
slt1952@aol.com

From: skyrulejrj@everyactioncustom.com on behalf of [Jessica Jakubanis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:51:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jessica Jakubanis
Albuquerque, NM 87123
skyrulejrj@yahoo.com

From: jsparkkuli@everyactioncustom.com on behalf of [Jon Spar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:41:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jon Spar
Albuquerque, NM 87106
jsparkkuli@yahoo.com.au

From: tntalbot56@everyactioncustom.com on behalf of [Thomas Talbot](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:35:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I am sending along the following petition as I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Thomas Talbot
Anthony, NM 88021
tntalbot56@gmail.com

From: dylan_shaw@everyactioncustom.com on behalf of [Dylan Shaw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:31:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dylan Shaw
Albuquerque, NM 87114
dylan_shaw@live.com

From: laurenperry22@everyactioncustom.com on behalf of [Lauren Perry-Rummel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 3:20:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lauren Perry-Rummel
Albuquerque, NM 87111
laurenperry22@gmail.com

From: rtriana@everyactioncustom.com on behalf of [Rosalia Triana](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:31:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rosalia Triana
Espanola, NM 87532
rtriana@windstream.net

From: roberttwells@everyactioncustom.com on behalf of [Robert Wells](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:19:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Robert Wells
Roswell, NM 88201
roberttwells@yahoo.com

From: nanking1224@everyactioncustom.com on behalf of [nancy king](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:19:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
nancy king
Santa Fe, NM 87501
nanking1224@earthlink.net

From: chemenchoa@everyactioncustom.com on behalf of [Chemen Ochoa](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:19:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Chemen Ochoa
Santa Fe, NM 87508
chemenchoa@msn.com

From: Slg@everyactioncustom.com on behalf of [Stephen I. Gilbert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:16:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Stephen I. Gilbert
Santa Fe, NM 87505
Slg@joshuaAssociates.net

From: goalienick33@everyactioncustom.com on behalf of [Nick Santangelo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:13:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Nick Santangelo
Rio Rancho, NM 87144
goalienick33@yahoo.com

From: artaylor@everyactioncustom.com on behalf of [Armena Taylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:04:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Armena Taylor
Las Cruces, NM 88011
artaylor@zianet.com

From: lasdosbks@everyactioncustom.com on behalf of [Myron Rightman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:04:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Myron Rightman
Santa Fe, NM 87506
lasdosbks@aol.com

From: alinegittleman@everyactioncustom.com on behalf of [Aline Gittleman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:01:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Aline Gittleman
Ranchos De Taos, NM 87557
alinegittleman@gmail.com

From: taosweaver@everyactioncustom.com on behalf of [carol weaver](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:58:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
carol weaver
Taos, NM 87571
taosweaver@msn.com

From: sueds60@everyactioncustom.com on behalf of [Susan Styer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 6:57:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Susan Styer
La Mesa, NM 88044
sueds60@gmail.com

From: joymartnm@everyactioncustom.com on behalf of [Martin Lumb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:57:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a resident of New Mexico I strongly oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Martin Lumb
Albuquerque, NM 87120
joymartnm@aol.com

From: Julianspalding1@everyactioncustom.com on behalf of [Julian Spalding](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:46:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Julian Spalding
Taos, NM 87571
Julianspalding1@mac.com

From: drpat@everyactioncustom.com on behalf of [Patrick Ramsey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:44:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Patrick Ramsey
Albuquerque, NM 87114
drpat@prodigy.net

From: krayski@everyactioncustom.com on behalf of [Peter Kray](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:42:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Peter Kray
Santa Fe, NM 87508
krayski@msn.com

From: sonjastahlhut@everyactioncustom.com on behalf of [Sonja Stahlhut](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:39:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sonja Stahlhut
Albuquerque, NM 87107
sonjastahlhut@yahoo.com

From: steve.rauworth@everyactioncustom.com on behalf of [Stephen Rauworth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:37:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Stephen Rauworth
Aztec, NM 87410
steve.rauworth@gmail.com

From: limorgan47@everyactioncustom.com on behalf of [Linda Morgan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:35:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Morgan
Los Lunas, NM 87031
limorgan47@gmail.com

From: violetflamemusic@everyactioncustom.com on behalf of [Phyllis Sanchez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:31:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Phyllis Sanchez
Corrales, NM 87048
violetflamemusic@earthlink.net

From: brf1948@everyactioncustom.com on behalf of [Bonnye Fry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:27:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Bonnye Fry
Alamogordo, NM 88310
brf1948@yahoo.com

From: jimae@everyactioncustom.com on behalf of [Ann Ellen Tuomey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:25:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Ann Ellen Tuomey
El Prado, NM 87529
jimae@taosnet.com

From: Seeingtheus@everyactioncustom.com on behalf of [Cheryl LaCounte](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 22, 2023 11:26:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Cheryl LaCounte
Ruidoso, NM 88345
Seeingtheus@aol.com

From: garybrooker@everyactioncustom.com on behalf of [Gary Brooker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 2:24:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Gary Brooker
Santa Fe, NM 87501
garybrooker@hotmail.com

From: mlwr46@everyactioncustom.com on behalf of [Marilyn Rose](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:24:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Marilyn Rose
Albuquerque, NM 87111
mlwr46@centurylink.net

From: cmermier@everyactioncustom.com on behalf of [Christine Mermier](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:24:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Christine Mermier
Albuquerque, NM 87108
cmermier@unm.edu

From: shelbyhallmark@everyactioncustom.com on behalf of [Shelby Hallmark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:24:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

There is no profound countervailing need for increased hunting of these creatures, many of whom are killed regularly due to their accidental incursion into WUI areas. Until NM Game and Fish has a solid basis for determining that the population of these animals is too high, there is no basis for this proposed rule.

Thank you.

Sincerely,
Shelby Hallmark
Silver City, NM 88061
shelbyhallmark@yahoo.com

From: michaelr@everyactioncustom.com on behalf of [Michael Robinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:23:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Michael Robinson
Silver City, NM 88062
michaelr@biologicaldiversity.org

From: gcspeer@everyactioncustom.com on behalf of [Greg Speer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:22:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

I am disgusted and outraged that this proposal is even on the table. It should be discarded immediately!

Thank you.

Sincerely,
Greg Speer
Placitas, NM 87043
gcspeer@comcast.net

From: pcmork@everyactioncustom.com on behalf of [PC Bush](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:19:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
PC Bush
Albuquerque, NM 87123
pcmork@yahoo.com

From: jackielcoombes@everyactioncustom.com on behalf of [Jackie Coombes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:16:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jackie Coombes
Rio Rancho, NM 87124
jackielcoombes@hotmail.com

From: agbartholomew@everyactioncustom.com on behalf of [Debra Stark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:14:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Debra Stark
Tesuque, NM 87574
agbartholomew@icloud.com

From: durgaomwolf@everyactioncustom.com on behalf of [S.Kay](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:13:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

This is their home, too.
We have invaded THEIR SPACE.
Humans need to share & be respectful.
I am so sick & tired of humans focusing on the 7 deadly sins constantly.

Maybe all sites should be turned onto the faces of humans & see what it feels like when you & your family are murdered.

SGMKJ

Sincerely,
S. Kay
Tijeras, NM 87059
durgaomwolf@gmail.com

From: hopesfuturesbydesign@everyactioncustom.com on behalf of [Hope Bakker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:11:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Hope Bakker
Santa Fe, NM 87505
hopesfuturesbydesign@gmail.com

From: wendyjim001@everyactioncustom.com on behalf of [Wendy Forster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 18, 2023 12:45:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Wendy Forster
None NE11 0ET
wendyjim001@gmail.com

From: wilbur@everyactioncustom.com on behalf of [William Hudspeth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:06:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
William Hudspeth
Albuquerque, NM 87114
wilbur@unmalumni.com

From: ekimdoolf@everyactioncustom.com on behalf of [Michael Flood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:00:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

I have seen two cougars over my 15 years in New Mexico. To see one is a reminder of how special an animal it is. Black bears are seen more regularly, as they raid poorly closed dumpsters. But they too are special animals and should NOT be hunted at all, in my humble opinion. There are more than enough deer and elk around to satisfy any hunter.

Thank you.

Sincerely,
Michael Flood
Angel Fire, NM 87710
ekimdoolf@gmail.com

From: dperrero13@everyactioncustom.com on behalf of [Deborah Perrero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:59:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Deborah Perrero
Mountainair, NM 87036
dperrero13@yahoo.com

From: dperrero13@everyactioncustom.com on behalf of [Deborah Perrero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:58:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Deborah Perrero
Mountainair, NM 87036
dperrero13@yahoo.com

From: duffee@everyactioncustom.com on behalf of [Julia Knight](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:57:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Julia Knight
Tijeras, NM 87059
duffee@outlook.com

From: ksw2kb@everyactioncustom.com on behalf of [Kelly Wells](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:56:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kelly Wells
Albuquerque, NM 87123
ksw2kb@outlook.com

From: carolgtempleton@everyactioncustom.com on behalf of [Carol Templeton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:53:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carol Templeton
Albuquerque, NM 87114
carolgtempleton@gmail.com

From: delschwartz@everyactioncustom.com on behalf of [Daniel Schwartz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:53:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Daniel Schwartz
Albuquerque, NM 87106
delschwartz@comcast.net

From: bo.cinesthetic.30.yx@everyactioncustom.com on behalf of [Bo Bergstrom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:50:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Bo Bergstrom
Silver City, NM 88061
bo.cinesthetic.30.yx@gmail.com

From: Louisea61@everyactioncustom.com on behalf of [Amy Louise](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:49:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Amy Louise
Albuquerque, NM 87120
Louisea61@yahoo.com

From: kristin_vyhna1@everyactioncustom.com on behalf of [Kristin Vyhna1](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 10:00:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a New Mexican, I oppose the NM Department of Game & Fish's proposal to kill more black bears and cougars by:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

The department has only a vague idea of the number of bears and cougars in the state, since their populations are estimated by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, the department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kristin Vyhna1
Albuquerque, NM 87122
kristin_vyhna1@hotmail.com

From: daps@everyactioncustom.com on behalf of [Eugenia Cornelius](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:48:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Eugenia Cornelius
Dixon, NM 87527
daps@cybermesa.com

From: tuffysmom@everyactioncustom.com on behalf of [Linda Frazer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:47:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Frazer
Los Lunas, NM 87031
tuffysmom@comcast.net

From: jjill@everyactioncustom.com on behalf of [jill rounds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:47:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
jill rounds
Arroyo Seco, NM 87514
jjill@icloud.com

From: barbaralenssen@everyactioncustom.com on behalf of [barbara Lenssen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:45:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
barbara Lenssen
Santa Fe, NM 87505
barbaralenssen@comcast.net

From: deniseone@everyactioncustom.com on behalf of [Denise Saccone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:45:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Denise Saccone
Santa Fe, NM 87501
deniseone@netzero.net

From: flampe@everyactioncustom.com on behalf of [Frank Lampe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:44:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

For the following, very important reasons and as a registered voter in New Mexico, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Unless you can show otherwise, your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Here's how you can responsibly respond to this misguided effort: Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Frank Lampe
Santa Fe, NM 87508
flampe@comcast.net

From: georgiadf@everyactioncustom.com on behalf of [Diane Georgia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:43:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Diane Georgia
Deming, NM 88030
georgiadf@yahoo.com

From: mccrearybpat@everyactioncustom.com on behalf of [Jan McCreary](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:42:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jan McCreary
Silver City, NM 88062
mccrearybpat@gmail.com

From: nlightsmgt@everyactioncustom.com on behalf of [Linda Bolton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:41:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Bolton
Albuquerque, NM 87122
nlightsmgt@aol.com

From: jasonrocks2@everyactioncustom.com on behalf of [Laura Boyd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:40:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Laura Boyd
Ribera, NM 87560
jasonrocks2@netscape.net

From: pacauate@everyactioncustom.com on behalf of [Todd Monson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 9:40:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

We should be protecting our bears and cougars, not killing them!

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Todd Monson
Albuquerque, NM 87112
pacauate@gmail.com

From: smdiazmd@everyactioncustom.com on behalf of [Susan Diaz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:39:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Susan Diaz
Albuquerque, NM 87107
smdiazmd@gmail.com

From: cabinck@everyactioncustom.com on behalf of [Therese Coucher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:39:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars. This is especially outrageous.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting. Not just hounds, but any dogs.

Thank you.

Sincerely,
Therese Coucher
Albuquerque, NM 87105
cabinck@mac.com

From: native.anne@everyactioncustom.com on behalf of [Anne Stauffer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:38:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Anne Stauffer
Albuquerque, NM 87107
native.anne@gmail.com

From: dtwoshoes32@everyactioncustom.com on behalf of [Phillip Delaplaine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:35:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Phillip Delaplaine
Santa Fe, NM 87508
dtwoshoes32@aol.com

From: megregory73@everyactioncustom.com on behalf of [Melissa Gregory](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:34:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Melissa Gregory
Los Alamos, NM 87544
megregory73@gmail.com

From: drmac48@everyactioncustom.com on behalf of [Paul McMaster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:34:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Paul McMaster
Silver City, NM 88061
drmac48@gmail.com

From: carmelo1011@everyactioncustom.com on behalf of [Caroline Castillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:31:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Caroline Castillo
Albuquerque, NM 87110
carmelo1011@msn.com

From: j-pnavarrete@everyactioncustom.com on behalf of [Patty Navarrete](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:31:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Patty Navarrete
Taos, NM 87571
j-pnavarrete@cybermesa.com

From: nail13720@everyactioncustom.com on behalf of [Linda HowardI](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:29:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda HowardI
Belen, NM 87002
nail13720@yahoo.com

From: caroline.lwsn@everyactioncustom.com on behalf of [Caroline Lawson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:28:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Caroline Lawson
Albuquerque, NM 87110
caroline.lwsn@gmail.com

From: karenmenczer@everyactioncustom.com on behalf of [Karen Menczer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 1:06:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Without knowing more about the populations of bears and cougars in the state, this is unconscionable

Despite questionable numbers, your department's proposal gives no consideration of the effects of climate change on these populations, including their food sources and habitats. As someone who lives in a community where we used to see bear and mountain lion and many signs of them, it has been years since we have even seen scat, let alone an actual animal.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Karen Menczer
Jemez Pueblo, NM 87024
karenmenczer@gmail.com

From: allaboardearth@everyactioncustom.com on behalf of [Michael Meade](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:28:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Michael Meade
Santa Fe, NM 87505
allaboardearth@gmail.com

From: leslie.colley@everyactioncustom.com on behalf of [Leslie Colley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:26:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leslie Colley
Santa Fe, NM 87506
leslie.colley@gmail.com

From: marydrabbs@everyactioncustom.com on behalf of [Mary Drabbs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:26:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mary Drabbs
Albuquerque, NM 87109
marydrabbs@gmail.com

From: allyxb@everyactioncustom.com on behalf of [Allyson Bennett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:25:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Allyson Bennett
Santa Fe, NM 87506
allyxb@mac.com

From: tmkgallery3@everyactioncustom.com on behalf of [Tatiana Kurakin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:25:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Tatiana Kurakin
Silver City, NM 88061
tmkgallery3@gmail.com

From: lgioannini@everyactioncustom.com on behalf of [Larry Gioannini](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:25:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Larry Gioannini
Las Cruces, NM 88005
lgioannini@yahoo.com

From: cfox@everyactioncustom.com on behalf of [Charles Fox](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:22:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

There is no demonstrated excuse for increasing the killing of New Mexico's bears and cougars, both native carnivores that confer ecological benefits.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Charles Fox
Santa Fe, NM 87505
cfox@aviandesign.net

From: mimbresblackhawk@everyactioncustom.com on behalf of [Ken Barr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:20:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Ken Barr
Mimbres, NM 88049
mimbresblackhawk@gmail.com

From: ritajimg@everyactioncustom.com on behalf of [James and Rita Grauer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:19:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
James and Rita Grauer
Albuquerque, NM 87120
ritajimg@gmail.com

From: LORINHAGER@everyactioncustom.com on behalf of [Lorin Hager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:19:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lorin Hager
Santa Fe, NM 87505
LORINHAGER@GMAIL.COM

From: catloversusan@everyactioncustom.com on behalf of [Susan Kutz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 10:24:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Susan Kutz
Las Cruces, NM 88012
catloversusan@gmail.com

From: mfranks@everyactioncustom.com on behalf of [Michelle Newsom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:19:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Michelle Newsom
Albuquerque, NM 87110
mfranks@studioswarch.com

From: mfc@everyactioncustom.com on behalf of [Margaia Forcier-Call](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:13:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Margaia Forcier-Call
Jemez Springs, NM 87025
mfc@windstream.net

From: joannecockerill@everyactioncustom.com on behalf of [Joanne Cockerill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:12:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores to NONE.
- 2) Do away with ALL hunting season.
- 3) Stop fucking hunting PERIOD.

Sincerely,
Joanne Cockerill
Silver City, NM 88061
joannecockerill@hotmail.com

From: delafrance.2013@everyactioncustom.com on behalf of [Diane LaFrance](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:11:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

WE KNOW THAT DROUGHT IS ALREADY DECIMATING THE POPULATIONS OF MANY OF OUR NATIVE SPECIES. BEARS AND COUGARS ARE VERY BENEFICIAL IN OUR OVERALL ECOLOGY AND ALTHOUGH THEY CAN BE PESTS WHEN WANDERING INTO HUMAN-OCCUPIED AREAS, AND SHOULD BE DISCOURAGED, THEY SHOULD NOT BE HUNTED OR KILLED IN THEIR OWN HABITAT.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Diane LaFrance
Silver City, NM 88061
delafrance.2013@gmail.com

From: tanobarb@everyactioncustom.com on behalf of [Barbara Seychelle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:10:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Barbara Seychelle
Santa Fe, NM 87505
tanobarb@comcast.net

From: leslie.colley@everyactioncustom.com on behalf of [Leslie Colley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:09:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leslie Colley
Santa Fe, NM 87506
leslie.colley@gmail.com

From: daxriner@everyactioncustom.com on behalf of [Dax Flanagan-Riner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:08:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dax Flanagan-Riner
Albuquerque, NM 87111
daxriner@gmail.com

From: jgowe@everyactioncustom.com on behalf of [Jane Gowe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:08:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jane Gowe
Santa Fe, NM 87508
jgowe@cwo.com

From: hofjan@everyactioncustom.com on behalf of [Janice Hoffman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:07:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Janice Hoffman
Las Cruces, NM 88001
hofjan@gmail.com

From: jlaflamme2002@everyactioncustom.com on behalf of [Jeff LaFlamme](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:07:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jeff LaFlamme
Santa Fe, NM 87508
jlaflamme2002@comcast.net

From: barrymorgan90@everyactioncustom.com on behalf of [Cindy Morgan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 9:42:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Cindy Morgan
Alto, NM 88312
barrymorgan90@yahoo.com

From: sarricks@everyactioncustom.com on behalf of [David Sarricks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:04:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
David Sarricks
Datil, NM 87821
sarricks@hotmail.com

From: taosk9five@everyactioncustom.com on behalf of [L.L. Wilkinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:02:44 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
L.L. Wilkinson
Taos, NM 87571
taosk9five@gmail.com

From: sevol.ear@everyactioncustom.com on behalf of [Steve V.](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:02:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Steve V.
Albuquerque, NM 87123
sevol.ear@gmail.com

From: sltapia74@everyactioncustom.com on behalf of [Samantha Tapia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:01:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Samantha Tapia
Albuquerque, NM 87113
sltapia74@gmail.com

From: fitnessrenegades@everyactioncustom.com on behalf of [James De Lara](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:59:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

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Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
James De Lara
Albuquerque, NM 87107
fitnessrenegades@yahoo.com

From: anne@everyactioncustom.com on behalf of [Anne Aylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:59:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Anne Aylor
Las Cruces, NM 88011
anne@anneaylor.co.uk

From: cougarox@everyactioncustom.com on behalf of [Brian Christian](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:59:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

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The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Brian Christian
Rio Rancho, NM 87124
cougarox@gmail.com

From: jkvrmeer@everyactioncustom.com on behalf of [Janice VrMeer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:58:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Janice VrMeer
Santa Fe, NM 87508
jkvrmeer@gmail.com

From: david_505_smile@everyactioncustom.com on behalf of [David Morrison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:58:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
David Morrison
Albuquerque, NM 87107
david_505_smile@yahoo.com

From: midbarnm@everyactioncustom.com on behalf of [Karen Milstein](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:56:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Karen Milstein
Santa Fe, NM 87505
midbarnm@gmail.com

From: sylvieauger55@everyactioncustom.com on behalf of [Sylvie Auger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 8:55:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sylvie Auger
QC G8Y6R6
sylvieauger55@gmail.com

From: mdwalch@everyactioncustom.com on behalf of [Mark Walch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:55:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mark Walch
Albuquerque, NM 87154
mdwalch@aol.com

From: sp_9062-h.3@everyactioncustom.com on behalf of [Gordon Parker III](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:55:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Gordon Parker III
Albuquerque, NM 87105
sp_9062-h.3@comcast.net

From: reedbarb@everyactioncustom.com on behalf of [Barbara Reed](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:55:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Barbara Reed
Las Cruces, NM 88011
reedbarb@aol.com

From: livegan@everyactioncustom.com on behalf of [JC Corcoran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:55:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
JC Corcoran
Glorieta, NM 87535
livegan@yahoo.com

From: payntern@everyactioncustom.com on behalf of [Natalie Paynter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:55:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Natalie Paynter
Taos, NM 87571
payntern@gmail.com

From: rhondahvaldez@everyactioncustom.com on behalf of [Rhonda Berger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:54:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rhonda Berger
Espanola, NM 87532
rhondahvaldez@yahoo.com

From: ahlight@everyactioncustom.com on behalf of [Adrienne Ross](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:54:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Adrienne Ross
Lamy, NM 87540
ahlight@gmail.com

From: johnjroig@everyactioncustom.com on behalf of [John Roig](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:53:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
John Roig
Santa Fe, NM 87506
johnjroig@gmail.com

From: ginniedes@everyactioncustom.com on behalf of [Virginia Desaulniers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:52:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Virginia Desaulniers
Santa Fe, NM 87507
ginniedes@yahoo.com

From: renee_blake@everyactioncustom.com on behalf of [Beth Blakeman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:50:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Beth Blakeman
Albuquerque, NM 87104
renee_blake@yahoo.com

From: gilamama44@everyactioncustom.com on behalf of [Damie Nelson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Thursday, August 17, 2023 7:40:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Predators belong! And hunters don't need trophies.

Thank you.

Sincerely,
Damie Nelson
Pinos Altos, NM 88053
gilamama44@gmail.com

From: kayaker2wa@everyactioncustom.com on behalf of [sandra.jackson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:47:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
sandra.jackson
Santa Fe, NM 87508
kayaker2wa@gmail.com

From: mauorei99@everyactioncustom.com on behalf of [MAUREEN O'REILLY](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:46:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
MAUREEN O'REILLY
Albuquerque, NM 87112
mauorei99@gmail.com

From: jennopp8@everyactioncustom.com on behalf of [Jennifer Oppenheim](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:45:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jennifer Oppenheim
Santa Fe, NM 87508
jennopp8@gmail.com

From: debbieannley@everyactioncustom.com on behalf of [D.L](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:45:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
D L
Albuquerque, NM 87123
debbieannley@yahoo.com

From: dmkoechner@everyactioncustom.com on behalf of [Donna Koechner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:44:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Donna Koechner
Albuquerque, NM 87123
dmkoechner@usa.net

From: Canyonpres@everyactioncustom.com on behalf of [Kent Williamson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:43:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kent Williamson
Pecos, NM 87552
Canyonpres@aol.com

From: syrbint2@everyactioncustom.com on behalf of [kathy vigil](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:43:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
kathy vigil
Peralta, NM 87042
syrbint2@hotmail.com

From: delise9999@everyactioncustom.com on behalf of [Dr. Dianne Strauss](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:43:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a family of 5 with long standing in the community who have lived in harmony with bears and cougars for decades, we ardently oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions. We personally know this first hand from our own work on the ground. Your numbers are flawed not site specific and mostly based upon road kill.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dr. Dianne Strauss
Santa Fe, NM 87504
delise9999@aol.com

From: jerreannstallcup@everyactioncustom.com on behalf of [Jerre Stallcup](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:42:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jerre Stallcup
Santa Fe, NM 87505
jerreannstallcup@gmail.com

From: michaelegmd@everyactioncustom.com on behalf of [Michael Gregory MD](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:41:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Michael Gregory MD
Santa Fe, NM 87508
michaelegmd@gmail.com

From: carol.marion@everyactioncustom.com on behalf of [Carol Marion](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 9:33:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carol Marion
Albuquerque, NM 87114
carol.marion@hotmail.com

From: icjcpapc@everyactioncustom.com on behalf of [Irene Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:40:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Irene Johnson
Roswell, NM 88203
icjcpapc@gmail.com

From: lennette@everyactioncustom.com on behalf of [Lennette Newell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:39:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lennette Newell
Placitas, NM 87043
lennette@me.com

From: rhino_807@everyactioncustom.com on behalf of [Jordan Longman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:38:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jordan Longman
Santa Fe, NM 87507
rhino_807@yahoo.com

From: susancoyote@everyactioncustom.com on behalf of [Susan Morgan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:38:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Susan Morgan
Arroyo Seco, NM 87514
susancoyote@icloud.com

From: euphoniousraconteur@everyactioncustom.com on behalf of [Rebecca Gentry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:38:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rebecca Gentry
Albuquerque, NM 87108
euphoniousraconteur@gmail.com

From: leahrberger@everyactioncustom.com on behalf of [Leah Berger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:37:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leah Berger
Albuquerque, NM 87107
leahrberger@gmail.com

From: aacorley@everyactioncustom.com on behalf of [Aaron Corley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:35:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Aaron Corley
Tijeras, NM 87059
aacorley@hotmail.com

From: lesfield@everyactioncustom.com on behalf of [Les Field](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:35:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Les Field
Albuquerque, NM 87106
lesfield@unm.edu

From: johnwilson333@everyactioncustom.com on behalf of [John Wilson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:33:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

We should not go back the wildlife management principles of the 1880s. We know more than they did and understand our responsibility to intelligently use science to regulate hunting.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
John Wilson
Magdalena, NM 87825
johnwilson333@gmail.com

From: hollyvsa@everyactioncustom.com on behalf of [Holly Sanchez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:33:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a former long-time resident of New Mexico, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a vague notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Holly Sanchez
Waverly, TN 37185
hollyvsa@yahoo.com

From: bapeter61@everyactioncustom.com on behalf of [Becky Peterson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 22, 2023 6:38:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Becky Peterson
Las Cruces, NM 88011
bapeter61@hotmail.com

From: photodude48@everyactioncustom.com on behalf of [Gerald Hallead](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 8:22:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Gerald Hallead
Traverse City, MI 49684
photodude48@gmail.com

From: walman@everyactioncustom.com on behalf of [Wallace Schultz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:32:49 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Wallace Schultz
Las Vegas, NM 87701
walman@cybermesa.com

From: yungbob@everyactioncustom.com on behalf of [Bryan Romkey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:32:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Bryan Romkey
Rio Rancho, NM 87144
yungbob@yahoo.com

From: katpat23@everyactioncustom.com on behalf of [Katie Patrick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:31:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Katie Patrick
Ranchos De Taos, NM 87557
katpat23@gmail.com

From: victoria@everyactioncustom.com on behalf of [Victoria More](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:31:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Victoria More
Santa Fe, NM 87506
victoria@victoriamore.org

From: mcbisselli@everyactioncustom.com on behalf of [Mary Bissell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:31:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mary Bissell
Rio Rancho, NM 87144
mcbisselli@gmail.com

From: burnolan@everyactioncustom.com on behalf of [Chris Nolan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:30:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Chris Nolan
Albuquerque, NM 87110
burnolan@netzero.net

From: rgmittan@everyactioncustom.com on behalf of [Ron Mittan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:29:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Ron Mittan
Albuquerque, NM 87120
rgmittan@gmail.com

From: sordes515@everyactioncustom.com on behalf of [Susan Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:29:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Susan Miller
Jamestown, NM 87347
sordes515@gmail.com

From: awerneke@everyactioncustom.com on behalf of [Angela Werneke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:29:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a 48-year resident of this beautiful state, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Angela Werneke
Santa Fe, NM 87507
awerneke@earthlink.net

From: ddmcadams@everyactioncustom.com on behalf of [Dixie Parker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:29:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

This is a terrible idea for many reasons.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

What you are proposing is so harmful, cruel, inhumane, and ignores the scientific, ecological value of these wonderful animals.

Please reconsider and protect them instead of killing them.

Thank you.

Sincerely,
Dixie Parker
Pecos, NM 87552
ddmcadams@msn.com

From: lambis_p@everyactioncustom.com on behalf of [Charalambos Papelis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 7:58:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Charalambos Papelis
Las Cruces, NM 88011
lambis_p@yahoo.com

From: jedreibelbis@everyactioncustom.com on behalf of [J Dreibelbis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:28:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
J Dreibelbis
Los Lunas, NM 87031
jedreibelbis@gmail.com

From: jakes@everyactioncustom.com on behalf of [James Cooke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:27:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
James Cooke
Albuquerque, NM 87106
jakes@james-cooke.com

From: danleeb@everyactioncustom.com on behalf of [daniel burval](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:27:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
daniel burval
Santa Cruz, NM 87567
danleeb@hotmail.com

From: scottlake@everyactioncustom.com on behalf of [Scott Lake](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:26:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Scott Lake
Corrales, NM 87048
scottlake@yahoo.com

From: jerreannstallcup@everyactioncustom.com on behalf of [Jerre Stallcup](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:26:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jerre Stallcup
Santa Fe, NM 87505
jerreannstallcup@gmail.com

From: kariotisj@everyactioncustom.com on behalf of [John Kariotis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:26:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
John Kariotis
Placitas, NM 87043
kariotisj@mac.com

From: sstuartstudio@everyactioncustom.com on behalf of [Signe Stuart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:25:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Signe Stuart
Santa Fe, NM 87508
sstuartstudio@gmail.com

From: hurrahs-glider-0g@everyactioncustom.com on behalf of [Robert Tweten](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:24:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Robert Tweten
Santa Fe, NM 87505
hurrahs-glider-0g@icloud.com

From: jhouse0516@everyactioncustom.com on behalf of [John House](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:24:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I am a resident of Santa Fe County. I strongly oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
John House
Santa Fe, NM 87506
jhouse0516@gmail.com

From: dondoberman@everyactioncustom.com on behalf of [Donald Helfrich](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:24:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department is part of the reason that 70% of wildlife is missing from the wild and you have little information of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Donald Helfrich
Albuquerque, NM 87106
dondoberman@gmail.com

From: adriennebolt@everyactioncustom.com on behalf of [Adrienne Seltz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 3:39:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Adrienne Seltz
Sandia Park, NM 87047
adriennebolt@aol.com

From: learkirsten@everyactioncustom.com on behalf of [Kirsten Lear](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:24:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kirsten Lear
Santa Fe, NM 87505
learkirsten@gmail.com

From: pluehrmann@everyactioncustom.com on behalf of [Paul Luehrmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:24:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Paul Luehrmann
Santa Fe, NM 87501
pluehrmann@cybermesa.com

From: hobo17pollie@everyactioncustom.com on behalf of [Les Roberts](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:23:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Les Roberts
Serafina, NM 87569
hobo17pollie@gmail.com

From: ktj27@everyactioncustom.com on behalf of [Katie Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:21:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Katie Johnson
Santa Fe, NM 87505
ktj27@hotmail.com

From: akosanmacd@everyactioncustom.com on behalf of [sandria cook](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:20:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
sandria cook
Corrales, NM 87048
akosanmacd@aol.com

From: jamihart@everyactioncustom.com on behalf of [Dr. Jami D.L.Hart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:20:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dr. Jami D. L. Hart
Bernalillo, NM 87004
jamihart@comcast.net

From: kathleenmayharrop@everyactioncustom.com on behalf of [Kathleen Harrop](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:19:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kathleen Harrop
Belen, NM 87002
kathleenmayharrop@gmail.com

From: erw400@everyactioncustom.com on behalf of [Ellen Wetzel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:19:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Ellen Wetzel
Santa Fe, NM 87507
erw400@aol.com

From: paulettedazsi@everyactioncustom.com on behalf of [Paulette Zeno](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:19:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Paulette Zeno
Rio Rancho, NM 87144
paulettedazsi@Gmail.com

From: seedvisions@everyactioncustom.com on behalf of [NS Khalsa](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:18:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
NS Khalsa
Pecos, NM 87552
seedvisions@gmail.com

From: swedish216@everyactioncustom.com on behalf of [Pam Eastwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 3:39:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Pam Eastwood
Las Cruces, NM 88005
swedish216@aol.com

From: LanaGreen742@everyactioncustom.com on behalf of [Lana Green](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:18:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lana Green
Taos, NM 87571
LanaGreen742@gmail.com

From: csassaman@everyactioncustom.com on behalf of [Carol A Sassaman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:18:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carol A Sassaman
Hanover, NM 88041
csassaman@ymail.com

From: natmtz1@everyactioncustom.com on behalf of [Natalie Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:17:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Natalie Martinez
Santa Fe, NM 87501
natmtz1@live.com

From: bestdharma@everyactioncustom.com on behalf of [Dharma Best](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:17:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dharma Best
Santa Fe, NM 87506
bestdharma@gmail.com

From: dwhollandphd@everyactioncustom.com on behalf of [Dennis Holland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:16:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dennis Holland
Bernalillo, NM 87004
dwhollandphd@gmail.com

From: ccw350@everyactioncustom.com on behalf of [Carla Waldron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:16:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carla Waldron
Santa Fe, NM 87501
ccw350@gmail.com

From: cdouglasjolly@everyactioncustom.com on behalf of [Craig Jolly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:16:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

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The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Craig Jolly
Santa Fe, NM 87505
cdouglasjolly@gmail.com

From: lahammer777@everyactioncustom.com on behalf of [Laurie Hammer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:16:01 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Laurie Hammer
Albuquerque, NM 87114
lahammer777@gmail.com

From: sleavitt@everyactioncustom.com on behalf of [Suzanne Leavitt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:15:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Suzanne Leavitt
Albuquerque, NM 87114
sleavitt@mail.com

From: ogorman.ogorman@everyactioncustom.com on behalf of [Therese OGorman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:14:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Therese OGorman
Santa Fe, NM 87501
ogorman.ogorman@gmail.com

From: suestar_120@everyactioncustom.com on behalf of [Sue Schümmer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 2:43:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sue Schümmer
Baden-Württemberg 89077
suestar_120@msn.com

From: m_loustau@everyactioncustom.com on behalf of [Martha Loustaunau](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:13:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Martha Loustaunau
Las Cruces, NM 88005
m_loustau@hotmail.com

From: valinehan@everyactioncustom.com on behalf of [Victoria Linehan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:12:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Victoria Linehan
Glenwood, NM 88039
valinehan@gilanet.com

From: suni_4@everyactioncustom.com on behalf of [Barbara Carmichael](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:12:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Barbara Carmichael
Santa Fe, NM 87505
suni_4@hotmail.com

From: aravenstone@everyactioncustom.com on behalf of [Anne Ravenstone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:10:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Anne Ravenstone
Mountainair, NM 87036
aravenstone@earthlink.net

From: jaervin7@everyactioncustom.com on behalf of [Andrew Ervin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:10:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Andrew Ervin
Sandia Park, NM 87047
jaervin7@gmail.com

From: jvcphd@everyactioncustom.com on behalf of [Joanie V. Connors](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a resident of New Mexico for 2 decades who lives 1/4 mile from the Gila National Forest, I strongly oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making serious increases to hunting quotas for both species.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Joanie V. Connors
Silver City, NM 88061
jvcphd@gmail.com

From: farkadelic@everyactioncustom.com on behalf of [Stephen Farkash](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Stephen Farkash
Rio Rancho, NM 87144
farkadelic@msn.com

From: ces@everyactioncustom.com on behalf of [Catherine skinner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Catherine skinner
Santa Fe, NM 87506
ces@ceskinner.com

From: denise.holland53@everyactioncustom.com on behalf of [Denise Holland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Denise Holland
Bernalillo, NM 87004
denise.holland53@gmail.com

From: dmsinn21@everyactioncustom.com on behalf of [Donna Sinn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Donna Sinn
Las Cruces, NM 88011
dmsinn21@outlook.com

From: wayne_darnell@everyactioncustom.com on behalf of [Wayne Darnell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 1:34:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Wayne Darnell
Santa Fe, NM 87507
wayne_darnell@comcast.net

From: francescayorke@everyactioncustom.com on behalf of [francesca.yorke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
francesca yorke
Santa Fe, NM 87505
francescayorke@hotmail.com

From: ronhagg@everyactioncustom.com on behalf of [Ron Hagg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:09:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Ron Hagg
Arroyo Hondo, NM 87513
ronhagg@hotmail.com

From: bisbee13@everyactioncustom.com on behalf of [Henry Kimbell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:07:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Henry Kimbell
Rio Rancho, NM 87144
bisbee13@icloud.com

From: runningpants@everyactioncustom.com on behalf of [Brita Sauer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:07:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a resident of the state of New Mexico, I cherish the wilderness and ecological diversity and vitality so central to our economy and way of life. Therefore, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Brita Sauer
Las Cruces, NM 88001
runningpants@gmail.com

From: chriscalvert82@everyactioncustom.com on behalf of [CHRIS Calvert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:07:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
CHRIS Calvert
Santa Fe, NM 87501
chriscalvert82@gmail.com

From: darshanfj@everyactioncustom.com on behalf of [Darshan Kaur](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:07:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Darshan Kaur
Espanola, NM 87532
darshanfj@gmail.com

From: vintagevixin@everyactioncustom.com on behalf of [Jamie Lyons](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:06:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jamie Lyons
Alamogordo, NM 88310
vintagevixin@gmail.com

From: coachdugger@everyactioncustom.com on behalf of [Douglas Dunkle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:06:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Douglas Dunkle
Pecos, NM 87552
coachdugger@gmail.com

From: russell.milazzo@everyactioncustom.com on behalf of [Russell Milazzo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:06:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Russell Milazzo
Albuquerque, NM 87113
russell.milazzo@gmail.com

From: bj0009721@everyactioncustom.com on behalf of [Bettemae Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:06:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Bettemae Johnson
Albuquerque, NM 87123
bj0009721@gmail.com

From: xannin2@everyactioncustom.com on behalf of [shannon patrick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 1:20:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
shannon patrick
Las Cruces, NM 88007
xannin2@yahoo.com

From: equintero@everyactioncustom.com on behalf of [Esperanza Quintero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:05:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Esperanza Quintero
Silver City, NM 88061
equintero@aznex.net

From: cairns3@everyactioncustom.com on behalf of [Norm Cairns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:05:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Norm Cairns
Albuquerque, NM 87112
cairns3@comcast.net

From: schmidt linda2004@everyactioncustom.com on behalf of [Linda Schmidt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:05:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Schmidt
Albuquerque, NM 87104
schmidt linda2004@yahoo.com

From: jean@everyactioncustom.com on behalf of [Jean Crawford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:05:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jean Crawford
Santa Fe, NM 87508
jean@mirageframes.com

From: catsmeow61269@everyactioncustom.com on behalf of [Tiffany Nicol](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:05:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Tiffany Nicol
Rio Rancho, NM 87124
catsmeow61269@aol.com

From: nancicairns@everyactioncustom.com on behalf of [Nanci Cairns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:04:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Nanci Cairns
Albuquerque, NM 87112
nancicairns@gmail.com

From: themiddleagedspread@everyactioncustom.com on behalf of [Resa Fitzgibbon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:03:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Resa Fitzgibbon
Taos, NM 87571
themiddleagedspread@yahoo.com

From: desertabeja@everyactioncustom.com on behalf of [Anna Sofia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 11, 2023 4:11:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Anna Sofia
Tucson, AZ 85705
desertabeja@gmail.com

From: jlee@everyactioncustom.com on behalf of [Joanna Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Friday, August 11, 2023 2:28:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Unspecified increases to quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Joanna Lee
Albany, CA 94706
jlee@biologicaldiversity.org

From: jchodosh2@everyactioncustom.com on behalf of [Janie Chodosh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 10:35:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Please reconsider!!!

oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Janie Chodosh
Santa Fe, NM 87501
jchodosh2@yahoo.com

From: cec7712@everyactioncustom.com on behalf of [Cheryl Williams](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 12:45:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Cheryl Williams
Las Cruces, NM 88012
cec7712@live.com

From: brucejmadden@everyactioncustom.com on behalf of [Bruce Madden](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 2:33:37 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions. I despise trophy hunting and think it expresses the disrespect of nature that we all suffer from. There is no better expression of nature's exquisite design than the bear and the cougar. There is no need for us to kill them.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Bruce Madden
Albuquerque, NM 87112
brucejmadden@gmail.com

From: faunesiegel@everyactioncustom.com on behalf of [Kate Kenner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 8:57:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

-----Bears and cougars are not trophies. They are not mere objects but living and feeling beings who play important roles in nature plus should have the right to live in peace and survive and thrive as a matter of principle. One person is killed and it is considered a tragedy yet hunters wantonly kill wildlife for the thrill of hunting and killing, glory, and the boosting of egos. Killing predators has completely upset the balance of nature. While I would not hunt, some do so for sustenance but to be able to just kill as many as one wants to is appalling, unethical and irresponsible. We humans have had and continue to have a devastating effect on nature and wildlife and it is bad enough it is legal to kill any wildlife/predators, it is much worse to set no limits. I have felt the need to say too many times that humans are not special or the most/only important species but merely the one with the power-power that is too often abused. Our greed and human centricity are what have caused so much harm for wildlife and nature.----

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kate Kenner
Brattleboro, VT 05301
faunesiegel@gmail.com

From: jonasher@everyactioncustom.com on behalf of [Jon Asher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 8:16:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

During one of the more recent droughts here it was widely reported that hundreds of bears had been killed because they'd been raiding homes and ranches for food. I also had two Game & Fish employees tell me they expected hundreds more to die during hibernation because they hadn't gotten enough food before denning up for the winter. Meanwhile our cougar population is also in decline due to habitat loss, hunting and even vehicular accidents. There is no reason whatsoever to expand the amount of hunting licenses issued in the state other than the minimal revenue those licenses produce. Who is pushing for this expansion? It's individuals and organizations who will generate additional revenue from such activities, and that does not represent the majority of New Mexicans.

Mike Sloan, you know better. Do NOT approve or champion this expansion because the additional animals killed will ultimately damage the environment.

Sincerely,
Jon Asher
Glorieta, NM 87535
jonasher@cybermesa.com

From: janker15@everyactioncustom.com on behalf of [Jan Ankerson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 8:06:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

We have been in drought for a long time. They are struggling more than we are. To extend the season for hunting, allow dogs and raising the quota unfairly impacts a delicate balance that is barely existing right now. Please consider the wild life of bears and cougars for the future generations.

Sincerely,
Jan Ankerson
Albuquerque, NM 87110
janker15@gmail.com

From: cbreenlee@everyactioncustom.com on behalf of [Candace Breen-Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 8:01:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

game and Fish should not be in the business of killing wildlife. it should be in the business of protecting it.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Candace Breen-Lee
Silver City, NM 88061
cbreenlee@yahoo.com

From: darwinsdog@everyactioncustom.com on behalf of [Joe Ward](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:54:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to sanction the killing of more black bears and cougars. Thrill killing has no place in a modern, civil society. Please allow these wild animals to live their lives in peace as you would wish to live yours.

Thank you.

Sincerely,
Joe Ward
Farmington, NM 87401
darwinsdog@yahoo.com

From: cccc@everyactioncustom.com on behalf of [Cyndy Costanza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 5:30:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

I have been blessed to have 5 bears in my yard, the only mountain lion was a kill in someones pickup, but I got to pet it and realized such an Angel With Paws and Claws. I have experienced Game and Fish trying to trap a bear in my yard, but he had experienced the trap before and would not enter it. These a very intelligent animals and if hunting is allowed a license should be issued and this be the only way to allow hunting of these animals!

Sincerely,
Cyndy Costanza
Datil, NM 87821
cccc@gilanet.com

From: jimwilson775@everyactioncustom.com on behalf of [James Wilson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 4:08:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I fully support Game & Fish's role in wildlife management because of the importance its role has in balancing the imbalance human activity has created. But I recognize the importance of doing it right and doing it right relies upon utilizing the best science-based approaches, especially in the area of wildlife habitat connectivity. Thus I support the following statement:

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
James Wilson
Albuquerque, NM 87110
jimwilson775@gmail.com

From: monica@everyactioncustom.com on behalf of [Monica Steensma](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:15:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

My husband & I & our family are Citizens, Taxpayers, & VOTERS, as well as people VERY DEEPLY CONCERNED about our rapidly degrading natural environment, & our remaining, increasingly threatened wildlife. We are also strong supporters of protection & preservation of ALL our wild Public Lands, & the habitats & ecosystems they contain.

Therefore we must, IN THE STRONGEST POSSIBLE TERMS, voice our adamant opposition to the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars, by means of:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

The above proposed provisions are outrageously ill-informed & very destructive.

These vague stipulations you propose, would essentially give FREE REIN to hunters & other gun lovers to indiscriminately & senselessly kill these magnificent, highly sentient, & utterly defenseless animals!!

You have obviously not considered that these members of two keystone predator species have any intrinsic value, let alone any right to live their lives out in the natural order. You must be reminded that top predators help keep herbivore & other prey animals' populations in check, & healthier, by culling the old, the weak, & any who are ill. This means the prey species are stronger en masse, & that their numbers do not exceed reasonable levels, which in turn ensures the better health of their ecosystems!

Moreover, there is NO way to monitor the actions of hunters, or thrill or trophy seeking target shooters, wishing to see large animals die for their egos & twisted pleasure!! This means that many animals will suffer & die, some after being wounded but not killed outright. This is profoundly immoral!!

It appears also that there has not been any accurate population censuses of New Mexico's bears & cougars, who will be the hapless subjects of your kill proposals. Your department has only a most hazy notion of how many bears and cougars live in our state, since you merely form estimates of their numbers, by extrapolating from very limited study areas, to much broader regions.

Despite these questionable numbers, your department's proposal gives NO consideration to the effects the climate emergency may have on bear food sources and habitat.

The climate emergency/catastrophe has already arrived, & has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find. This means, bears will be under more natural hardships & treats than before, leading to increased fatalities..

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and land instead, on the side of prudent wildlife management by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting ENTIRELY the use of hounds in bear and cougar hunting.

You MUST protect New Mexico's wildlife from the terror of pursuit by hounds & other hunters, the suffering their killing will entail, & in fact, the virtually unregulated, wholesale slaughter of the iconic & environmentally important animals.

Your new proposal WILL NOT do this, & MUST BE REJECTED!!

Thank you.

Sincerely,
Monica Steensma
Santa Fe, NM 87505
monica@vom.com

From: rprocter@everyactioncustom.com on behalf of [Rebecca Procter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 3:00:55 PM

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Dear New Mexico Department of Game & Fish,

Let me begin my comments this way: the planet is long past the time when we can kill some/save some in the old Game and Fish pattern. Killing of any keystone species threatens our entire NM ecosystems, already hammered by fires and other effects of climate change.

I believe the Center for Biological Diversity puts it very well, as follows:

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rebecca Procter
Santa Fe, NM 87508
rprocter@msn.com

From: juanmm@everyactioncustom.com on behalf of [Juan Montes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 12:14:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Juan Montes
Questa, NM 87556
juanmm@unm.edu

From: lbrownaz@everyactioncustom.com on behalf of [Linda Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 2:04:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I live among the bears and cougars in Catron County. We've seen a couple of bears while hiking, but we've never seen a cougar. We shouldn't because they are superb at staying out of sight. I cannot imagine why killing more cougars and bears would be good for the public. In fact, the cougars help keep the deer and elk populations in check.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Brown
Quemado, NM 87829
lbrownaz@gmail.com

From: jmarshall@everyactioncustom.com on behalf of [James Marshall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 12:35:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Hunters should be restricted to hunting Elk and other food source animals and not practice trophy hunting of almost endangered animals such as Cougars and Bears. I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
James Marshall
Santa Fe, NM 87507
jmarshall@cybermesa.com

From: lawrysager@everyactioncustom.com on behalf of [Lawry Sager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:03:04 AM

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Dear New Mexico Department of Game & Fish,

Oh no! This sounds like another dumb idea from the politically appointed (and altered in accordance with the governor's pet projects) New Mexico Game Commission. Oddly enough, a perusal of the ever-changing board's personal CVs would lead one to believe that such a qualified panel would "do the right thing" for the game (and non-game) animals of our state. (The personnel may change, but the commission was responsible for a 1970s doe season from which NM has yet to recover fully, and actually tried to reintroduce a hunting season on Lesser Prairie-chickens--even as the birds were in steep decline and being proposed for federal ESA listing, and more recently, refused to do away with leghold traps, except where folks are likely to walk their dogs, as if fur trading is a source of great wealth for the state!) Can you hear my eyes rolling?

So, how about just a little science, and a little less gun-happy hyperbole. While working in the autumn Manzanos, we would take in lost hounds and try to return them to their owners during the bear season. Responsible hunters?, certainly not--just guys wanting to kill something. Same with the big cats: I learned long ago not to mention sightings as "hunters"--and their dogs, would show up on my doorstep. Playing to the macho crowd is a poor means of showing concern for the large predators that are an essential, integral part of a healthy ecosystem. More science, less stupidity. Educating the public, especially in places where "development" has decimated the habitat of a host of species, from large to very small, would go a lot further than letting "hunters" pressure the NMDGF into making poor decisions. Decades ago, we called that agency a "hook and bullet bunch"; this is not one of those times that you have to remove any doubt that the appellation is still correct. There is absolutely nothing to warrant these seat of the pants changes. Science, not bullshit.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lawry Sager
Cerrillos, NM 87010
lawrysager@gmail.com

From: reasley03@everyactioncustom.com on behalf of [Linda Easley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:04:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I believe the New Mexico Department of Game & Fish needs to step back and consider the outcomes of their recent proposal to kill more black bears and cougars.

Decades of drought and years of severe climate change are wreaking havoc with the habitat and food sources for these two animals. Your proposal to allow further hunting of them could push them toward complete extinction or could allow a harmful increase in the population of their prey. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find. Further research is needed before declaring open season on them.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader geographic areas.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Whatever action you take, please remember that we are in a new climate crisis, making it impossible to do business as usual. The future of all species on Earth is unknowable at this point. Thank you.

Sincerely,
Linda Easley
Albuquerque, NM 87120
reasley03@comcast.net

From: mvorr01@everyactioncustom.com on behalf of [Mary Orr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:55:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions. A recent study in the Jemez Mountains by NPS showed that mountain lions have a short life in the Jemez Mountains because of hunting. Males are recruited from outside this range so cub survival was low to nonexistent due to outside males killing them.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mary Orr
Española, NM 87533
mvorr01@gmail.com

From: bwr54dtg44@everyactioncustom.com on behalf of [Douglas Gruenau](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:52:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Black Bears and Cougars are indicators of healthy wild ecosystems. There is no indication in current scientific data that their current numbers are not sustainable in our state, therefore, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Douglas Gruenau
Santa Fe, NM 87508
bwr54dtg44@gmail.com

From: carolj@everyactioncustom.com on behalf of [Carol Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:34:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Bears and cougars are natural to New Mexico and do little to no harm. I live in the forest and respect and acknowledge their right to be here. We prefer the use of rubber bullets to killing.

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Carol Johnson
Glorieta, NM 87535
carolj@cybermesa.com

From: sereniph@everyactioncustom.com on behalf of [Lewisa Goggin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:21:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Living in the wilds of NM where these amazing animals live showed me first hand how important they are to the environment, how increasingly rare they are becoming and the tremendous and horrific decimation they are experiencing from people just randomly killing them. You KNOW this is true but ignore it as I have reported it continuously and NOTHING was ever done about it. I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lewisa Goggin
Lucerne, CA 95458
sereniph@yahoo.com

From: rexgstone@everyactioncustom.com on behalf of [Rex Stone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:20:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I have attended NM Dept. G&F meetings for years as a representative for wildlife conservation interests which supposedly the G&F Dept. takes into consideration when updating their bear and cougar rules. Nothing could be farther from the truth. This department works strictly for hunters, many of whom are out of state trophy hunters. For all the good it will do

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rex Stone
Albuquerque, NM 87107
rexgstone@me.com

From: annieb8@everyactioncustom.com on behalf of [Margaret Bell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:19:40 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you for doing the right thing for our precious bears and cougars. They are an essential part of a healthy ecosystem and should never be a trophy on someone's wall.

Sincerely,
Margaret Bell
Albuquerque, NM 87107
annieb8@msn.com

From: nancyuen@everyactioncustom.com on behalf of [Nancy Yuen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect American wildlife
Date: Wednesday, August 16, 2023 9:51:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I am urging you to oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Reducng the length of hunting seasons, and.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Nancy Yuen
Albuquerque, NM 87122
nancyuen@yahoo.com

From: cheryl.l.scannell@everyactioncustom.com on behalf of [Cheryl Scannell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:17:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I strongly oppose the New Mexico Department of Game & Fish's proposal to allow the killing of more black bears and cougars. There is absolutely no need for this rule. Moreover, the proposal is fatally arbitrary by:

- 1) Making unspecified increases to hunting quotas on no scientific basis.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions. Your department has no basis to conclude that bear and cougar populations can sustain additional human mortality.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find. The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity.

The proposal doesn't address how the use of hounds in hunting puts nontarget animals in danger and risks human safety, and that lengthening bear hunting seasons compounds these impacts, and makes New Mexico public lands off limits to non-bear hunters for more of the year.

Instead of allowing more bears and cougars to be killed, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Cheryl Scannell
Silver City, NM 88061
cheryl.l.scannell@gmail.com

From: clobel1@everyactioncustom.com on behalf of [Colleen Lobel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 21, 2023 3:47:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Colleen Lobel
San Diego, CA 92126
clobel1@san.rr.com

From: bodica6086@everyactioncustom.com on behalf of [margo wyse](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 9:31:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
margo wyse
Mimbres, NM 88049
bodica6086@yahoo.com

From: svanslooten@everyactioncustom.com on behalf of [Shirley Van Slooten](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 9:12:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Shirley Van Slooten
Santa Fe, NM 87501
svanslooten@aol.com

From: herbert.staniek@everyactioncustom.com on behalf of [Herbert Staniek](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 4:08:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Herbert Staniek
None 1060
herbert.staniek@hotmail.com

From: tabbykat7285@everyactioncustom.com on behalf of [Raleigh Koritz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Wednesday, August 16, 2023 2:00:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Raleigh Koritz
Minneapolis, MN 55442
tabbykat7285@outlook.com

From: tribe@everyactioncustom.com on behalf of [Tom Ribe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 10:08:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a New Mexican, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Tom Ribe
Santa Fe, NM 87505
tribe@swadventures.com

From: jean@everyactioncustom.com on behalf of [Jean Crawford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:20:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jean Crawford
Santa Fe, NM 87508
jean@mirageframes.com

From: kgouldmartin@everyactioncustom.com on behalf of [Katherine Gould-Martin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:14:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Katherine Gould-Martin
Cliff, NM 88028
kgouldmartin@gmail.com

From: signa002@everyactioncustom.com on behalf of [Sara Ignacio](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 7:59:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sara Ignacio
Las Cruces, NM 88011
signa002@gmail.com

From: nanasamoldbird@everyactioncustom.com on behalf of [Hendricka Samytowski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 7:33:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Hendricka Samytowski
Albany, NY 12201
nanasamoldbird@hotmail.com

From: ampen@everyactioncustom.com on behalf of [Autumn Penfold](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 7:11:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Autumn Penfold
Edgewood, NM 87015
ampen@outlook.com

From: kathleenmayharrop@everyactioncustom.com on behalf of [Kathleen Harrop](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 21, 2023 2:08:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kathleen Harrop
Belen, NM 87002
kathleenmayharrop@gmail.com

From: tabbykat7285@everyactioncustom.com on behalf of [Raleigh Koritz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 6:27:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Raleigh Koritz
Minneapolis, MN 55442
tabbykat7285@outlook.com

From: lindaz@everyactioncustom.com on behalf of [Linda Z](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 4:37:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Linda Z
Silver City, NM 88062
lindaz@pobox.com

From: edwinten@everyactioncustom.com on behalf of [Edwina Hubert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 3:42:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Edwina Hubert
Albuquerque, NM 87106
edwinten@aol.com

From: 4eco.forward@everyactioncustom.com on behalf of [Barbara Stone](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 2:53:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Barbara Stone
Silver City, NM 88061
4eco.forward@gmail.com

From: extendthefield@everyactioncustom.com on behalf of [Sue Roberts](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife during this extinction crisis
Date: Tuesday, August 15, 2023 2:13:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety. Wildlife is in the midst of an extinction crisis, and you are enabling the wiping out of wildlife in New Mexico.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sue Roberts
Albuquerque, NM 87112
extendthefield@gmail.com

From: okeefe@everyactioncustom.com on behalf of [Brian O'Keefe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 1:19:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Brian O'Keefe
Santa Fe, NM 87501
okeefe@cybermesa.com

From: nancyweiser@everyactioncustom.com on behalf of [Nancy Weiser](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 1:17:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Nancy Weiser
Rio Rancho, NM 87144
nancyweiser@hotmail.com

From: cdprettybird@everyactioncustom.com on behalf of [Christina Dunkin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 1:14:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state since you estimate their population by extrapolating from limited study areas to much broader regions. Your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Christina Dunkin
Santa Fe, NM 87505
cdprettybird@gmail.com

From: savelife@everyactioncustom.com on behalf of [Marissa Bingham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 1:02:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I strongly oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Please save our wildlife and species, particularly bears and cougars in the face of climate chaos and crisis the worst extinction crisis in many eons.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts non target animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Marissa Bingham
Santa Fe, NM 87507
savelife@santafe.sent.com

From: chiponline@everyactioncustom.com on behalf of [Chip Leavitt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 12:35:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Chip Leavitt
Silver City, NM 88061
chiponline@icloud.com

From: tabbykat7285@everyactioncustom.com on behalf of [Raleigh Koritz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 21, 2023 2:01:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Raleigh Koritz
Minneapolis, MN 55442
tabbykat7285@outlook.com

From: christinamedina90@everyactioncustom.com on behalf of [Christina Medina](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 12:27:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Christina Medina
Las Cruces, NM 88001
christinamedina90@yahoo.com

From: b.lynn.buckingham@everyactioncustom.com on behalf of [Brittany Buckingham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 11:53:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Brittany Buckingham
Albuquerque, NM 87112
b.lynn.buckingham@gmail.com

From: ericksmith2@everyactioncustom.com on behalf of [Eric Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 11:51:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Eric Smith
Albuquerque, NM 87114
ericksmith2@yahoo.com

From: jaubert-f@everyactioncustom.com on behalf of [Frédéric Jaubert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 11:41:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Frédéric Jaubert
Rhône-Alpes 38230
jaubert-f@hotmail.fr

From: snowflower@everyactioncustom.com on behalf of [Janet Snowden](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 11:40:31 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Janet Snowden
Santa Fe, NM 87501
snowflower@cybermesa.com

From: chantal.buslot@everyactioncustom.com on behalf of [Chantal Buslot](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 11:35:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Chantal Buslot
AK 35100
chantal.buslot@hotmail.com

From: allysonsiwik@everyactioncustom.com on behalf of [Allyson Siwik](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 11:18:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Allyson Siwik
Silver City, NM 88061
allysonsiwik@gmail.com

From: bobwasserman@everyactioncustom.com on behalf of [Robert Wasserman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 10:44:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Robert Wasserman
Corrales, NM 87048
bobwasserman@aol.com

From: leolehiwa@everyactioncustom.com on behalf of [Mimi Forsyth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 10:24:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mimi Forsyth
Santa Fe, NM 87502
leolehiwa@gmail.com

From: elisabeth.bechmann@everyactioncustom.com on behalf of [Elisabeth Bechmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:43:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Elisabeth Bechmann
None 00000
elisabeth.bechmann@kstp.at

From: lizjohnson@everyactioncustom.com on behalf of [Lizabeth Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Sunday, August 20, 2023 3:33:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lizabeth Johnson
Los Alamos, NM 87544
lizjohnson@unm.edu

From: starowl3@everyactioncustom.com on behalf of [Pamela Morgan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:31:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Pamela Morgan
Silver City, NM 88061
starowl3@hotmail.com

From: leucovorinsaves@everyactioncustom.com on behalf of [Roger Kulp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:24:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Roger Kulp
Albuquerque, NM 87108
leucovorinsaves@outlook.com

From: kellir@everyactioncustom.com on behalf of [Kelli Reynolds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:22:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kelli Reynolds
Alamogordo, NM 88310
kellir@outlook.com

From: onecrane@everyactioncustom.com on behalf of [MARIE O'Meara](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 9:21:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a long-time NM resident, I am appalled at this apparently poorly-thought through proposal. I count on my state to do better than this, and oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
MARIE O'Meara
Albuquerque, NM 87106
onecrane@comcast.net

From: pat.gioannini@everyactioncustom.com on behalf of [John Gioannini](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 8:33:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
John Gioannini
Las Cruces, NM 88005
pat.gioannini@gmail.com

From: mammy2700@everyactioncustom.com on behalf of [Maryann Staron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 8:13:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Maryann Staron
Hometown, IL 60456
mammy2700@comcast.net

From: ritagentry@everyactioncustom.com on behalf of [Rita Gentry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 7:25:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

As a former resource planner, I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department does not have a satisfactory science-based count of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

In addition, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades and their impact on bear habitat. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing human encroachments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rita Gentry
Santa Fe, NM 87507
ritagentry@cybermesa.com

From: carlton505@everyactioncustom.com on behalf of [Patricia Carlton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 7:13:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Patricia Carlton
Santa Fe, NM 87505
carlton505@comcast.net

From: jewels@everyactioncustom.com on behalf of [julie ann hawes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 6:57:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
julie ann hawes
Santa Fe, NM 87501
jewels@jewelsarts.com

From: leighsaunders318@everyactioncustom.com on behalf of [Leigh Saunders](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 5:03:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leigh Saunders
Hawke's Bay 4122
leighsaunders318@gmail.com

From: sabinealmstrom@everyactioncustom.com on behalf of [Sabine Almstrom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Sunday, August 20, 2023 7:38:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Sabine Almstrom
Lamy, NM 87540
sabinealmstrom@gmail.com

From: caronyma@everyactioncustom.com on behalf of [Caroline Sévilla](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 4:38:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Caroline Sévilla
Boling, TX 77420
caronyma@msn.com

From: stardlc@everyactioncustom.com on behalf of [Debra Cameron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 4:19:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Debra Cameron
Edgewood, NM 87015
stardlc@hotmail.com

From: krona65@everyactioncustom.com on behalf of [Robert Nowak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 4:19:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Dear New Mexico Department of Game & Fish!

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you!

Robert Nowak
Os.Zamkowe 6/1
63500 Ostrzeszow
Poland
E-mail:krona65@wp.pl

Sincerely,
Robert Nowak
Wielkopolska 63500

krona65@wp.pl

From: hi2cherie@everyactioncustom.com on behalf of [Lesley Jorgensen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 3:46:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Lesley Jorgensen
Santa Fe, NM 87501
hi2cherie@yahoo.com

From: rabbitwhisperr@everyactioncustom.com on behalf of [Andrea Chu](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 3:16:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Andrea Chu
Las Cruces, NM 88012
rabbitwhisperr@gmail.com

From: ronfaich@everyactioncustom.com on behalf of [Ron Faich](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 2:45:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Ron Faich
Albuquerque, NM 87112
ronfaich@comcast.net

From: onordom@everyactioncustom.com on behalf of [Chris Burns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Tuesday, August 15, 2023 12:07:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Chris Burns
Abiquiu, NM 87510
onordom@hotmail.com

From: gjp1226@everyactioncustom.com on behalf of [George Parrish](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:36:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
George Parrish
Belen, NM 87002
gjp1226@yahoo.com

From: mkrieb@everyactioncustom.com on behalf of [M.K Rieb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:25:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
M K Rieb
Albuquerque, NM 87110
mkrieb@comcast.net

From: avgraham27@everyactioncustom.com on behalf of [Amanda Graham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:21:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Amanda Graham
Albuquerque, NM 87123
avgraham27@gmail.com

From: janine.vinton@everyactioncustom.com on behalf of [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Sunday, August 20, 2023 2:20:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Janine Vinton
Victoria 3915
janine.vinton@mail.com

From: lovedavidjane@everyactioncustom.com on behalf of [Jane Love](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:07:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jane Love
Socorro, NM 87801
lovedavidjane@me.com

From: kitkatt4444@everyactioncustom.com on behalf of [Kate Waters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 11:03:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Kate Waters
Rio Rancho, NM 87124
kitkatt4444@gmail.com

From: shines104@everyactioncustom.com on behalf of [Stephanie Shine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:54:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Stephanie Shine
Ponderosa, NM 87044
shines104@yahoo.com

From: nthornton001@everyactioncustom.com on behalf of [Norman Thornton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:46:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.
- 4) Killing should never be the solution to any issue. Put your alleged superior intelligence to use to find a solution that addresses the issue in a non-lethal manner.

Thank you.

Sincerely,
Norman Thornton
Albuquerque, NM 87123
nthornton001@Mac.Com

From: rakraimer@everyactioncustom.com on behalf of [Rebecca Kraimer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:24:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Rebecca Kraimer
Las Cruces, NM 88011
rakraimer@gmail.com

From: nnortz@everyactioncustom.com on behalf of [Nancy Nortz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 10:16:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades.

And hunting bears and cougars is unsustainable because neither animal evolved as prey. Bears evolved to reproduce slowly. emergency may have on bear food sources and habitat.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Nancy Nortz
Edgewood, NM 87015
nnortz@nmia.com

From: stephafuchs@everyactioncustom.com on behalf of [Stephanie Fuchs](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:54:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Stephanie Fuchs
Albuquerque, NM 87108
stephafuchs@yahoo.com

From: droogies@everyactioncustom.com on behalf of [Dee Sands](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 9:54:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Dee Sands
Farmington, NM 87401
droogies@duck.com

From: jtsan2260@everyactioncustom.com on behalf of [Jeff Sanford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 8:55:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Jeff Sanford
Hobbs, NM 88242
jtsan2260@gmail.com

From: darkdreameevil@everyactioncustom.com on behalf of [Georgia Griego](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Monday, August 14, 2023 8:53:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Georgia Griego
Albuquerque, NM 87112
darkdreameevil@yahoo.com

From: lesliedwilbur@everyactioncustom.com on behalf of [Leslie Wilbur](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule to protect New Mexican wildlife
Date: Sunday, September 3, 2023 1:07:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Leslie Wilbur
Las Cruces, NM 88005
lesliedwilbur@yahoo.com

From: arleneyogini@everyactioncustom.com on behalf of [Arlene Griffin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the bear and cougar rule
Date: Monday, August 14, 2023 11:31:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Arlene Griffin
Santa Fe, NM 87501
arleneyogini@gmail.com

From: falconbritt@everyactioncustom.com on behalf of [Leslie Britt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reject the new bear and cougar quota!
Date: Monday, August 14, 2023 11:48:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

Please do NOT increase the quota for killing cougars and bears.

1. Top tier predators have crucial roles in the ecosystems! Please see the extensive studies done at Yellowstone and at other wilderness parks around the world: All life "below" the apex predators is affected, right down to reduction of plants such as grass (ranchers won't be happy!) and trees, which provide shade to streams and keep them from evaporating. This happens because there's a cascade effect from having far too many of the animals the cougars and bears and wolves would normally have been eating. Grasses died off, barren areas began appearing, and young trees could not achieve full growth because of too many herbivores, because there was no apex predator eating them to maintain nature's balance. EVERYTHING was affected by having not enough apex predators to balance out the smaller creatures' reproduction rate. Nature knows how to balance everything, and we need to stop messing with it, we only mess it up. We need streams that can flow water, we need grasses and trees. I've also lived in NC where there were too many deer because they had too few apex predators - all the deer were very small and scrawny, and then after a while in that shape, a disease came into them which was even worse. To have healthy deer and elk for our hunters whose families rely upon the meat, I saw firsthand that we must have apex predators to thin them out.

2. The proposed law makes no specifications as to how many can be killed, thus opening them all to extinction. (Who the heck wrote this law? Betting \$\$\$\$ is involved. Anybody knows laws need to be specific.)

3. We also should not be lengthening hunting season for bears in some areas - there are very sound scientific reasons for limiting the season. Don't go against science.

4. Allowing elk and deer hunters to opportunistically shoot bears and cougars is just ridiculous - those hunters are not scientists who have studied the delicate ecological balance in their region, so they have NO IDEA how much damage they are doing when they randomly kill bears and cougars.

Your department's proposal also gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution.

1) Reduce the hunting quotas of these two ecologically critical carnivores.

2) Maintain the current lengths of their hunting seasons.

3) Prohibit the use of hounds in bear and cougar hunting, which is also cruel and unnecessary, not to mention barbaric. We should be past that by now.

Thank you.

Sincerely,
Leslie Britt
El Prado, NM 87529
falconbritt@gmail.com

From: [Cherie Rios](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Removing predatory hunts
Date: Wednesday, August 16, 2023 4:27:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Good afternoon I would like to write in and let you know that myself and my husband are both Put in for the big game hunt draw every year purple deer and elk and sometimes Other big games species. And I wanted to share our opinion about removing Predatory hunts like bear and mountain Lion. Predatory hunts are so important to Our ecosystem and the management of big game without these hunts the entire ecosystem I am trying to say the entire ecosystem Will become unbalanced and there will be a number of problems that follow when there Are too many predatory animals not only does the big game management suffer but also the livelihood of those who like to utilize New Mexico State parks. I urge you to not only leave the predatory hunts be but to Continue to listen to the advice of the experts and Monitor the amount of tags that are issued each year for these hunts.

Most Respectfully,
Jesse and Cherie Rios

From: [505cienea](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Reponse to Proposed Changes
Date: Friday, August 18, 2023 2:54:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NMDGF,

I have read the Proposed Changes Summary for the Bear & Cougar Rule. All the proposed changes appear to have sound science backing them, citing ecological and biological changes on the landscape that warrant increased harvest of both species in specific locations/contexts, as well as accounting for acquisition of new WMA property. I am support of all the proposed changes.

Thanks for your work,

Canyon Young

Sent via the Samsung Galaxy A13 5G,an AT&T 5G smartphone

From: [Evalinda Walrack](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Request
Date: Tuesday, August 8, 2023 11:34:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As a multigenerational New Mexican- I oppose trophy hunting of our large predators. I believe that especially with growing loss of habitat, the increased lack of water and hotter temperatures, that these species populations will be increasingly strained. We don't need more hunting.

Please consider decreasing quotas or at the very least, keeping them the same.

Respectfully

Evalinda Walrack

Sent from my iPhone

From: [Dave R](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect and keep Bear and Cougar hunting
Date: Wednesday, August 23, 2023 2:55:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

David Rios MD

Tel. 484 626 2611

From: [Colby Farquhar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 27, 2023 4:37:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Colby Farquhar

From: [Dennis Doerr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Wednesday, August 23, 2023 4:16:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Dennis Doerr

From: [Terry Rensberger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Wednesday, August 23, 2023 7:05:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Continuous review and adjustment are essential for effective wildlife management. The proposed changes to the bear and cougar rule seem well thought out, reflecting lessons learned over time. Such adaptations are necessary to ensure the well-being of our wildlife populations. Please support bear/cougar hunting.

Sincerely,
Terry Rensberger

From: [Brian Bielby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 20, 2023 9:44:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
Brian Bielby

From: [Jeremy Hagen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 20, 2023 9:08:35 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters would now seek to protect from the very hunters who have nurtured them.

Sincerely,
Jeremy Hagen

From: [Benjamin Saunders](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 20, 2023 11:09:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Benjamin Saunders

From: [Justin Booth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 20, 2023 10:45:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Justin Booth

From: [Kevin Amdahl](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 20, 2023 10:39:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Kevin Amdahl

From: [Matthew Mora](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Sunday, August 20, 2023 10:38:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Matthew Mora

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Respect for All Life: Consume What You Hunt
Date: Friday, September 8, 2023 2:15:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Jason Stutzman

From: joytmj@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Response to Bear and cougar hunts.
Date: Thursday, August 17, 2023 7:07:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Predator management is vital to maintain a healthy habitat and environment in our forest. News of bears and cougars roaming our neighborhoods seeking easy prey like our pets is becoming more common. I also heard of a possibility of not allowing hunting hounds in NM. This will also be detrimental to our outfitters, causing unsuccessful predator hunts and harvesting numbers to decrease. We need to manage our game, especially predators.

NM is known for our great hunts, don't let uninformed extremist take that from us.

Sincerely ;

Tina Joy

From: [Mary Hines](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Response
Date: Wednesday, August 16, 2023 1:25:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support cougar and bear hunt rules currently in place. At times having dogs in the field during archery for deer and elk has been disruptive but I believe that has changed a bit. Let's not further limit hunting access.

From: [Jarrod Dillon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Tuesday, August 22, 2023 10:09:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place. Especially hound hunting at its core is a traditional way of hunting that should never get lost and a sound way for predator management

Sincerely,
Jarrod Dillon

From: [jason.hull](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:47:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
jason hull

From: [Mark DeGroot](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:47:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Mark DeGroot

From: [Chase Lawhorn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:38:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Chase Lawhorn

From: [Nathaniel Dickerson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:38:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Nathaniel Dickerson

From: [Clint Dye](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:36:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Clint Dye

From: [Eric Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:20:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Eric Jones

From: [Matthew Batson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Sunday, August 20, 2023 11:21:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Matthew Batson

From: [Ben Leacox](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Sunday, August 20, 2023 10:50:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Ben Leacox

From: [Ramiro Carrillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Sunday, August 20, 2023 9:00:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Ramiro Carrillo

From: [Marshall Parks](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Sunday, August 20, 2023 7:35:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Marshall Parks

From: [Daniel Heitstuman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 11:00:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Daniel Heitstuman

From: [Ward Schraeder](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Sunday, August 20, 2023 7:20:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Ward Schraeder

From: [John DeAngelis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 9:42:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
John DeAngelis

From: [Steve Gross](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 7:54:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Steve Gross

From: [Dan Egger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 7:31:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Dan Egger

From: [Jeff Lessans](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 7:11:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Jeff Lessans

From: [BILL JACKSON](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 7:10:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
BILL JACKSON

From: [Rex Jensen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 7:04:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Rex Jensen

From: [Jeff Griffeth](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 21, 2023 6:48:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Jeff Griffeth

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Game Management is Rooted in Tradition
Date: Monday, August 28, 2023 9:49:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
rob holsinger

From: [Thomas Clements](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 5:42:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Thomas Clements

From: [Ty Bodiford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Sunday, August 20, 2023 12:24:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The true essence of wildlife management lies in striking a balance. By blending tradition with science, we can ensure that New Mexico's wildlife thrives while preserving the hunting legacy that so many cherish. Let's prioritize this balance in every decision we make. Vote to support the cat and bear hunts!

Sincerely,
Ty Bodiford

From: [Drew Hatter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Sunday, August 20, 2023 7:51:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Drew Hatter

From: [Doug Ferenbaugh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Sunday, August 20, 2023 7:17:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Doug Ferenbaugh

From: [David Rios](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 1:08:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's rich biodiversity is a testament to the success of its wildlife management programs. The proposed changes in the bear and cougar rule indicate a dedication to maintain this balance. Recognizing the essential role played by hunters, anglers, trappers, and recreational shooters across the country, it's vital that decisions be based on the insights and data provided by New Mexico's dedicated department biologists.

Sincerely,
David Rios

From: [Jeremy Freborg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 9:53:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
Jeremy Freborg

From: [Garrett Johnsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 9:20:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Garrett Johnsen

From: [Matthew Bourget](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 9:10:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Matthew Bourget

From: [Brandon Schad](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 8:33:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
Brandon Schad

From: [Doug Garvey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 8:21:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Doug Garvey

From: [Cody Tapie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Monday, August 21, 2023 12:17:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts are essential in controlling their populations and thereby ensuring all wildlife populations are kept at sustainable levels. I'm in full support of bear and cougar hunts.

Sincerely,
Cody Tapie

From: [Dominic Aiello](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Sunday, August 20, 2023 12:54:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Emphasizing the importance of basing wildlife management decisions on scientific evidence and proven methodologies can't be stressed enough. The state's mandate, which emphasizes the protection, regulation, and conservation of game and fish, is a testament to a vision that prioritizes balance. Abiding by these principles, as reflected in the proposed changes to the bear and cougar rule, ensures that this vision is sustained. Keep the hunts!

Sincerely,
Dominic Aiello

From: [Aaron Lingwall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Hunting: The Pillar of NM's Game Success
Date: Wednesday, August 23, 2023 3:08:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Aaron Lingwall

From: [Frank Quarrell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible Predator Hunting
Date: Wednesday, August 16, 2023 11:49:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To State Officials,

As a 65 year old, native New Mexican, I am opposed to any restrictions on responsible predator hunting in our great state. This includes the hunting of bear and cougar in allowable game units.

Sincerely,
Frank M Quarrell
Silver City, New Mexico

From: [lterry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible hunting with dogs
Date: Wednesday, August 16, 2023 2:52:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I've been an active hunter in New Mexico for the past 60 years and I fully support bear and cougar hunting with dogs. With the increased numbers of cougars and decreasing deer herds it is a MUST that more cougars are removed. Since it is almost impossible to hunt cougars without the use of dogs, their use must not be restricted.

Thank you for your consideration,
Larry J Terry

Sent from my Verizon, Samsung Galaxy smartphone

From: [Daniel Peterlick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible predator hunt programs
Date: Wednesday, August 16, 2023 11:34:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico State Game Commission Members,

Please adopt the proposed rules drafted by New Mexico Department of Game and Fish biologists that will allow continued hunting of bear and cougar. Please follow the responsible predator hunt programs and the scientific management proposal submitted by game department biologists--please do not be influenced by the anti-hunting groups many of which are from outside New Mexico.

Hunters and fishermen are uber conservationists, good stewards of the land and resources, they follow rules and respect scientific research concerning game management while supporting responsible hunting programs as you should as well in your capacity on the New Mexico State Game Commission.

Thanks
Dan

From: [Roman L](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible predator hunting.
Date: Thursday, August 17, 2023 10:10:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM game and fish and all other parties involved.

While I am not a resident of NM I do visit and recreate there often.

I am 100% in support of science based predator hunting (even though I have not hunted bear/cougar myself yet).

We need to ensure it's present and regulated by fish n game agency that is based on science and facts.

I hope to get a chance at hunting bear or cougar in NM in near future.

Thanks

Roman

From: [Tyler Flick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible predator hunting
Date: Friday, August 18, 2023 5:13:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Tyler Flick

Sent from my iPhone

From: [Dan Klaus](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Responsible predators hunting should be allowed in New Mexico along with others
Date: Wednesday, August 16, 2023 12:05:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPad

From: fishbikefish@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rethinking wildlife management
Date: Monday, July 31, 2023 11:14:58 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reconsider the policy to allow more hunting of bears and cougars.

A better updated plan to manage our state's wildlife needs to be established to not allow MORE killing of an already stressed species of wildlife trying to adapt to recent fires, drought and change of habitat.

Killing them is not the proper way I want to see our state manage wildlife. We all have the right to exist.

Please say NO to allowing any kind of hunting of bear and cougar in this state. Colorado doesn't allow it. Perhaps our state game and fish needs to be educated on other methods of wildlife management and get out of the wild west mentality of allowing hunting of our valuable wildlife.

Hunting in this day and age is simply a sport and with all the technology these hunters have in their hands it's just a brutal one-sided game that's allowed to be played with our wildlife.

Opening up more opportunity to hunt bear and cougar is not about management but about allowing hunters to have at it and kill our wildlife. It's simply wrong.

Thank you, Felicia R. Trujillo

From: [Mark Mattaini](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Forman, Nicholas, DGF](#)
Subject: [EXTERNAL] Revisions to the Bear and Cougar Rule (19.31.11 NMAC)
Date: Sunday, August 6, 2023 6:53:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is (Dr.) Mark Mattaini. My doctoral education emphasized databased, statistical, scientific analyses—work I continue to do as an emeritus professor for the University of Illinois Chicago while living here. I currently in Laguna Pueblo (I have lived in ten states, including almost a decade in Alaska). I am an active board member of the New Mexico chapter of Backcountry Hunters and Anglers, and a monthly donor to Defenders of Wildlife, thus expanding my perspective. I am writing to support the modest revisions proposed by the NMDGF for the Bear and Cougar Rule.

I have followed the work of the NMDGF since beginning to move to New Mexico over 20 years ago, and have attended Game Commission Meetings since 2020. I also regularly examine documents produced by the NMDGF. In developing this statement, I have also drawn on research and policies from multiple states (e.g., Colorado, Alaska, Washington, and Minnesota), and professional journal publications. The advancing technologies used by the NMDGF are consistent with research and practice across the most relevant areas in the United States and much of Europe. I find their research and analyses technically excellent, thoughtful, and well-grounded in the geography of our state. Their recommendations are supported by the data. No measure is perfect, of course, but the combination of non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and traditional measures where appropriate are safer and less disruptive to the animals, while also limiting costs.

30 years ago, a proposal by Cleveland Amory in the Sierra Club journal suggested that justice demands that “all animals will not only be not shot, they will be protected not only from people, but as much as possible from each other. Prey will be separated from predator, and there will be no overpopulation or starvation because all will be controlled by sterilization.” I cannot imagine a proposal less consistent with the natural world to which all animals are adapted. Ethical hunters engage nature in ways that are as much consistent with historical development of humans and animals up to the present—ways that I view as much more respectful and less traumatic than the ways domestic animals (and even plants), are grown under constraint, and killed to feed most of American society. Ever so, we must continually examine hunting practices, for example, in considerations of what genuinely constitutes fair chase, and is consistent with the North American Model of Wildlife Conservation. I believe the proposals offered by the NMDGF to be consistent with this framework. I therefore fully support their recommendations as prepared for the Game Commission.

Mark Mattaini, DSW
(mattaini@uic.edu)



From: [Branden Salas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rule 190
Date: Tuesday, August 15, 2023 5:51:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Stop rule 190 bear hunting and lion hunting with hounds is a huge tradition and the only way to 100% decide if you want to harvest that animal after it's treed. People that hunt bears and lions without hounds have no sure way to sex the animals to help conservation with sow and female lion population for the next generations of hunters. Houndsmen do care and for most it's a way of life.

Sent from my iPhone

From: [Bryan Ward](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rule change
Date: Thursday, August 17, 2023 3:56:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise. I have trapped most of my adult life and lost that, please don't take this away.

--

Bryan Ward
575-988-8467
575-988-8593

From: [jake Madison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rule changes
Date: Wednesday, August 16, 2023 9:10:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of the changes over all. Large predator hunting is a huge part of New Mexican and American culture. We can't let that disappear.

JM

Sent from my iPhone

From: [Mike Estrada](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rule making against allowing hounds.
Date: Friday, August 18, 2023 3:34:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Anti-hunters haven't the slightest clue as to the logistics of a Bear or lion hunt.

The fact that hounds are used makes no difference in the grand scheme of things. The use of hounds is the safest way to control the predators, ie. Lions and Bears.

Ranchers have suffered many a loss of cattle, sheep, goats and horses due the overrun of predators that roam our public and private lands.

The current policy our state uses is well thought out and fairly enforced. Any threat to our current law is a threat to our ranchers' livelihoods.

Hunters and landowners need to stand together to preserve our rights as hunter and landowners.

The unfortunate loss of a pet can be avoided with proper handling of the animal.

When trained hounds are released into the wild for lions or bears, the handler controls every move of the pack. Thus the safety of the hounds are always at the forefront of the mission.

Anti-hunters have no business trying to dictate how I, or anyone else, chooses to hunt or fish in the state of NM.

Our hunting regulations are very stringent already and for good reason. Panels of educated people have put forth many efforts in preserving our state's wildlife and eco system.

Non participating entities should NOT have a say in the way we currently operate and govern the traditions of our great state.

New Mexicans, stand strong against outside non-participants, when our rights are being attacked.

Respectfully,

Mike Estrada.
NM lifetime resident.

Sent from my iPhone

From: [Bill Ritchey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rule proposal
Date: Monday, July 24, 2023 8:30:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I agree with fishing games proposal for the ruled change would also like to add that we open up more of the state including zone 10 for Bear harvest with use of hounds starting August 16th and increase cougar harvest quota for zone B

In addition I would like to see a spring Bear harvest pursuit for hounds this would push bears back into the forest when they start coming into towns in the summer

From: [Daniel Bosley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules Change
Date: Tuesday, August 15, 2023 7:11:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please reinstate the August Bear hunting season in Southern New Mexico. That's my favorite time to hunt.
Sent from my iPhone

From: [liz.bessin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules and Quotas
Date: Thursday, July 20, 2023 11:50:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Quotas for bears and cougars should be reduced not raised so the ecosystem can remain stable. Both bears and cougars are hard to count. Adding more bear and cougar hunting permits and starting hunting season earlier is cruel given the heat we've been having.

Please consider broad public opinion, and have hunting rules that ban the use of dogs in cougar and bear hunting.

Give these animals a fair chance. Humans are wildlife's biggest threat.

Thank you for your consideration.

Liz Bessin

Santa Fe, NM

From: [Margaret Mendoza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules change
Date: Tuesday, October 17, 2023 10:35:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am strongly opposed to any rule allowing MORE killing of New Mexico's bears and cougars. These beautiful animals are a part of this state's natural resources. They are not sources of food--only trophies for a select few.

Sent from Samsung Galaxy smartphone.

Get [Outlook for Android](#)

From: [Kevin Branum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules changes
Date: Wednesday, August 16, 2023 8:16:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am much in favor of the rule changes proposed. The increases in limits for bear are needed. Need to reevaluate how you come up with limits for cougar. The deer and elk populations are suffering severely due to the amount of cougars.

Kevin Branum

[Sent from Yahoo Mail for iPhone](#)

From: [Pamela Burdick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules the trophy hunting of bears and cougars for the next four years
Date: Wednesday, August 23, 2023 4:40:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I love NM and have visited often. It is an enchanted state except for wildlife and dogs.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Your proposed rules recommend raising the kill quotas for bears, extending the bear hunting season, and continuing indefensibly high kill quotas for cougars.

Please reconsider your proposals for many reasons. These animals deserve protection. Game and Fish has not provided sufficient or coherent information about bear or cougar populations that allow the public or even wildlife biologists to judge whether their recommendations are sound.

Please reconsider.

Thank you for listening.

Pamela Burdick

From: [BART HANSON](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules
Date: Wednesday, August 16, 2023 2:27:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please continue to allow hunting of bears and cougars. Especially continue allowing hound hunting.
Bart m Hanson
1113 S 4th Street
Artesia NM 88210

Sent from my iPhone

From: [Michael Lynch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Rules
Date: Sunday, July 30, 2023 11:30:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs and Madams

Please scrap your proposed rules regarding bears and cougars and change your mindset regarding all wildlife. All wildlife are conscious and suffer. Trophy hunting is ignorance and arrogance.

Thank you

Michael Lynch

From: [johnson_thomas32](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Running hounds on large predators
Date: Wednesday, August 16, 2023 9:12:25 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm a houndsman from Pennsylvania, who is PRO HOUND HUNTING, and also enjoys the pursuit of game with my dogs. I look forward to being able to chase game across the US when I retire. With the hopes of looking up a pine tree or on a cliff edge at a Cougar or Bear. Running these game animals is very enjoyable and rewarding. It gives sportsman the chance too better assess the trophy and decide if it's one they want to take or let go.

I think taking the option of hunting hounds on these game animals is going to take a big hit too the hunting economy within the state. It will also allow the predator population too expand further then the carrying capacity of the environment too allow which in turn will hurt the Elk and Mule deer Whitetail populations. There too it will be more common for tourists to encounter bears and cougars with the possibility of injuries or death.

Sincerely,

Thomas Johnson

Sent via the Samsung Galaxy S21 Ultra 5G, an AT&T 5G smartphone

From: [Raaj deva](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] SEO Solutions (No Reply Yet)
Date: Wednesday, October 11, 2023 9:34:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi,

I haven't gotten any response from you for the last couple of days. Please let me know, I'll surely help you out.

Thanks

From: Raaj deva
Sent: Wednesday, October 11, 2023
Subject: SEO Solutions (No Reply Yet)

Hi DGF-Bear-Cougar-Rules@state.nm.us,

Greetings of the day!

I came across your website and noticed that you were not ranking well for certain keyword phrases.

With your permission I would like to send you an SEO report with prices showing you a few things to greatly improve these search results for you. These things are not difficult, and my report will be very specific. It will show you exactly what needs to be done to move you up in the rankings dramatically.

If interested. May I send you a price/package/proposal.?

Thanks

Raaj deva

From: [p.platt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] STOP IT!
Date: Sunday, July 16, 2023 1:55:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NM Game & Fish,

Just stop it! Do not allow these new hunting proposals to pass.

There is no science-based evidence to support these actions.

Pamela Platt

From: [Mary Ann Waddell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Save cougars
Date: Friday, October 6, 2023 7:08:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the new hunting limits

From: [Jim Willems](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Save hunting
Date: Wednesday, August 16, 2023 12:39:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please allow the qualified biologists and other Game and Fish professionals to continue to do their jobs. New Mexico's wildlife needs our help in order to survive and not face slow and excruciating deaths by an already over populated large predator population.

We need to be able to control the populations of all large predators in New Mexico and the best way to do that is to continue to allow hunting with hounds or any other method deemed necessary by the professionals.

Ending hound hunting and other forms of predator control will ensure diminished populations throughout the state. It is your responsibility to maintain balanced and healthy populations of all wildlife, not just large predators.

Sincerely,

James Willems
Farmington, NM

From: celery_nm@everyactioncustom.com on behalf of [Anne Petrokubi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Save our lives and wildlife
Date: Monday, August 14, 2023 5:48:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Anne Petrokubi
Taos, NM 87571
celery_nm@yahoo.com

From: [Dee Sands](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Save our mountain lions
Date: Saturday, October 14, 2023 9:36:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Please do not extend any murder of our iconic mountain lions either in number or lengthening the season.

Your plan is not sustainable.

No one wants rich greedy Texans tearing up our landscape and murdering our animals.

Sincerely,

Dee Sands

From: [Brad Green](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Science based wildlife management
Date: Wednesday, August 23, 2023 3:42:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Brad Green

From: [DAVID COX](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Science over emotion
Date: Wednesday, August 16, 2023 11:46:33 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please except this email as enthusiastic support for the science-based analysis that the New Mexico Department of Game and Fish would use to establish reasonable hunting regulations to effectively manage bear and cougar population.

Too often I feel that people react with their hearts rather than their heads when it comes to wildlife regulation. The most passionate people I have ever met when it comes to the environment and the health and well-being of wildlife are hunters. To some this may seem to be a contradiction, it is not, but then again that is emotion over fact.

Thank you, David Cox, Glorieta, NM

David Cox | motion+stills |
davecoxmedia.com | 505.660.4463

From: [Jay Krottinger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Science, Not Sentiment: Making Wise Decisions
Date: Tuesday, August 22, 2023 7:53:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Jay Krottinger

From: [Kaden Martinsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Science, Not Sentiment: Making Wise Decisions
Date: Sunday, August 20, 2023 4:02:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Kaden Martinsen

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Science, Not Sentiment: Making Wise Decisions
Date: Monday, August 28, 2023 8:12:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Brian Carson

From: [Nick Mote](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Science-based Bear/Cougar Rules
Date: Tuesday, August 22, 2023 7:52:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Commission,

I encourage you to “listen to the science” with your newly proposed bear/cougar management rules. Don’t bend to the political pressures of interest groups using the public comment to make it appear that the general public is against bear and cougar management.

Hunting, especially of predator species, is an important part of maintaining a balanced, sustainable population of wildlife in our wonderful state. The people best suited to make the recommendations for target populations are the wildlife biologists who’s job it is to study the numbers, not militant organizations who are catering to their donating members.

As an avid outdoorsman and father, I sincerely hope you base your decision for predator management off the scientific data, not some campaign by interest groups to reduce hunting access.

Nick Mote
Albuquerque, New Mexico

From: [kevin.moleschi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Tuesday, August 22, 2023 8:40:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
kevin moleschi

From: [Jonathan Marx](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Tuesday, August 22, 2023 9:21:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The challenges we face in wildlife management today call for a proactive approach. Addressing criticisms, updating rules, and ensuring responsible practices are all part of building a sustainable future. I stand with the game department's vision and hope we can forge ahead with unity and determination. Keep the bear hunts, keep the cougar hunts!

Sincerely,
Jonathan Marx

From: [Robert Nienow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Monday, August 21, 2023 6:12:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Robert Nienow

From: [Levi Hansen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Sunday, August 20, 2023 7:09:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Levi Hansen

From: [Bryan Cook](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Sunday, August 20, 2023 2:10:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Bryan Cook

From: [Brent Taft](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Sunday, August 20, 2023 7:09:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Brent Taft

From: [Rick Boback](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Sunday, August 20, 2023 7:08:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Rick Boback

From: [Timothy Gallaty](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Management: Beyond Just Being Lawful
Date: Thursday, August 24, 2023 6:47:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Timothy Gallaty

From: [Tim McCoy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Friday, August 25, 2023 4:39:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Tim McCoy

From: [Philip West](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Thursday, August 24, 2023 12:28:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Philip West

From: [Mitchell Pinnell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Wednesday, August 23, 2023 10:09:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Mitchell Pinnell

From: [Warren Wallace](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Sunday, August 20, 2023 2:54:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Warren Wallace

From: [Tadd Olson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Sunday, August 20, 2023 2:16:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Tadd Olson

From: [Ryan Glitsky](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Sunday, August 20, 2023 6:54:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Ryan Glitsky

From: [Josh Caple](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Saturday, August 19, 2023 9:30:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As someone who has observed wildlife trends over decades, I can attest to the importance of hunters in conservation. The funding they provide, the attention they bring to ecosystem health, and the role they play in managing populations is irreplaceable. We must recognize and value their ongoing support. Cougar and bear hunts should be in place!

Sincerely,
Josh Caple

From: [cody kress](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Monday, August 21, 2023 6:58:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
cody kress

From: [Thomas Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Sunday, August 20, 2023 9:25:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

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We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
Thomas Wood

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific Strategies Are Vital in Predator Control
Date: Wednesday, August 30, 2023 8:26:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Brian Carson

From: [Jacob Wolfe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Scientific approach to why hound hunting is good for wildlife
Date: Tuesday, August 15, 2023 10:45:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear state of New Mexico,

Hear are some of the reasons you should consider keeping a hound hunting season for bear and cougar. One of the main reasons are it is very ethical way of hunting. By treeing a bear or cougar you get a good look at the animal. Which gives you a good look at the age and sex of the animal. So there for there a far less accidental killing of an immature animal. Which actually helps the overall health of the predator population.

Reason number two: by keeping the predator population in check increases the health of mule deer and elk populations.

By managing the predator population to a good balance helps the deer and elk thrive better. It also then in return make the predators that are their much healthier. with more deer and elk it allows more opportunity for tags for residents and non resident hunters. Which help the state agency rase money.

Reason number three: if the predator population goes unchecked for to long it will be detrimental for the overall health of the species.

If the predator population goes unchecked and swings where there are more predators than prey species eventually they run out of food and have a massive die off from diseases. In that mean time they are killing of all the deer and elk populations. Which means the less deer and elk . the less tag are gonna be available for resident and non resident hunters. In return means the less money that state agency brings and the less money that is spent in the towns the hunters pass through on there adventures.

If y'all actually read all this I surely do appreciate it and please take a good look at the science behind it. It's very important to manage the predator population healthy balance. I do speak for most hounds man and we love running the game and treeing them and freeing them to live another. Please don't judge us based off one two bad apples in the bunch.

Thank you, sincerely from

Jacob wolfe

From: [Carl Tapia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Seriously??
Date: Tuesday, August 15, 2023 4:45:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the new issue about stopping bear and cougar hunting. You have to hunt both to have balance.

Sent from my iPhone

From: [Evan Allan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Setting the Record Straight: Hunters are Conservationists
Date: Sunday, August 20, 2023 5:39:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Evan Allan

From: [Robert Taylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Setting the Record Straight: Hunters are Conservationists
Date: Sunday, August 20, 2023 4:57:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Robert Taylor

From: [Jeff Snyder](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Setting the Record Straight: Hunters are Conservationists
Date: Sunday, August 20, 2023 8:28:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Jeff Snyder

From: [Jason Clark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Setting the Record Straight: Hunters are Conservationists
Date: Saturday, August 19, 2023 10:44:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Jason Clark

From: [Al Bowling](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Setting the Record Straight: Hunters are Conservationists
Date: Thursday, August 24, 2023 6:35:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Al Bowling

From: [Juan Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Thursday, August 24, 2023 6:59:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Juan Martinez

From: [Chance Lee](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Thursday, August 24, 2023 12:55:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Chance Lee

From: [Steve Scrape](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Thursday, August 24, 2023 10:59:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Steve Scrape

From: [Brandon Vonaesch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Saturday, August 19, 2023 10:14:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
Brandon Vonaesch

From: [Robert Ellis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 5:23:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Robert Ellis

From: [Gregg Munson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 12:25:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Gregg Munson

From: [Patrick Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 10:12:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Patrick Miller

From: [Ryan Nottestad](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 10:04:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's stance on wildlife management provides a compelling blueprint for balancing conservation with sustainable usage. Embracing scientifically-backed strategies, including regulated hunting, fortifies New Mexico's position as a forerunner in wildlife conservation. With that in mind, keep the bear and cougar hunts!

Sincerely,
Ryan Nottestad

From: [Joe Knight](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 8:57:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Joe Knight

From: [Caleb Schelle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 8:55:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

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Sincerely,
Caleb Schelle

From: [Doris Rusch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 8:55:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Doris Rusch

From: [Candy Yow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Sunday, August 20, 2023 8:46:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Candy Yow

From: [Tom Rumney](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Sound Policy Decisions: Relying on Proven Data
Date: Thursday, August 24, 2023 6:33:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Tom Rumney

From: [Dav Safaris](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] South Africa and Zimbabwe a lifetime Safari Tour
Date: Friday, September 15, 2023 5:57:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

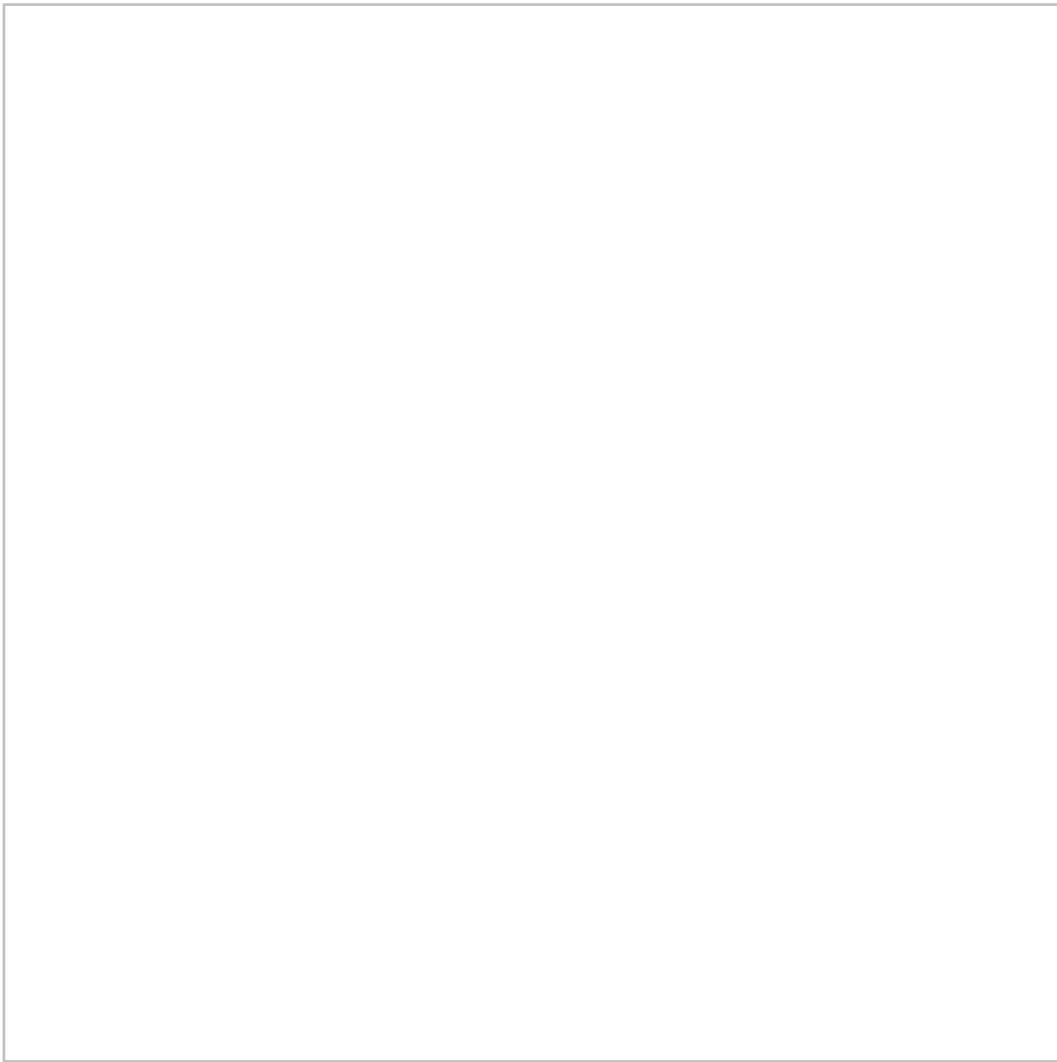
Logo



Uganda, Rwanda, Kenya, Tanzania, South Africa, Zimbabwe, Namibia, Botswana

Email: info@davsafaris.com Company: [Dav Safaris](#) Tel: +256757795781

Embarking on a safari in **South Africa** and **Zimbabwe** is an adventure like no other. Imagine witnessing majestic wildlife in their natural habitats, exploring vast national parks, and immersing yourself in the rich local culture. To make the most of your safari adventure, proper planning is essential. Here are some key aspects to consider. [Read more >>>](#)



Exploring South Africa's Safari Destinations

If you're seeking the ultimate wildlife adventure, South Africa should be at the top of your travel list.

From the world-renowned Kruger National Park to hidden gems like the Karongwe Private Game Reserve, there is no shortage of options to embark on an unforgettable safari journey.



[View Trips](#)

Wildlife Encounters at Kruger National Park

With its sprawling savannahs, abundant wildlife, and iconic Big Five game animals, Kruger National Park is a must-visit destination for any wildlife enthusiast.

The park covers an impressive 19,485 square kilometers and is home to over 500 species of birds, 147 species of mammals, and numerous reptiles and amphibians. On a full-day safari in the park, be prepared to witness lions, elephants, rhinos, leopards, and buffaloes in their natural habitat.



[View Trips](#)

Witnessing the Majestic Victoria Falls, Zimbabwe

When it comes to natural wonders, few compare to the awe-inspiring Victoria Falls. Located on the border of Zimbabwe and Zambia, this towering waterfall is a must-see for any adventurous traveler in Southern Africa. Standing at over 350 feet tall and almost a mile wide, Victoria Falls is a sight to behold.



[View Trips](#)

The Magnificent Hwange National Park

The magnificent Hwange National Park is a must-visit destination for wildlife enthusiasts.

With its vast expanse covering over 14,600 square kilometers, the park is home to an incredible array of biodiversity, making it one of the top game reserves in Africa.



[View Trips](#)

Why you should contact us about a Safari in Africa

Dav safaris is experienced in organizing amazing African Safari experiences to Kenya, Tanzania, Uganda, Rwanda, Zanzibar, Zimbabwe, Botswana and others.

We have overtime assembled a team mixed with young and energetic staff guided by well experienced mature managers and directors who are local guides to our destinations. If contacted, one of our staff will assist in providing accurate and timely information that you can rely on as soon as possible.

[Speak to Our Safari Expert](#)

Email: info@davsafaris.com

WhatsApp: +256757795781 or +256701412430

Logo



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www.davsafaris.com

Our mailing address is:

Freedom City Shopping Mall Entebbe Road, Uganda

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From: [Darryle Cash](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Southern Zone August Bear
Date: Wednesday, August 16, 2023 6:44:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Would it be possible to reinstate the southern zone dates to align with the August 16th northern zones?

Thanks Darryle

From: [Duane Baker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Southern Zone Bear Season
Date: Tuesday, August 15, 2023 10:57:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to see the August bear season reinstated for the southern zone.

Thank you,

Duane Baker

Hunter, Fisherman, Sportsman, and supporter of responsible game management and conservation.

Get [Outlook for Android](#)

From: larryltee@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Southern Zone bear hunts
Date: Tuesday, August 15, 2023 7:08:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please work on bringing back the Southern zone bear hunts. These hunts are more convenient and helped to serve the bear population before the start of other seasons in the same areas.
Sent from my iPhone

From: [Hank Drake](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Southern zone bear
Date: Tuesday, August 15, 2023 9:11:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello I just wanted to reach out to see if there is any way you will open southern nm zones open in august agin.
Temps are very similar to other zones and all of the southern zone hunters flood into the closest zones to the north.
Thank you

Sent from my iPhone

From: [barbara.judy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Statement of opposition to increase in hunting quotas for New Mexico bears and cougars
Date: Sunday, August 6, 2023 12:49:54 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear State of New Mexico Department of Game and Fish;

This message is to express opposition to your department's current proposal to accelerate hunting take of New Mexico bears and cougars. My perspective as a New Mexican is that wildlife is a resource for all citizens of the state, and not a source of entertainment or sport for a select group of trophy hunters. Your department has not spent sufficient time and resources to understand the ecosystem value of New Mexico bears and cougars, and cannot project the ecosystem effects of accelerated take, especially given the multi-decade drought we are experiencing and its effects on animals throughout the state.

I object to the funding basis for the Department of Game and Fish, which relies on sale of hunting licenses to fund the department. The obvious conflict of interest between managing wildlife for sustainable populations and the department's need to fund its regular operations leaves DGF with no credibility when seeking to accelerate hunting take.

Sincerely,

Barbara Judy
220 Anita Place
Santa Fe NM 87505-8806

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Monday, August 28, 2023 10:56:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Dusty Bauer

From: [Jilliane Zito](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters" Role
Date: Sunday, August 20, 2023 12:18:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Jilliane Zito

From: [Sue Tidwell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Sunday, August 20, 2023 7:48:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Sue Tidwell

From: [James Jubran](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Saturday, August 19, 2023 9:05:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
James Jubran

From: [Nathan Younkin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Sunday, August 20, 2023 8:09:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Nathan Younkin

From: [Ramona Harrison](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Sunday, August 27, 2023 5:30:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Ramona Harrison

From: [Richard Grueter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Thursday, August 24, 2023 1:24:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Richard Grueter

From: [Cameron Gatto](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters" Role
Date: Thursday, August 24, 2023 1:17:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Cameron Gatto

From: [Bart Hill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Wednesday, August 23, 2023 2:51:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's stance on wildlife management provides a compelling blueprint for balancing conservation with sustainable usage. Embracing scientifically-backed strategies, including regulated hunting, fortifies New Mexico's position as a forerunner in wildlife conservation. With that in mind, keep the bear and cougar hunts!

Sincerely,
Bart Hill

From: [Shannon Yager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Tuesday, August 22, 2023 7:09:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Shannon Yager

From: [Shannon Yager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Tuesday, August 22, 2023 7:09:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Shannon Yager

From: [Shawn Chadwick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Sunday, August 20, 2023 2:27:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Shawn Chadwick

From: [Dave Hall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters" Role
Date: Sunday, August 20, 2023 12:30:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Dave Hall

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stewardship Over Popularity: Valuing Hunters' Role
Date: Wednesday, August 30, 2023 4:58:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Emphasizing the importance of basing wildlife management decisions on scientific evidence and proven methodologies can't be stressed enough. The state's mandate, which emphasizes the protection, regulation, and conservation of game and fish, is a testament to a vision that prioritizes balance. Abiding by these principles, as reflected in the proposed changes to the bear and cougar rule, ensures that this vision is sustained. Keep the hunts!

Sincerely,
Rusty Truman

From: [Rebecca M. Summer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop Bear/Cougar rules now
Date: Monday, July 31, 2023 9:13:52 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings:

My family and I live on the edge of the Gila National Forest. Below is information and data that clearly can guide the rules for these amazing mammals.

- 1- Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.
- 2- Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.
- 3- Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.
Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.
- 4- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- 5- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- 6- Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.
- 7- Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar

and bear hunting.

Thank you for your consideration of the lives of both bears and cougars on our lands of NM.

Rebecca Summer, PhD
Richard Ducotey
Silver City, NM

From: [isabel montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop Rule 190
Date: Tuesday, August 15, 2023 5:55:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I do not agree with Rule 190.

From: [C.C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop Selling our Wildlife
Date: Sunday, October 15, 2023 2:49:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing today to oppose the proposed allowance. Removing legislation and protections has always resulted in worse than anticipated impacts to the species due to over-harvesting and increased poaching that these rules allow for. Cougar and Bear are the only predators we have to help reduce the deer, elk, feral cow, and feral horse populations, which, in regards to the last two are actually in need of management. I highly recommend that instead of pursuing this short-sided, money grabbing rule, you retract the proposed rules.

Thanks,

Chris

From: [Ronald E. Voorhees](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop Trophy Hunting
Date: Wednesday, August 9, 2023 9:00:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings:

I am writing to strongly oppose continuation of allowing hunting of cougars and bear in New Mexico. There should be a moratorium on hunting these animals until there is a rigorous, fact-based assessment of the effects of hunting these animals. This assessment should include effects on animal populations, actual impacts on livestock, and economic impacts.

There is a positive impact on tourism of feeling that wildlife and the rest of the natural world is intact in New Mexico. It could be - and should be - assessed, as it may well dwarf the small amount of permit and license fees generated by hunting, which benefits only a tiny number of hunters compared to the vastly larger number of New Mexicans and tourists who visit New Mexico and want to have unspoiled beauty.

The assessment should also consider animal cruelty. Hunting is no longer a hunter walking in the forest - current methods are both high-tech and barbaric. I feel that current hunting methods are more related to cockfighting in terms of cruelty. Moreover, it is even more cruel, as bears and cougars have much more consciousness than chickens. Cockfighting has appropriately been banned. Bear and cougar hunting should be similarly evaluated and approached.

Please consider at least a moratorium if not an outright ban on hunting mountain lions and bears.

Sincerely yours,

Ronald E. Voorhees, MD, MPH
Santa Fe 87505
revkak2@me.com
(412)849-6078

From: [Lissa Hart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop Trophy Hunting
Date: Friday, October 20, 2023 6:17:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Issuing a hunting license to trophy hunters is a practice I'd like to see ended. Really, what is someone going to do with a bear or a cougar but show it off? I'm sure that those type of people have enough to show off already. Please, leave our beautiful mountain lions alone!!

Lissa Hart
505-899-2640

From: [Gilbert Miera](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop destroying our culture
Date: Wednesday, August 16, 2023 11:41:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My family's roots are truly New Mexican and I know it's difficult for transplants to understand our ways and culture (you claim one of the reasons of moving to NM is the culture). STOP destroying our culture!!! Just because you didn't grow up doing the things we did what gives you the right to change it? Hunting, fishing, and trapping are things we learned from our grandfathers! I think when people bring up these issues the first question we ask them is where are you originally from, it would be my bet its not NM!

Sent from my iPhone

From: [Walter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop hunting bears and cougars with dogs.
Date: Wednesday, August 16, 2023 2:59:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Walter

From: wchance53@hotmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop hunting bears and lions with dogs.
Date: Wednesday, August 16, 2023 5:38:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am a hunter, but I vote to stop hunting bear and lion wit dogs. I'd like see all hunting stop for both animals, but at least stalking is not as horrible as being chased by a pack of dogs.

Walter Chance
1116 Dartmouth NE
ABQ, NM 87106

From: [Gilles Bussod](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop hunting cougars and bears in NM
Date: Sunday, August 6, 2023 3:34:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: robertfischhoff@everyactioncustom.com on behalf of [Robert Fischhoff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop killing everything! Reject the bear and cougar rule.
Date: Monday, August 14, 2023 9:09:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I completely oppose the New Mexico Department of Game & Fish's insane proposal to kill even more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Robert Fischhoff
Silver City, NM 88062
robertfischhoff@gmail.com

From: [Peg Busard](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop targeting pumas and bears
Date: Wednesday, September 27, 2023 7:51:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the proposed trophy hunting limit increase for bears and pumas in New Mexico. Trophy hunting is a particularly despicable act and I am shocked that the New Mexico Department of Game and Fish is even considering this proposal. Find another way to increase your revenues. I would be in favor of a surcharge on outdoor gear or increased recreation site fees in place of increasing horrific trophy hunting permits. Frankly, I believe trophy hunting should be outlawed.

Thank you for your consideration of my opinion.

Regards,

Peg Busard

From: [Carol Canfield](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop the killing!!!!
Date: Friday, October 20, 2023 2:00:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We the numerous people who stand firm in a no kill state towards wildlife of any kind are appalled. You know nothing about the current bear, cougar population yet claim to intend on raising kill limits on both!!!! You also can't be content with that so want to extend the season of innocent creatures blood killing!! Whats the basis for such slaughter??? I'm vehinently AGAINST your evil deeds, plans without ANY accountability!!!

Disgusted with your Dept of death!!!!

From: [Essie Martinez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop the killing
Date: Tuesday, October 10, 2023 3:48:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

You all need to end this senseless killing of nm wild animals, they have every right to live just like you do! Nature will take care of overpopulation all by itself . They have more rights than cattle to exist in their God given territory. Stop the murder now !!

From: [Annemarie McMahon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Stop!
Date: Sunday, October 15, 2023 2:25:55 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am against the plan to increase the number of unnecessary killings of cougars in NM!
Annemarie McMahon
Albuquerque, NM 87108
Sent from my iPhone

From: [Jake Sant](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Strongly Support Bear and Cougar Hunting
Date: Wednesday, August 16, 2023 10:21:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I strongly support sustainable management practices for bears and mountain lions, including hunting with hounds. Please do not take this away from responsible sportsmen and women.

Kind regards,
Jake Sant

From: [Rick Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Strongly oppose increased hunting of bears and mountain lions
Date: Tuesday, September 26, 2023 4:36:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Department of Game and Fish,

I am strongly opposed to increasing the number of bear and mountain lion hunting permits in New Mexico, especially for trophy hunters. This is an offensive activity (certainly not a sport) and should be prohibited both in New Mexico and nationwide. Aside from that, the proposed changes will harm our bear and mountain lion populations who are already facing grave threats from climate change, fragmented habitat, and motor vehicle collisions. There is no scientific review or justification of this proposal and it seems to be solely meant to benefit hunting interests. Many of us either live in or moved to New Mexico because of its rich natural beauty and wildlife, including bears and mountain lions.

Instead of seeing bears and mountain lions as a revenue source through hunting permits, the Department of Game and Fish should be working with the scientific and environmental communities to more accurately assess the bear and mountain lion populations in our state and determine ways to help them flourish. Increasing hunting quotas is NOT the way to do this!

It's time to end the age-old antagonisms towards these animals and instead find ways to coexist in a healthy environment for all.

Please reject this offensive and inappropriate proposal.

Sincerely,

Richard Brown
Rio Rancho, New Mexico 87144
rickbbiking@gmail.com

From: [Val Weston](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Subject: In support of science-based bear and cougar hunt rules
Date: Sunday, August 20, 2023 9:55:47 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To the New Mexico State Game Commission-

Please count my voice in support of the scientific management proposal submitted by game department biologists and the continuation of science-based management programs for bear and cougar populations in our state. Emotion and manipulation have no place in proper management policies.

Thank you,

Val Weston
Silver City, NM
[Photographer](#) | [Artist](#) | [Writer](#) | [Entrepreneur](#)



From: [Greg Meisner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Subject: Support our NMDG&F Biologists
Date: Monday, August 21, 2023 7:36:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
Greg Meisner

From: [Joseph T. Griego](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Bases Sound Science Management
Date: Wednesday, August 16, 2023 12:56:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Department of Game & Fish,

Hunting is under attack within the state!

We continue to watch our heritage being washed away by groups that are constantly looking for an agenda. Many of these groups have the majority of their membership that has never set foot in the forest, woods, or wilderness yet they are allowed to dictate policy. This dictation of policy is not through science but based on empirical emotions. If you continue to allow this behavior, you too will find yourselves out of a job. The department has employees (biologists) that evaluate the wildlife populations, harvesting, and environmental conditions in making sound recommendations for not only conservation. If the state is not going to follow their research then why are we employing them? I could go on about this topic, but why when you have all the evidence required to make the right decision...

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state.

Regards,

Joseph T. Griego,
Hunter, Outdoorsman, & American Patriot

Sent from my iPhone

From: [Mark Scott](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Bear and Cougar Hunting
Date: Monday, August 28, 2023 8:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please vote in support of Bear and Cougar hunting.

Mark Scott
Vernal, Ut.

Sent from my iPhone

From: [Mark Seraly](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Bear and Lion Hunting
Date: Wednesday, August 16, 2023 11:21:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In order to continue to maintain healthy populations of Bear and Cougar in NM, restrictions on hunting should not occur. If bear and cougar hunting is outlawed, population expansion will surely occur resulting in a greater likelihood of negative encounters with people, pets, and livestock.

Thank you,

Mark P Seraly MD

From: [Mariah Lucero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Bear and Lion Hunting
Date: Thursday, August 17, 2023 5:32:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [John Crenshaw](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Bear-Cougar Rule as presented
Date: Monday, August 21, 2023 4:39:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear State Game Commissioners:

Your professional big game biologists have presented you with a conservative, science-backed proposal for cougar and bear hunting over the coming four-year span of the rule. Their recommended modifications to the existing rule are modest, and the changes' effects on the harvest figures for both species will be nominal.

As a Native New Mexican with long experience in wildlife conservation, I personally support the Game and Fish Department's recommendations as presented, and I urge you to do the same. You can vote with confidence: Contrary to the dire suppositions you are receiving from some quarters, both species are thriving, and will continue to thrive, under this management regimen.

Thank you for reading.

John Crenshaw
1923 Hopi Road
Santa Fe, NM 87505
505 577-7510

From: [Kim Siegler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Hound Hunting in New Mexico
Date: Sunday, August 20, 2023 9:11:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti-hunting groups does nothing but give them momentum. When the game department tried to bring trappers and anti-groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Kim Siegler

From: [Edwin Zuni](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support Hunters and Houndsmen
Date: Tuesday, August 15, 2023 6:17:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We support New Mexico hunters and hounds-men!

Please reconsider the rules of bear and cougar and allow us to defend our lives and future for generations to come.

[Sent from Yahoo Mail for iPhone](#)

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Wednesday, August 23, 2023 8:10:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Brian Carson

From: [Nicholas Espinoza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 9:24:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Nicholas Espinoza

From: [Jessie Cahill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 8:44:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Jessie Cahill

From: [Jarrod Fischer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 7:55:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need to keep the management of lions and bears the in the great state of New Mexico...management of predators is key to keep the ungulate population flourishing. The best tool to manage these predators is the use of hounds because it allows you to age and sex the animal with no guessing and also allows you to be more selective on the animal you want to harvest. Please do not change anything on the lions and bear hunts.

Sincerely,
Jarrod Fischer

From: [Matt Gaugh](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 7:29:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support. Thank you for your time

Sincerely,
Matt Gaugh

From: [Sally Stommen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 7:13:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Sally Stommen

From: [Andrew Dotson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 7:12:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Andrew Dotson

From: [Jordan Rutherford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Tuesday, August 22, 2023 5:45:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Jordan Rutherford

From: [Clint Hebert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Monday, August 21, 2023 5:39:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Clint Hebert

From: [Peter Skarda](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 8:19:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The state's predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Sincerely,
Peter Skarda

From: [Elmer Otero](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Monday, August 21, 2023 7:33:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the constantly shifting landscape of wildlife management, one thing remains constant: the importance of informed, science-based decisions. This ensures that traditions are respected, ecosystems are preserved, and future challenges are anticipated. The proposed adjustments to the bear and cougar rule, rooted in both science and historical context, embody this approach.

Sincerely,
Elmer Otero

From: [Oscar Guevara](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Monday, August 21, 2023 4:58:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Oscar Guevara

From: [John Mccoy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Monday, August 21, 2023 1:14:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
John Mccoy

From: [Thomas Bennett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Monday, August 21, 2023 1:09:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Cougar and bear hunts must continue. The success of sustainable game management lies in our ability to adapt to changing conditions while respecting the traditions that brought us here. New Mexico's rich hunting history, combined with modern scientific insights, offers a roadmap to a prosperous future for both our wildlife and our hunters.

Sincerely,
Thomas Bennett

From: [Jordan Conant](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 12:05:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Jordan Conant

From: [Gabe Torrez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 11:48:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Gabe Torrez

From: [Dan Thomas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 11:38:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Dan Thomas

From: [Jordan Coughlin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Sunday, August 20, 2023 9:43:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Jordan Coughlin

From: [Leonard Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support NMDG&F Biologists
Date: Wednesday, August 23, 2023 10:11:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Leonard Montoya

From: nreif@plateautel.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support bear & cougar hunting
Date: Wednesday, August 16, 2023 11:58:05 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please continue control of bears and cougars. Management of their numbers is crucial for other wildlife (deer, bighorn sheep, elk) & domestic animals.

N. Mark Reif, DVM

Clayton Veterinary Clinic

From: [Daniel Ocana](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support bear and lion hunting
Date: Thursday, August 17, 2023 4:46:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban. The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences. California is the perfect example. One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

From: [Patrick M. Boyne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for Bear and Cougar hunting
Date: Wednesday, August 16, 2023 12:25:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Members of the New Mexico State Game Commission,

I am writing to express my strong support for the continued practice of bear and cougar hunting, including hunting with dogs, as approved by state biologists. As an avid outdoors enthusiast and conservationist, I believe that responsible hunting plays a crucial role in maintaining healthy wildlife populations and preserving the delicate balance of our ecosystems.

Hunting, when properly regulated and guided by scientific research, is an effective tool for wildlife management. Hunting with dogs, in particular, has proven to be an efficient and ethical method for managing bear and cougar populations. The use of well-trained hunting dogs allows for more precise tracking and selective targeting, reducing the likelihood of accidental harm to non-target species. Moreover, hunting with dogs promotes responsible hunting practices by enhancing safety and minimizing the risk of wounded animals escaping and suffering unnecessarily.

In conclusion, I urge the New Mexico State Game Commission to continue supporting bear and cougar hunting. By doing so, we can maintain a balanced and healthy ecosystem, support wildlife conservation efforts, and uphold our cherished hunting traditions. Thank you for your dedication to the responsible management of our state's wildlife resources.

Sincerely,

Patrick Boyne

From: [Brian Teller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for Bear and Lion Hunting
Date: Tuesday, August 29, 2023 8:35:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commission,

Neither bears, nor lions are endangered. Therefore, their population must continue to be managed by ethical hunting. Hound dog use, some people's heritage, is an effective way to locate these predators. It must not be infringed. I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. Thank you for your considerations.

From: [Alyssa](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for Hunting with Dogs as an Effective Method for Bears and Mountain Lions
Date: Wednesday, August 16, 2023 12:51:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern,

I am writing to express my strong support for the continued allowance of hunting with dogs as a legitimate and effective method for pursuing bears and mountain lions in New Mexico. As a responsible outdoors enthusiast and a supporter of conservation efforts, I believe that this traditional hunting practice should not be infringed upon due to its practical benefits for both wildlife management and safety.

Hunting with dogs has been a time-honored practice that dates back centuries and has proven to be a successful and ethical means of controlling predator populations. This method allows hunters to closely track and engage with targeted animals, thereby ensuring precise and humane kills. Additionally, hunting with dogs enhances the safety of both hunters and the general public, as trained hunting dogs contribute to better tracking and preventing the animals from entering populated areas.

Furthermore, the use of well-trained hunting dogs can lead to more selective hunting, minimizing the impact on non-target species. By allowing hunters to focus on specific animals, such as bears and mountain lions, the risk of unintended wildlife casualties is reduced. This targeted approach aligns with the principles of responsible wildlife management and helps maintain a healthy balance in local ecosystems.

In light of these benefits, I strongly urge the New Mexico Department of Game and Fish to maintain the right to hunt with dogs for bears and mountain lions. By preserving this method, you can ensure the continued effectiveness of predator population control and contribute to the conservation of these species. I believe that a balanced approach that respects the rights of responsible hunters while safeguarding the well-being of wildlife and the public is crucial.

Thank you for your attention to this matter. I trust that you will carefully consider the significance of hunting with dogs as an important tool for wildlife management and conservation in New Mexico.

Sincerely,

Alyssa Tharp

From: [Rashaan Sorrelhorse](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for Lion and Bear Hunting with Dogs
Date: Wednesday, August 16, 2023 5:40:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting with dogs as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

From: [Dylan Anderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for Proposed Bear and Cougar Rule Changes
Date: Thursday, August 17, 2023 8:33:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Game Commission,

I am writing to express my **strong support for the proposed changes** to bear and cougar regulations, as well as my **unwavering commitment to science-based bear management** in our state.

As a lifelong resident of New Mexico and a current resident of Albuquerque, I engage in hunting activities within our beautiful state every year. I have participated in several bear hunts, valuing the accessibility of over-the-counter opportunities for pursuing big game locally. This endeavor holds a special place in my heart, not only for the thrill it brings but also for the unique landscapes it allows me to explore. Moreover, the sustenance provided to my family in the form of meat and tallow from these hunts is deeply cherished.

Research by Hristienko & McDonald (2007) underscores the upward trend in black bear populations throughout the continental United States [1]. This thriving population is, however, juxtaposed with the challenge of diminishing habitat due to urbanization and the convergence of urban-wildland interfaces. It becomes apparent that the expansion of black bear territories requires astute management.

A parallel concern revolves around elk populations, which have come under significant pressure due to factors like drought and habitat loss. A study by Quintana (2016) conducted in Northern New Mexico highlights an alarming observation: "the primary cause of death for [elk] calves across all years was black bear predation." This underscores the pivotal role that science-driven policies play in effectively managing both bear populations and their prey species within our state.

In light of these findings, I wholeheartedly endorse the proposed rule changes that embody science-backed bear management strategies. These measures not only address the challenges posed by thriving bear populations and their impact on other species, but they also ensure the preservation of our diverse ecosystem.

Thank you for your time and consideration. Your efforts in advancing balanced and informed wildlife management are greatly appreciated.

Sincerely,

Dylan Anderson

[1]. Hank Hristienko, John E. McDonald "Going into the 21St century: a perspective on trends and controversies in the management of the American black bear," *Ursus*, 18(1), 72-88, (1 April 2007)

[2]. Quintana, Nicole Tatman. Predator-prey relationships between Rocky Mountain elk and

black bears in Northern New Mexico. Diss. 2016.

From: [Charlie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for Science based Mountain Lion Management
Date: Wednesday, October 18, 2023 7:01:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I would like to express my support for the experts and professionals in the wildlife department to set the rules for our game animal resources, whether that extends or shortens seasons, increases restrictions on hunting tackle, or any other decisions made by people who are studying data and trying to do their job that likely involves balancing many conflicting interests at the same time.

I am sending this email in response to coming across a sensationalist hit piece about the department 'selling out our mountain lions' that is trying to galvanize people against the upcoming changes.

I support plans made by experts in the department (whether they approve the new plan or decide something else), not fear mongering from individuals who clearly don't know anything about game management.

Thank you for your time, and your work.

Charles LaCasse

From: [Chad Smith](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for bear and cougar hunting
Date: Wednesday, August 16, 2023 6:59:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm an avid outdoorsman born and raised in New Mexico. I fully support Bear and Mountain Lion hunting in all forms in our great state. Predator management needs to be based on the science and not on emotion. Just look at other states and what has happened when Lion and Bear management is based on emotion instead of science.

Thank You,
Chad Smith
Sent from my iPhone

From: [Donald Wenner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for bear and cougar rule changes
Date: Thursday, August 17, 2023 8:18:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing to tell you that I am in support of all the proposed changes to the bear and cougar hunt rules and zones.

I also have a few comments of my own on additional changes which I think should be considered:

Make unit 26 and 27 into a separate bear hunting zone. These units are separated from the main Gila units by many miles of desert and to me seem to be a distinct population that is more connected to the Chiricahua's in Arizona and the mountains in Mexico. There is a healthy bear population in these units as I have witnessed for many years when deer hunting.

I think that additional population studies for bears should be done in Units 36 and 37. I have been hunting and hiking these units for 35 years and I think the current bear population is the lowest that I have ever seen. The lack of bear harvest in these units over the past several seasons is due to a lack of bears, not a lack of hunter effort.

Thanks for your consideration.
Donald Wenner III

From: [Jeremy Valentine](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for cougar rule
Date: Monday, October 16, 2023 6:57:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing to voice my support for allowing game and fish to update the cougar hunting rule and to continue to manage new mexico wildlife using scientific game management. These decisions need to be made based on evidence and planned objectives, never emotion.

Thanks,
Jeremy

From: mikemcg2021@hotmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for houndsmen
Date: Wednesday, August 16, 2023 5:44:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Having hunted your beautiful state for elk and pronghorn, I am in awe of the state's beauty and abundant wildlife. Please continue your great heritage and diversity of experiences and protect ethical hunting with hounds.

Thank you for your consideration.

Mike McGowan
Outdoorsman/hunter

Get [Outlook for iOS](#)

From: [Michael Oliver](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for hunting bear and cougar in NM
Date: Wednesday, August 16, 2023 1:05:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Removing the hunting of bear and cougar from NM will increase the population of both. The increased population of cougar will reduce the number of other game animals and increase the chances that "hiker" will appear on their menu. Increase of bear population will increase the number of bears in residential areas as they are pushed to forage for food.

We should be thanking our hunters for working with the NM Game and Fish to help maintain the wildlife populations in NM at sustainable levels.

Michael Oliver
PO Box 681
Sandia Park, NM 87047

From: [Ken Quintana](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for predator management programs in NM
Date: Wednesday, August 16, 2023 1:17:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am a resident of New Mexico and avid outdoorsman. I also hunt big game in New Mexico.

I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. If the state curbs the predator management programs, fewer numbers of big game will be available, which then can have an adverse impact on state revenues gained through hunting and outdoor activities.

For example, I would be more inclined to hunt in a neighboring state if I knew my chances of tagging big game were minimized. I know of many others who feel the same way as I do. I also know that larger numbers of big game, and quality big game, attract hunters from outside of the state, which is a major source of revenue.

I love New Mexico and all it has to offer in terms of hunting and fishing. I ask that we continue to embark upon the scientific predator management programs that will continue to allow our citizens, and even non-citizens, the opportunity to hunt in the state.

With appreciation,

Ken Quintana

From: [Fred Phillips](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for regulated hunting of bear and cougar
Date: Thursday, August 17, 2023 8:33:06 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commission:

I am writing in support of the proposed updated regulations for hunting bear and cougar. Hunting limits must be based on scientific surveys of animal populations and evaluations of habitats. So long as these are used to set the limits on bear and cougar harvests, I support continued hunting of these species.

Fred Phillips

Retired professor
New Mexico hunter

Socorro, New Mexico

From: [Glenn Mason](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for sustainable harvest of Bears and Cougars
Date: Wednesday, August 16, 2023 9:57:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Glenn Mason

Sent from my iPhone

From: berglund@plateautel.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for the Game Commission experts
Date: Wednesday, August 16, 2023 2:00:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

There is no justification for cutting out the hunting of bear and cougar. Neither species is in any danger and in fact are too common in many areas. Both species can be dangerous for humans when they lose their fear of humans, and when they become overpopulated. These are not warm and friendly animals but are large carnivores and regulated seasons are necessary to keep their populations under control.

The anti-hunters are the dealing with pure feel-good emotion, not common sense.

From: [high country69](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support for use of hounds for bear and cougar hunting
Date: Thursday, August 17, 2023 9:03:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm writing to show support for the use of hounds and trapping as tools to help control predator populations in New Mexico. I have personally experienced how out of control predator populations have had a massively negative impact on our already low Mule deer numbers throughout the state. I am adamantly opposed to any rule changes that negatively affect the use of hounds or trapping as a conservation tool. Houndsmen, houndswomen, trappers and hunters are an invaluable resource to help control the predator problem within our state and across the nation. Best of all, they pay for the right to help through the revenue of hunting and trapping licenses and habitat stamp fees. Imagine that, a solution to a huge problem that actually pays you to use it, saving taxpayer revenue in the process! We can no longer allow "feel good" emotional idealism to rule over common sense, biologically proven conservation practices, when it comes to the health and welfare of New Mexico's diverse wildlife and beautiful wild places! My family, friends and I are all taxpayers and we all vote pro-hunting, pro-trapping and pro-scientifically based conservation!

Thank you for your time and consideration, -Larry Carson

From: [steven ocana](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support hounds men
Date: Thursday, August 17, 2023 4:56:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I know that you have received several emails requesting that you abolish the use of hounds and Bear / Cougar hunting in general. Considering our state has lost public land trapping, getting rid of hound hunting is a terrible idea. The states predator population is already a problem and was even before the trapping ban.

The use of hound hunting is essential to many ranchers to reduce the predator populations and instill a healthy fear of humans. Every state, without exception, that has banned hounds has suffered the consequences.

California is the perfect example.

One of the biggest lessons learned with the trapping ban is that compromising with anti groups does nothing but give them momentum. When the game department tried to bring trappers and anti groups together, trappers tried to find common ground to no avail. I beg you, please do not compromise.

Once again here's the email address to paste in your email:

dgf-bear-cougar-rules@state.nm.us

Sent from my iPhone

From: [Bronson Eskridge](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support hounds-men
Date: Tuesday, August 15, 2023 8:37:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the use of hounds for bear and cougar hunting in New Mexico. The lack of support comes from misunderstanding the respectable men and women who partake in this sport, and their mission. I've seen first hand the passion for the dogs these individuals put forth as well as the pursuit of the game they love and respect. These animals are some of the most elusive animals to pursue and hounds are one of the only ways to properly manage their numbers. Please take into consideration all the men and women who have such drive and passion for this sport, I've seen more bears/lions be let go after being treed than I've seen harvested. Why? Because the respectable hunter in this sport doesn't want to see bear and lion numbers plummet, they want to take a few mature animals out of the population. But mainly they want to see the dogs as they work in the wilderness, and enjoy the moments that have made hound hunting so special for generations.

Maybe everyone needs to take a break and watch *Where The Red Fern Grows*

Bronson Eskridge
New Mexico Outdoorsman

From: [Wild Trout](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of Bear and Cougar Changes
Date: Wednesday, August 16, 2023 7:05:44 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

I am a life-long New Mexican and grew up hunting with my dad in southern New Mexico beginning in the early 1970's. I trust the science behind changes the Game and Fish are proposing. Besides the science, I spend a lot of time in the field. Bear and cougar are alive and well in New Mexico!

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Jeff Young

Sandia Park

From: [Philip Makarewicz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of Bear and Cougar Hunting
Date: Thursday, August 17, 2023 2:57:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Respectfully,

Philip Makarewicz of Albuquerque

From: [Colleen Payne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of Bear and Cougar proposal
Date: Wednesday, August 16, 2023 9:53:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing in support of the proposed 2023 bear and cougar rule changes. The data shows an increase in licenses will not have a negative impact on the population and this allows for more hunters to participate in bear and lion hunting.

Bear proposal: I am in support of increasing OTC bear tags; I support the change to BMZ 5,6, and 7; I support increasing the bear draw licenses; I support allowing WMA deer and elk hunters to harvest a bear or lion on a WMA during their hunt; I do not support moving the season dates back to Aug 16 in BMZ 12 and 13.

Cougar proposal: no opinion one way or the other.

Colleen Payne

From: [Ramon Chacon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of Hound Hunting
Date: Thursday, August 17, 2023 7:56:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission, The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting with dogs as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture. The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time. We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Regards

Ramon Chacon

From: [John Schroeder](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of NMDGF game department proposal
Date: Wednesday, August 16, 2023 11:24:24 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please include me in the long list of outdoor enthusiasts that are in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.

Thank you

John Schroeder

From: [Jeremy Hughes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of New Cougar Harvest limits
Date: Tuesday, October 17, 2023 10:11:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am in full support of increasing the amount of mountain lion permits. This is a logically step in supporting both mountain lion and other big game populations. Please don't be succumb to pressure from anti hunting campaigns that are ramping up right now.

Jeremy Hughes

From: [bobby herendeen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of hound hunting for Bear and Cougar
Date: Sunday, August 27, 2023 2:47:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support fair chase of bear and cougars with hounds in my home state of NM.

Sent from my iPhone

From: [Briana](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of hound hunting
Date: Saturday, August 19, 2023 10:37:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing this email to let it be known that I support any rule or law in favor of hound hunting. Hound hunting is the most ethical and sometimes only way to safely hunt these large predators. Bear and lion population is important to keep at healthy levels to benefit them and the other wildlife and habitat that is surrounding them. Hound hunting is the best way possible to do that. Please keep hound hunting legal for bear and lion in New Mexico. Thank you.

Briana Lawrence

From: [Mike Lindsay](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of predator hunting
Date: Wednesday, August 16, 2023 8:28:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

In favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists. [Sent from Yahoo Mail for iPad](#)

Thank you,
Respectfully,
Michael J. Lindsay

From: [NM Linhoff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of proposed changes
Date: Thursday, August 17, 2023 9:44:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Thank you for the opportunity to comment. I fully support all of the proposals as posted on the website. It is clear that professionals have spent a significant amount of time and effort monitoring these populations and coming up with reasonable recommendations. I very much appreciate these efforts, thank you to the staff who have provided these thoughtful proposals. Management of hunted species should always be driven by science, as put forth in the North American Model. These proposals are exactly that. I urge the game commission to support them as proposed.

From: [Ariel Greenwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of proposed rules
Date: Wednesday, August 16, 2023 4:00:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am not a hunter and the only animals I have shot with a rifle are ones that were sick or injured. I'm a livestock manager working on a large leased ranch in New Mexico and delight at every cached lion kill, bear seen ambling across the road or bathing in a drinker, or lion stirred from lazing in the morning sun. I have no personal interest in killing these animals for meat or sport. But I am writing to **support** the proposed rule changes for cougar and bear population management. Predators belong, and part of ensuring they have a place into New Mexico's future means looking to science based data to determine how we interface with and manage their populations.

Respectfully,

Ariel Greenwood

From: [martin.lopez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support of the scientific management of hunting
Date: Wednesday, August 16, 2023 11:46:57 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I Martin Lopez as a hunter and outdoorsman living in New Mexico I whole heartedly support the New Mexico game and fish department to scientifically and responsibly provide leadership and oversight for hunting and fishing in New Mexico. I oppose any entity outside of our great state to try and take my rights and privileges away. We are Americans. It is time to stop those trying to destroy our great way of life.

Thank you for your concern,
Martin Lopez

[Sent from Yahoo Mail for iPhone](#)

From: [L Alkire](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support predator control
Date: Wednesday, August 16, 2023 11:59:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support cougar and bear predator control in the state of New Mexico.
Cynthia Alkire

Sent from my iPhone

From: [Steve McCloskey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support proposed rule changes for bear and cougar
Date: Friday, August 18, 2023 6:53:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support NM Game and Fish proposed science based rule changes. Steve McCloskey; 7 Rodeo Dr; La Luz, NM 88337

From: [austin.muzzy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support science based management of predators
Date: Tuesday, August 15, 2023 6:10:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support science based management of large predators and the general non hunting public should have no say in the planning and implication of effective hunting based harvest of such

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Monday, August 28, 2023 3:09:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
John Baunach

From: [Jake Sant](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Sunday, August 20, 2023 7:26:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Jake Sant

From: [Janis Putelis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Sunday, August 20, 2023 7:23:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Janis Putelis

From: [Artin Marootian](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Friday, August 25, 2023 2:56:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Artin Marootian

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Friday, August 25, 2023 8:21:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
Brian Carson

From: [Dale Rush](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Thursday, August 24, 2023 2:10:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Dale Rush

From: [Perry Will](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Thursday, August 24, 2023 9:12:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Perry Will

From: [Austin Huntsman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Tuesday, August 22, 2023 4:23:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
Austin Huntsman

From: [Rich Meade](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Tuesday, August 22, 2023 5:43:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Observing the repercussions of hound bans in places like California has been alarming. Predator populations must be managed responsibly for the health of the ecosystem. Let's learn from others' mistakes and maintain the balance here in New Mexico. Continue with cougar/bear hunting!

Sincerely,
Rich Meade

From: [Kevin Lindo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Monday, August 21, 2023 6:21:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please keep the bear and cougar hunts. Short-sighted decisions in wildlife management can lead to unintended consequences. By using the scientific expertise of trained biologists and relying on historical data, we ensure that our actions today won't harm our wildlife tomorrow. I urge the commission to continue prioritizing a long-term vision for New Mexico's wildlife.

Sincerely,
Kevin Lindo

From: [Bradley Hahn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Sunday, August 20, 2023 2:08:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Bradley Hahn

From: [Ryan Schroeder](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the Bear and Cougar Proposal
Date: Monday, August 21, 2023 8:43:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I commend the New Mexico Department of Game and Fish biologists for their work on the bear and cougar rule. I support their proposed changes. The proposed changes in many instances reflect the success of game department management practices and resulting increased populations.

The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

Thank you for the opportunity to comment on this rule. I appreciate this commission's commitment to securing the future of hunting and conservation in the state.

Sincerely,
Ryan Schroeder

From: [k9bearandlionhounds](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Support the reopening of Aug bear season
Date: Tuesday, August 15, 2023 4:22:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi I support the reopening of the Aug 16 bear season in units 34 and 36. Being allowed to hunt bear in Aug is a better option for everyone because it lessens the chance of hound hunters Interferring with other elk and deer hunters hunt it also has less people in the woods and less impact please reopen the Aug bear hunt

Tye Hare

Sent from my Verizon, Samsung Galaxy smartphone

From: [Tyler Norred](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Supporting Sustainable Wildlife Management - Considerations for Bear and Cougar Hunting Seasons
Date: Wednesday, August 16, 2023 8:05:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sir/Ma'am,

I trust this message finds you well. I am writing to express my perspective on the proposed changes to the bear and cougar hunting seasons in our region. As a conservation-minded individual, I believe that responsible hunting can contribute to both wildlife management and the overall health of our local ecosystem.

It is important to recognize that regulated hunting can play a role in maintaining balanced wildlife populations. Bear and cougar populations, if left unchecked, have the potential to increase beyond the carrying capacity of their habitats. This can lead to negative impacts on plant communities, as well as potential conflicts with human populations. Managed hunting can provide a tool to control population numbers and prevent such imbalances.

Scientific research supports the idea that well-regulated hunting can contribute to ecosystem health. Studies such as the work by Kunkel et al. (2017) published in the journal "Wildlife Society Bulletin" emphasize the importance of maintaining predator-prey relationships at levels that allow for sustainable coexistence. By selectively harvesting a portion of the bear and cougar populations, we can help preserve the health and stability of the ecosystem.

Furthermore, sustainable hunting practices can generate revenue that can be invested in conservation efforts. These funds can be directed towards habitat restoration, wildlife research, and education programs that promote a deeper understanding of our natural world. The potential benefits extend beyond ecological considerations, contributing to local economies and fostering a sense of connection between communities and their environments.

I encourage you to carefully consider the science-based arguments in favor of managed hunting. Responsible conservation strategies take into account the complex interactions within ecosystems, and hunting can be a valuable tool when applied thoughtfully and with strict adherence to regulations.

Thank you for your attention to this matter. I am open to discussing these perspectives further and sharing additional scientific references that support the arguments presented in this email. Let us work together to ensure a harmonious coexistence between wildlife and human populations.

Sincerely,

Randall Norred

From: [Leslie Kuhn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, October 24, 2023 2:23:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the value of bears and cougars to New Mexico in providing ecological balance in the food chain, and attracting people to visit a state in which areas of wilderness and wildlife are left undisturbed by human manipulation, their kill quotas should be zero, rather than being increased. The proposed change is not based on solid numbers for habitat area or population variation over time for either species.

Bears and cougars are highly intelligent species with intrinsic value as part of the entire wild ecosystem. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, which creates social disruption that drives greater conflict with humans.

Both species have great ecological value. Bears spread more seeds than birds, and cougars leave leftovers for other animals, including raptors, enhancing biological diversity. Wildlife tourism (such as my annual visits to wild New Mexico!) bring in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars remains very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. While studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans and visitors to the state. Our state's wildlife deserves better. Game and Fish should apply the precautionary principle and cut, not increase, hunting quotas and seasons, to ensure healthy bear and cougar populations in their historic ranges.

Sincerely,
Leslie Kuhn
1427 Kenora St
Escondido, CA 92027

From: [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, October 16, 2023 10:24:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Janine Vinton
1 Walter St
Albany, NY 12204

From: [Laura Ramirez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 4:13:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Laura Ramirez
1132 Madero Avenue
Las Cruces, NM 88005

From: [Rusty Shackleford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 3:47:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Rusty Shackleford
87122
abq, NM 87122

From: [Hyacinth Salas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 3:32:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Hyacinth Salas
1049 Mesa Cruzada NW
Los Lunas, NM 87031

From: [Shannon Okeefe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 3:01:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Shannon Okeefe
4605 Pedroncelli Ct nw
Albuquerque, NM 87107

From: [v c](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:59:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

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Sincerely,

v c

1505 Girard Blvd SE
Albuquerque, NM 87106

From: [ELLEN pERRIN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:39:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

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Sincerely,
ELLEN pERRIN
7627 VIA BELLEZA Sw
Albuquerque, NM 87121

From: [Randee Greenwald](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:36:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

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Sincerely,
Randee Greenwald
4235 Dona Ana Rd
Las Cruces, NM 88007

From: [Jane M Nims](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:31:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

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Sincerely,
Jane M Nims
393 Boulder Rd
Sullivan, NH 03445

From: [Patrice Schooley Fish](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:20:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

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Sincerely,
Patrice Schooley Fish
50 Tunnel Springs Rd
Placitas, NM 87043

From: [Mitzi Koch](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:11:02 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

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Sincerely,
Mitzi Koch
5908 N. Elm Ln.
Peoria, IL 61614

From: [Molly Hayfield](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, October 16, 2023 1:30:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Molly Hayfield
PO Box 380
San Cristobal, NM 87564

From: [Rosanne Tarantolo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:09:36 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Rosanne Tarantolo
5024 S. Johnson St.
New Orleans, LA 70125

From: [Melinda Tossani](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:06:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

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Sincerely,
Melinda Tossani
P.O. Box 6790
Santa Fe, NM 87502

From: [Barbara Blackwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:05:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Barbara Blackwood
11916 E 25th Ave
Spokane Valley, WA 99206

From: [Gary Columb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 2:01:00 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Gary Columb
8601 Madras Drive NE
Albuquerque, NM 87122

From: [Donna Rice](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 1:58:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Donna Rice
77 Fieldstone Rd
Elkton, MD 21921

From: [Patricia Carlton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 1:57:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Patricia Carlton
500 Rodeo Rd Apt 1121
Santa Fe, NM 87505

From: [Susan Rose](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 1:52:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Susan Rose
112 Doc Holiday Ct.
Alto, NM 88312

From: [NANCY PLEVIN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 1:49:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
NANCY PLEVIN
9100 Galaxia Way NE
Albuquerque, NM 87111

From: [Jess Clemens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, October 20, 2023 2:37:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Hi my name is Jess Clemens and I have been in the landscape business in Santa Fe since 1980. I have seen black bears and cougars in the wild only a few times on my many outdoor hikes and flyfishing trips in northern New Mexico. For me, they have GREAT VALUE alive, not dead. I have friends and family who are hunters and I respect that recreational pursuit. Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

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Sincerely,
Jess Clemens
1000 Cordova Place #38
Santa Fe, NM 87505

From: [Kimberly Fincher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 28, 2023 3:03:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Given the recent climate changes and the almost constant drought status for NM, it would be reckless to increase the kill quotas for these animals. Their numbers could naturally decrease radically by loss of food and habitat over the next few years. And starting the hunts earlier before they have had time to prepare for winter on scarce food sources will impact the survival of younger animals. Chase hunting should be eliminated completely. Your population studies are incomplete and inaccurate. An increase? in populations in one habitat area is not indicative of how the species is doing statewide. A long term study should be implemented, especially in areas of the state that have been more impacted by drought and wildfires.

Sincerely,
Kimberly Fincher
828 Madison st NE
albuq, NM 87110

From: [Kelly Pasholk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, October 16, 2023 10:47:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Kelly Pasholk
PO Box 515
Arroyo Hondo, NM 87513

From: [Linda Berd](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 7:13:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

NMGFD is ignoring science, independent review by outside experts, actual review & study of total numbers of bears & cougars numbers & yearly deaths by humans; but also guilty of not taking into account that most New Mexicans don't own cattle ranches, or goats, or sheep, all of which are allowed by Fish & Game to infringe on bears & cougars natural habitat...nevermind the increasing number of humans moving into their habitat as well!

Lastly, Fish & Game must take into consideration the majority of New Mexicans who are vociferously against such an ignorant, arrogant, unscientific predetermination (based on nothing) to double or even just enlarge the allowable "hunting/trapping kill numbers" of bears & cougars.

Sincerely,
Linda Berd

PO Box 909
Magdalena, NM 87825

From: [Paula Zima](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 11:04:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

It seems to me that the NM Game and Fish Commission is much more about helping hunters have a good experience, than being good stewards for care and protection of the wildlife.

The proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans.

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans.

Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity

They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. .

Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain.

There is no management plan detailing measurable objectives for these species.

While a handful of studies were done to estimate population density in several areas, data was only collected for a short time.

Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans.

Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Thank you for doing the right action.

Sincerely,
Paula Zima
10 Blue Raven Rd.
Santa Fe, NM 87508

From: [Nancy Pieters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:20:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

I strongly oppose the current rule allowing more bears and cougars to be killed in New Mexico. They are endangered and should be protected!

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts. More data needs to be collected and analyzed.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Thank you so much for listening and NOT supporting the current rule, but in fact reducing the quotas for bears and cougars in New Mexico! It's the right thing to do.

Sincerely,
Nancy Pieters
8 Reeds Peak
Santa Fe, NM 87508

From: [Linda Young](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 9:09:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

As regards the current proposal, which I very strongly oppose, to raise the kill quota for New Mexico bears and cougars some intelligent thought needs to be given here because it seems very little, if any, logic is at play.

Bears and cougars are not likely to overrun New Mexico. Since there are no specific census counts on either of these animals how can increasing the killing of them make any sense at all? As it is they, like other wildlife, are now struggling with the effects the climate change crisis is inflicting on us all and which will undoubtedly worsen before, or if, things get better These issues alone must ultimately negatively affect the health of bear and cougar populations to survive as viable species.

Bears and cougars play a vital role in environmental balance--a fact which is not debatable. Furthermore, what is also a cold, hard fact is that human misuse and abuse of the natural world has caused much of the imbalance we are now experiencing. The hunting proposal revamp appears to cater to a specific segment of the population that enjoys what they call "hunting" but which, as practiced, is really blood sport. Wildlife is not expendable to suit humans. Increasing the kill quotas for bears and cougars by pandering to trophy hunters is unreasonable, cruel and irresponsible and should be neither encouraged nor promoted. Please do NOT do this.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year "mega-drought," the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico's two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons

to ensure bear and cougar populations are not negatively affected.

Sincerely,
Linda Young
2929 Indiana St NE
Albuquerque, NM 87110

From: [Robert L Anderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 2:52:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

The current climate crisis demands us humans to help these species flourish with support and care, not death and removal. We don't know what the next decades hold for all of us.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Robert L Anderson
324 Richmond Dr Se
Albuquerque, NM 87106

From: [Sara Fitzpatrick](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 3:49:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

I moved from Florida thinking New Mexico was more enlightened. I mean, it wasn't a high bar.

In 2015, Florida opened its first bear hunt in 21 years. They shut down the hunt after only two days, which racked up a shocking kill count of 306, including 36 lactating mama bears. Public officials resigned in shame.

Now panther politics will really drive you crazy. Those big cats have good noses, but the voting public are best at sniffing out greed on the landowning fat cats.

Don't be Florida. I mean, it's a pretty low bar.

Sincerely,
Sara Fitzpatrick
1000 Cordova Pl # 823
Santa Fe, NM 87505

From: [Janice Evans](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 3:07:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Both bears and cougars are mostly hunted using dogs that chase them, until they are exhausted, climb a tree, then are shot. Parts of the hunting community even find this practice contrary to Fair Chase, and surveys of general public have shown that the public opposes this method of killing for “trophies” and recreation. Please also consider broad public opinion and ban using dogs in this way to kill cougars and bears.

Sincerely,
Janice Evans
12721 Viewcrest Pl NE
Albuquerque, NM 87112

From: [Susan Pinkerton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Sunday, October 15, 2023 10:25:03 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Kill quotas for bears and cougars should be reduced, not raised.

Bears and cougars are extremely valuable to New Mexico, and there is uncertainty of habitat and population estimates for both species.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans.

Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity.

Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Many residents chose to live in New Mexico because of opportunities to see and appreciate wildlife. Your rules and policies should not destroy what others appreciate most. Please be considerate of wildlife.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species.

While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better.

Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Thank you,
Susan Pinkerton

Sincerely,
Susan Pinkerton

6255 San Antonio Dr. NE #93430
Albuquerque, NM 87199

From: [Norm Cairns](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Sunday, October 15, 2023 9:24:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Norm Cairns
14009 Oak Butte Rd NE
Albuquerque, NM 87112

From: [Amme Hogan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Saturday, October 14, 2023 9:21:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Amme Hogan
4938 Kathryn Cir SE
Albuquerque, NM 87108

From: [ANDREW V SANDOVAL](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Saturday, October 14, 2023 7:56:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the lack of reliable population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social instability that serves as a catalyst driving more human/wildlife conflicts. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but unfortunately, population demographics for both bears and cougars is very limited. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable goals and objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us little about long-term population growth rate or trends. Furthermore, there has also been no external review of those population estimates by independent, outside peers.

In short, the proposed rule is out of touch with both the principles of sound wildlife management science the conscience and wishes of the vast majority of New Mexicans. Our state's wildlife deserves better. The Department of Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure the long-term viability of bear and cougar populations in New Mexico.

Sincerely,
ANDREW V SANDOVAL
42 County Road B-001- Luna Cyn Rd
Chacon, NM 87713, NM 87713

From: [Melanie Shirk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Saturday, October 14, 2023 11:47:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Here in Los Alamos, we have managed to live with both bears and cougars. Sometimes it is necessary to euthanize these wild creatures, but most of the time, we live in harmony by taking reasonable precautions. I feel more in danger from drunk and inept hunters than from the game they are hunting!

Sincerely,
Melanie Shirk
University of New Mexico at Los Alamos, 4000 University Drive
Los Alamos, NM 87544

From: [Nodiah Brent](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Saturday, October 14, 2023 9:24:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

To kill indiscriminately is to wreak havoc on all species. Every day we learn more about the folly of our ways. Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. What do we teach our children by allowing trophy hunting? That our access to firearms gives us god-like power over other beings? Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Nodiah Brent
954 Camino Santander
santa fe, NM 87505

From: [william.crosby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Saturday, October 14, 2023 3:57:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
william crosby
146 Francis St
New Britain, CT 06053

From: [Vic Bostock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Saturday, October 21, 2023 8:34:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Vic Bostock
1612 Woodglen Ln
Altadena, CA 91001

From: [EVALYN BEMIS](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, October 13, 2023 9:31:01 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

I am strongly opposed to the proposed Current Bear and Cougar Rule. Your approach to decision-making on kill numbers is not science-based and does not have the data to support your numbers.

Sincerely,
EVALYN BEMIS
21 LEAPING POWDER RD
SANTA FE, NM 87508

From: [Beverley Spears](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, October 13, 2023 9:29:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Killing bears and cougars is immoral and indefensible. Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Beverley Spears
1334 Pacheco St
Santa Fe, NM 87505

From: [Cynthia DaCosta](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, October 13, 2023 8:44:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Cynthia DaCosta
50 Leaping Powder Rd
Santa Fe, NM 87508

From: [Yvette Tapp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, October 13, 2023 8:10:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Yvette Tapp
1255 Avenida Morelia Unit 204
Santa Fe, NM 87506

From: [James Cooke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, October 13, 2023 4:48:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
James Cooke
3518 Eastern Ave. SE
Albuquerque, NM 87106

From: [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, September 15, 2023 10:33:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Janine Vinton
1 Walter St
Albany, NY 12204

From: [Carol Kuykendall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, September 14, 2023 2:15:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Carol Kuykendall
1005 18th St NW
Albuquerque, NM 87104

From: [william.crosby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, September 13, 2023 12:43:42 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
william crosby
146 Francis St
New Britain, CT 06053

From: [Vic Bostock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, September 13, 2023 10:32:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Vic Bostock
1612 Woodglen Ln
Altadena, CA 91001

From: [Patrice Wallace](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, September 13, 2023 10:23:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Patrice Wallace
5498 Coast Rd Apt 3
Santa Cruz, CA 95060

From: [Suzanne Schneider](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, October 19, 2023 3:54:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Suzanne Schneider
1120 Marigold Dr, NE
Albuquerque, NM 87122

From: [Kathleen Corby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, September 13, 2023 10:18:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Kathleen Corby
58 Poplar Ave.
Pine Plains, NY 12567

From: [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 29, 2023 10:02:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Janine Vinton
1 Walter Street
Albany, NY 12204

From: [Patrice Wallace](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 28, 2023 1:56:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Patrice Wallace
5498 Coast Rd Apt 3
Santa Cruz, CA 95060

From: [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, August 25, 2023 3:47:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Janine Vinton
1 Walter St
Albany, NY 12204

From: [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, August 25, 2023 12:26:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Janine Vinton
1 Walter St
Albany, NY 12204

From: [Janine Vinton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Friday, August 25, 2023 12:19:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Janine Vinton
1 Walter St
Albany, NY 12204

From: [Hannah Stephens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 11:34:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Hannah Stephens
12040 Caribou NE,
Albuquerque, NM 87111

From: [Shirley Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 4:55:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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The proposed rule is out of touch with good science. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Shirley Brown
933 San Mateo Blvd NE #255
Albuquerque, NM 87108

From: [Stephen Dubinsky](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 3:41:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Stephen Dubinsky
1041 Don Diego Avenue
Santa Fe, NM 87505

From: [Barbara Blackwood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 12:54:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Barbara Blackwood
11916 E 25th Ave
Spokane Valley, WA 99206

From: [John David Blagg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, October 19, 2023 1:19:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

I have great respect for the officers carrying out their duties in the field in the face of so much controversy and division amongst their fellow New Mexicans. It cannot be an easy job, yet they remain responsive and helpful. The balance is so difficult to manage with this changing world of ours. Locally we were discussing the lack of large Elk bulls this year, noting that last years fire and destructive flooding have damaged habitat to the degree that all wildlife are struggling. Might be time to back off the harvesting and let nature work on things for a while. Respectfully, John David

Sincerely,
John David Blagg
PO Box 743
Sapello, NM 87745

From: [frances.drescher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 12:50:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
frances drescher
60 Cooper Ave
Wallingford, CT 06492

From: [Donna Jo Finley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 12:23:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Donna Jo Finley
6716 Isleta Blvd SW
Albuquerque, NM 87105

From: [Maryann Staron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 12:11:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Maryann Staron
4541 W 88th St
Hometown, IL 60456

From: [judith wechsler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 11:31:50 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
judith wechsler
7105 Bellrose Ave NE
Albuquerque, NM 87110

From: [Sharon Birkenbuel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 11:30:59 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Sharon Birkenbuel
7105 Bellrose Ave NE
Albuquerque, NM 87110

From: [Victoria Linehan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 11:08:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Victoria Linehan
43 Hollimon Rd.
Glenwood, NM 88039

From: [Mari Rodriguez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 9:31:20 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Good day from a friend in New Mexico. I would like to request that you read the below message in favor of reducing kill quotas with an open mind, and consider each and every point made by the author. We should be leading, not lagging, as a state in the push forward to better, more humane and sensical wildlife management.

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Thank you, Mari

Sincerely,
Mari Rodriguez
151 Villa Chiquita
Las Cruces, NM 88007

From: [Linda and Bob Hull](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 9:04:22 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Dear Commissioners,

Please give the citizens of New Mexico policies we can take pride in, policies that nurture the populations and habitat of our legendary wild animals. Push to become a department regulated by sufficient data that will give New Mexicans a coherent view of our bear and cougar demographics.

Please do not increase the quotas for hunting bears and cougars. Let's keep the Land of Enchantment enchanting for people and native wildlife! Don't bring more shame to our state.

I agree completely with the Animal Protection of NM when it writes, "Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected."

Thank you for time. Blessings, should you agree.

Sincerely,

Linda and Bob Hull
121 San Ildefonso Rd
Los Alamos, NM 87544

From: [Tara Mansker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 8:28:46 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Tara Mansker
8920 Lomas Blvd NE
Albuquerque, NM 87112

From: [Vic Bostock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 8:15:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Vic Bostock
1612 Woodglen Ln
Altadena, CA 91001

From: [Edward LeBlanc](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, October 19, 2023 12:55:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bear and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bear and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bear spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead, since wildlife-watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bear or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Edward LeBlanc
531A Dolores St.
Santa Fe, NM 87501

From: [Thomas Wesse](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 7:33:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised. How could the NM Dept. of Game and Fish even suggest or think of doing this. Wrong and cruel. These animals need to be left alone in their environment! They do have value where they live.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Thomas Wesse
4410 SW 102nd Ave
Davie, FL 33328

From: [Patricia Trellue](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 5:02:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Patricia Trellue
10811 Santa Monica Dr NE
Albuquerque, NM 87122

From: [John DelMar](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Thursday, August 24, 2023 4:19:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
John DelMar
73Calle Estevan
Santa Fe, NM 87507

From: [Karl Horak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 9:16:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

My sister-in-law, Dr. Kathleen Ramsay, provides care and rehabilitation for numerous bears and mountain lions every year in her veterinarian practice. How ridiculous to spend all that effort to treat injured wild animals only to have them hunted and killed.

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Karl Horak
1455 Valle Lane NW
Albuquerque, NM 87107

From: [Janet Cameron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 8:08:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Janet Cameron
36 Evergreen Manor SW
Calgary, TX 99999

From: [Claudette Selph](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 7:58:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Claudette Selph
1835 Truchas Peak Trl NE
Rio Rancho, NM 87144

From: [Connie Fowler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 7:46:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Connie Fowler
457 Little Topsey Dr
Cripple Creek, CO 80813

From: [Spider Kedelsky](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 7:25:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Spider Kedelsky
273 Headquarters Trail
Santa Fe, NM 87506

From: [Cindy Wren](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 7:03:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Cindy Wren
453 Swain Wood Rd
Clarksville, GA 30523

From: [Carol Kuykendall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 7:02:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Carol Kuykendall
1005 18th St. NW.
Albuquerque, NM 87104

From: [Maida Henderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, October 18, 2023 10:26:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
Maida Henderson
1007 Placita don Andres
Santa Fe, NM 87501

From: [C. Scullin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:44:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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Sincerely,
C Scullin
369 Montezuma
Santa Fe, NM 87501

From: [Alice Trabaudo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:38:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Alice Trabaudo
2505 Los Pinos SW
Albuquerque, NM 87105

From: [Roxane Trujillo](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:38:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Roxane Trujillo
930 Baca St Ste 10
Santa Fe, NM 87505

From: [Peter Dickinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:35:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

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In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Peter Dickinson
7 Ave. Vista Grande #552
Santa Fe, NM 87508

From: [Dennis Morley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:30:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

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Sincerely,
Dennis Morley
104 Throckmorton Lane
Old Bridge, NJ 08857

From: [Beth Dillingham](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:29:49 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Beth Dillingham
309 Ortega Rd. NW
Alb, NM 87114

From: [Patricia Carlton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:27:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Patricia Carlton
500 Rodeo Rd Apt 1121
Santa Fe, NM 87505

From: [Jane Wilken](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:05:59 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Jane Wilken
22 Cerrado Loop
Santa Fe, NM 87508

From: [Patrice Schooley Fish](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:05:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Patrice Schooley Fish
50 Tunnel Springs Rd
Placitas, NM 87043

From: [Cynthia DaCosta](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 6:03:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Cynthia DaCosta
50 Leaping Powder Rd
Santa Fe, NM 87508

From: [cynthia.wolf](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, October 18, 2023 4:56:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
cynthia.wolf
POB 372
Mimbres, NM 88049

From: [David Steele](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:59:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
David Steele
4358 Nambe Arc
Las Cruces, NM 88011

From: [Jean Bernstein](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:18:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Jean Bernstein
4224 Rio Grande Blvd NW
Albuquerque, NM 87107

From: [Maria Elena Justiz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:15:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Maria Elena Justiz
6212 Belcher Ave NE
Albuquerque, NM 87109

From: [Molly Hayfield](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:11:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Molly Hayfield
PO Box 380
San Cristobal, NM 87564

From: [Donna Rice](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:09:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Donna Rice
77 Fieldstone Rd
Elkton, MD 21921

From: [Rusty Shackleford](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 5:07:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

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Sincerely,
Rusty Shackleford
87122
abq, NM 87122

From: [Sue Farrington](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 12:51:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Sue Farrington
PO Box 463
Chimayo, NM 87522

From: [Cindy Wren](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 9:46:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

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Sincerely,
Cindy Wren
453 Swain Wood Rd
Clarkesville, GA 30523

From: [Jamie Searcy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Wednesday, August 23, 2023 8:44:04 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Jamie Searcy
2505 Los Pinos SW
Albuquerque, NM 87105

From: [Barbara Welker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 9:53:05 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

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Sincerely,
Barbara Welker
2387 Swain Hill Rd
Swain, NY 14884

From: [Karen Menczer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, October 17, 2023 10:47:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Karen Menczer
39 Chimal Rd
Jemez Pueblo, NM 87024

From: [Elaine Soto](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 9:35:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Elaine Soto
POBox 14926
Albuquerque, NM 87191

From: [William Schmidt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 8:43:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

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In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
William Schmidt
PO Box 3338
Palestine, TX 75802

From: [Janice George](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 4:46:39 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Thank you for your consideration, understanding and compassion.

Sincerely,
Janice George
31 Topcrest Lane
Ridgefield, CT 06877

From: [Maryann Staron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 11:56:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Maryann Staron
4541 W 88th St
Hometown, IL 60456

From: [Vic Bostock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 11:41:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

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Sincerely,
Vic Bostock
1612 Woodglen Ln
Altadena, CA 91001

From: [Patrice Wallace](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 11:23:37 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Patrice Wallace
5498 Coast Rd Apt 3
Santa Cruz, CA 95060

From: [william.crosby](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, August 22, 2023 3:32:41 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
william crosby
146 Francis St
New Britain, CT 06053

From: [Tamar Hurwitz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 9:14:44 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Aren't these animals under enough duress from fires, drought and loss of habitat without higher killing quotas?

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Tamar Hurwitz
1039 Camino San Acacio
Santa Fe, NM 87505

From: [Cecilia Clark](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 9:14:31 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

As a long time supporter of Animal Protection NM, when they tell me that Given the uncertainty of habitat and the kill quotas for bears and cougars should be reduced, not raised, I listen. I agree with APNMs position as follows:

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Cecilia Clark
10119 Jiles Dr, N.E.
Albuquerque, NM 87111

From: [Lynne Buchen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 8:45:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Lynne Buchen
424 Kathryn Pl
Santa Fe, NM 87501

From: [Melinda Tossani](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, October 17, 2023 8:57:36 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Bears and cougars are highly intelligent species with intrinsic value independent of their benefits to humans. They are devoted mothers who spend up to 2 years raising their young and have complex social hierarchies that are easily disrupted through trophy hunting, creating social chaos that drives more conflict with humans. Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

Accurate population counts are vital to sound management, but obtaining an accurate count of either bears or cougars is very difficult. In fact, the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for a short time. Such snapshots in time tell us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans. Our state's wildlife deserves better. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Melinda Tossani
PO Box 6790
Santa Fe, NM 87502

From: [Christine Stewart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 7:15:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Christine Stewart
307 Whippoorwill Glen
Escondido, CA 92026

From: [C. Scullin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 7:05:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

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Sincerely,
C Scullin
369 montezuma
Santa Fe, NM 87501

From: [Michelle Newsom](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 5:55:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

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Sincerely,
Michelle Newsom
7313 Dellwood Rd NE
Albuquerque, NM 87110

From: [Janet Cameron](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 5:52:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

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In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Janet Cameron
36 Evergreen Manor SW
Calgary, TX 99999

From: [Claudette Selph](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 5:47:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

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Sincerely,
Claudette Selph
1835 Truchas peak trail ne
Rio rancho, NM 87144

From: [Judy Cato](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 5:46:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

A first and perhaps most important point is that the cougars and bears were here before we were.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Judy Cato
14008 Mel Smith Rd NE
Albuquerque, NM 87123

From: [Dona LaSchiava](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 5:16:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Dona LaSchiava
556 W, Paseo Solana
Green Valley, AZ 85614

From: [Sherry Gettmann](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 5:07:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Sherry Gettmann
8763 spring Canyon Drive spring Valley CA 91977
Spring Valley, CA 91977

From: [Susan Peirce](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 4:33:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

New Mexico is currently experiencing a 20-year “megadrought,” the driest period in the Southwest since 800 C.E., and a record heat wave this summer. Additionally, New Mexico’s two record-breaking fires in 2022 consumed over 666,800 acres of primary wildlife habitat. These cumulative effects of climate change will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates.

Bear and cougar population numbers are extremely hard to count accurately and the current health and sustainability of both species in NM are entirely uncertain. There is no management plan detailing measurable objectives for these species. While a handful of studies were done to estimate population density in several areas, data was only collected for one year. This snapshot in time tells us nothing about the population’s growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

In short, the hallmarks of good science, which the people of NM deserve when it comes to wildlife management, are absent in the hunting rule proposed for bears and cougars. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Susan Peirce
18 Paseo de Aguila
Santa Fe, NM 87506

From: [Karen Menczer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Monday, August 21, 2023 4:25:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

As someone who lives in bear and mountain lion country, we have loved seeing the animals and their signs. But no more. We don't even find scat any longer. Also, as someone who remembers these same discussions from over 40 years ago, I am horrified to see that we still aren't considering the science and that NM policy when it comes to wildlife conservation is still driven by the interests of ranchers and hunters.

Now more than ever, the effects of climate change on these species, critical for the health of our ecosystems, must be taken into account.

As we've known for decades, bear and mountain lion populations are extremely hard to count accurately, and therefore, it is very difficult to determine the health of these species. Given the increased development in their habitat and the effects of climate change, these animals need more, not fewer protections, and less not more pressure. Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Karen Menczer
39 Chimal Rd
Jemez Pueblo, NM 87024

From: [Matthew Wood](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tell NM Dept. of Game and Fish you OPPOSE the Current Bear & Cougar Rule
Date: Tuesday, October 24, 2023 4:04:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Dept Game and Fish,

Given the immense value of bears and cougars to New Mexico, and the uncertainty of habitat and population estimates for both species, their kill quotas should be reduced, not raised.

Both species also have great ecological value: bears spread more seeds than birds, and cougars leave more leftovers for other animals, enhancing biological diversity. Even from an economic standpoint, they are more valuable alive than dead since wildlife watching tourism brings in exponentially more money to our state than hunting or trapping.

And there is no management plan detailing measurable objectives for these species. The little research done tells us nothing about the population's growth rate or trends. There has also been no external review of those population estimates by independent, outside experts.

The proposed rule is out of touch with both the hallmarks of good science and the conscience of the vast majority of New Mexicans.

Game and Fish must apply the precautionary principle and cut, not increase, hunting quotas and seasons to ensure bear and cougar populations are not negatively affected.

Sincerely,
Matthew Wood
29 Tetilla Road
Santa Fe, NM 87508

From: [maria.elvira](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bear-Cougar misunderstanding
Date: Saturday, July 15, 2023 7:54:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico legislators

I'm writing to express my concern about the haste to promote Bear and cougar killings. Such elimination by NO mean will make certain business prosper, which is the idea behind the increase of slaughtering quotas.. .

In terms of problems, NM is better off by the help from bears and cougars in the fight to balance Nature's upcoming changes, than considering prospective benefits attached to hunting these carnivores.

Climate change IS a problem, it's already affecting NM, but the fact that many business people don't understand what's already going on on their lands turned them noisier than the voice of experts who work to keep NM wildlife healthy. Blaming animals for smaller profits is a shortcut deserving little consideration. .

- The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.
- NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.
- Thank your for your time
- Mari Elvi
- Boston, MA

From: [Nick Kufalk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Thursday, August 24, 2023 12:31:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Nick Kufalk

From: [Owen Bacon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Saturday, August 19, 2023 9:42:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Owen Bacon

From: [Jamie Suchy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Monday, August 21, 2023 11:38:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Jamie Suchy

From: ["Jessica Valentín"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Sunday, August 20, 2023 4:09:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Jessica Valentín

From: [Shawn Kloster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Wednesday, August 23, 2023 5:23:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support predator hunting

the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Shawn Kloster

From: [Frederick Shafer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Wednesday, August 23, 2023 10:54:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The core of New Mexico's wildlife policies has always been twofold: conservation and responsible utilization. With the emphasis on science-based strategies and responsible hunting, New Mexico stands as a model for how wildlife should be approached and respected. Cougar and bear hunting must remain in place.

Sincerely,
Frederick Shafer

From: [RYAN SMITH](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Monday, August 21, 2023 4:33:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
RYAN SMITH

From: [Andrew Hamilton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Monday, August 21, 2023 1:55:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Andrew Hamilton

From: [Dave Bontrager](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Sunday, August 20, 2023 7:32:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

We need the bear and cougar hunts. Hunters have been among the most consistent supporters of wildlife conservation throughout history. Their license fees fund essential research, habitat preservation, and wildlife rehabilitation projects. Let's not lose sight of the positive impact they bring to our state and continue to champion their cause.

Sincerely,
Dave Bontrager

From: [Matt Burke](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Sunday, August 20, 2023 1:20:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Matt Burke

From: ["Anthony O'Neill"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Sunday, August 20, 2023 7:21:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Anthony O'Neill

From: [Randy Donis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Sunday, August 20, 2023 7:16:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Randy Donis

From: [Bruce Tanner](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Bounty of Bear & Cougar: Nutrition and Tradition
Date: Sunday, August 27, 2023 10:29:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Bruce Tanner

From: [Jimmy Torrez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Game commission has a responsibility to give as many opportunities as possible to hunt to NM sportsmen.
Date: Wednesday, August 16, 2023 12:24:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

As such anytime the science dictates hunting opportunities do everywhere in the state this includes bear and cougar hunting.

In addition, bear and cougar hunts should be allowed in the Sandias. There is no valid scientific reason to prohibit bow hunts in the Sandias, except anti hunting groups do not want them.

Jimmy Torrez

From: [Aaron Berg](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Thursday, August 24, 2023 3:17:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Aaron Berg

From: [Dean Shear](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Monday, August 21, 2023 7:04:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's rich biodiversity is a testament to the success of its wildlife management programs. The proposed changes in the bear and cougar rule indicate a dedication to maintain this balance. Recognizing the essential role played by hunters, anglers, trappers, and recreational shooters across the country, it's vital that decisions be based on the insights and data provided by New Mexico's dedicated department biologists.

Sincerely,
Dean Shear

From: [Jonah Kimmes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Sunday, August 20, 2023 8:34:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Jonah Kimmes

From: [John Ocoy](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Sunday, August 20, 2023 7:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the vast realm of wildlife management, staying grounded in research and tradition is key. New Mexico's proposed changes to the bear and cougar rule are a testament to this approach, reflecting both the state's rich hunting heritage and the latest scientific insights. This balanced perspective ensures that New Mexico's wildlife remains a shared treasure for generations to come.

Sincerely,
John Ocoy

From: [David Walrod](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Sunday, August 20, 2023 7:45:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
David Walrod

From: [Michael HOLT](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Sunday, August 20, 2023 7:13:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
Michael HOLT

From: [Philip West](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Hidden Benefits of Game Hunting in NM
Date: Friday, August 25, 2023 9:38:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Philip West

From: [Brittany Hunt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Friday, August 25, 2023 9:21:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts! My husband guides hunts in New Mexico which helps with population control.

Sincerely,
Brittany Hunt

From: [Raoul Valencia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Sunday, August 20, 2023 8:35:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Raoul Valencia

From: [Brian Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Thursday, August 24, 2023 10:28:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Brian Carson

From: [Brett Boyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Wednesday, August 23, 2023 8:08:43 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Brett Boyer

From: [Leonard Montoya](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Wednesday, August 23, 2023 7:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Don't end bear and cougar hunts. The attempt to bridge the divide between trappers and opposing groups has shown that compromise isn't always feasible. Some divisions are too deep to bridge with simple concessions. It's paramount to uphold practices that have long-standing evidence of their effectiveness and necessity.

Sincerely,
Leonard Montoya

From: [Matt Albertsen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Monday, August 21, 2023 11:06:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Matt Albertsen

From: [Mark Wedde](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Monday, August 21, 2023 7:45:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Mark Wedde

From: [Mark Helton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Sunday, August 20, 2023 6:59:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Mark Helton

From: [Michael Borel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Sunday, August 20, 2023 1:19:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Michael Borel

From: [Paul Bohochik](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Sunday, August 20, 2023 1:17:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Paul Bohochik

From: [Gary Socola](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Imperative of Trusting NMDG&F's Scientific Research
Date: Friday, August 25, 2023 7:36:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Gary Socola

From: [Andrew Wike](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Tuesday, August 22, 2023 4:55:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
Andrew Wike

From: [Jeremy Berkompas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Sunday, August 20, 2023 9:01:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Jeremy Berkompas

From: [JUSTIN TUMBERG](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Sunday, August 20, 2023 7:54:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm in support of bear/cougar hunting. In our ever-changing world, holding onto a solid foundation is crucial. The Public Trust Doctrine offers that anchor for wildlife management. Through proposed changes and scientific monitoring tools, we ensure a balance between human intervention and natural processes. Let's continue this legacy.

Sincerely,
JUSTIN TUMBERG

From: [John McClain](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Sunday, August 20, 2023 7:20:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
John McClain

From: [Billy Dippel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Tuesday, August 22, 2023 12:04:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Billy Dippel

From: [Derek Hermanson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Monday, August 21, 2023 4:58:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let's keep the bear and cat hunts. As the world changes, so do perspectives on hunting. New Mexico has a chance to set a precedent by ensuring that hunting practices are not only sustainable but also ethically sound. Proposals, such as making it mandatory for hunters to retrieve edible portions from their game, can deter criticisms and emphasize responsible hunting. It's not merely about preserving New Mexico's hunting traditions, but also about evolving them for the better.

Sincerely,
Derek Hermanson

From: [Mark Roland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Monday, August 21, 2023 10:44:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Mark Roland

From: [Dean Baldwin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Monday, August 21, 2023 10:40:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Dean Baldwin

From: [Jim Hogan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Monday, August 21, 2023 10:36:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's dedication to wildlife protection, sustainable use, and conservation shines through its proposed bear and cougar rule changes. By adhering to these principles, New Mexico can continue to be a beacon of responsible wildlife management, ensuring that its unique ecosystems thrive for years to come. Protect the hunts!

Sincerely,
Jim Hogan

From: [Ian Gillespie](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Monday, August 21, 2023 12:31:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's undeniable that hunting plays a significant role in wildlife conservation. From the funds generated through licenses to the active role hunters play in managing and monitoring animal populations, their involvement is essential. Abolishing the use of hounds and general bear and cougar hunting, based on non-scientific arguments, can result in unintended and detrimental consequences to ecosystems.

Sincerely,
Ian Gillespie

From: [Nathan Swigart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Sunday, August 20, 2023 8:05:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Nathan Swigart

From: [Brad Dahlman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Sunday, August 20, 2023 7:50:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Brad Dahlman

From: ["allen-michel.gibson"](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Importance of Utilizing All Game Parts
Date: Thursday, August 24, 2023 12:18:18 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives. this is crucial its always been crucial and will remain crucial stuff doesn't just stop because people want it to theres always repercussions with drastic changes

Sincerely,
allen-michel gibson

From: [Michael Arnette](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Lifeblood of Wildlife Conservation
Date: Monday, August 21, 2023 3:03:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts at a sustainable level. These are not trophy hunts. Bear and cougar meat is a delicious and safe form of protein. With bear especially being a staple in most Native American diets and traditional practices. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state. With thriving populations of both bear and cougar the residents of Mexico will continue to enjoy their wildlife in all outdoor pastimes.

Sincerely,
Michael Arnette

From: [Lynn Schrum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Thursday, August 24, 2023 4:49:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Let the hunts stay! Recognizing the value of diverse voices in wildlife management discussions is crucial. While every perspective is valid, it's imperative to prioritize decisions grounded in extensive research, historical understanding, and a long-term vision. The contributions of hunters and the expertise of biologists are both invaluable assets in this intricate dialogue.

Sincerely,
Lynn Schrum

From: [William Dallmeyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 7:11:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
William Dallmeyer

From: [Harry Globstad](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 7:08:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Harry Globstad

From: [Peter Hartz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 6:58:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife management policy emphasizes a well-balanced approach. The state's commitment to ensuring an adequate game supply while conserving our natural habitats is commendable. Incorporating scientific strategies in predator management is not just a best practice, it's mandated by law. Let the bear and cougar hunts continue!

Sincerely,
Peter Hartz

From: [Raymond Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Thursday, August 24, 2023 12:23:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts! I commend the New Mexico Game and Fish biologists on their recommendations.

Sincerely,
Raymond Johnson

From: [Michael Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Thursday, August 24, 2023 12:01:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Watching the fallout from the trapping ban has been a sobering experience. It underscores the dangers of compromising with groups that often seem to have a narrow focus. I hope we can stand firm against such pressures and maintain a holistic view of our state's ecosystem needs. Support the cougar and bear hunts!

Sincerely,
Michael Johnson

From: [Kim Espat](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Tuesday, August 22, 2023 11:10:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please don't let emotions and short sighted political decisions impact proven conservation models. Anthropomorphizing these predators will cause widespread negative impact on other species and will result in wildlife conflicts ultimately resulting in taxpayer dollars being used to kill these animals. Contrast that scenario with one where hunters will pay for tags and the money gained from that opportunity can be used for the conservation and improved habitat of not only charismatic mega fauna, but for those species that don't get as much media attention.

Sincerely,
Kim Espat

From: [Wolfgang Troxel](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 9:28:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Wolfgang Troxel

From: [Thomas McGary](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 11:17:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Thomas McGary

From: [Thomas Heaps](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 10:52:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Thomas Heaps

From: [Jimmy Daniels](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 10:33:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep bear and cougar hunting in New Mexico! New Mexico's vision for wildlife management, emphasizing protection, regulation, and conservation, has always been forward-thinking. The proposed changes to the bear and cougar rule showcase a commitment to this vision. By aligning with these principles, New Mexico can ensure a sustainable future for its rich wildlife and the communities that depend on it.

Sincerely,
Jimmy Daniels

From: [Will Hergenrader](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Sunday, August 20, 2023 8:30:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please keep the bear and cougar hunts. Short-sighted decisions in wildlife management can lead to unintended consequences. By using the scientific expertise of trained biologists and relying on historical data, we ensure that our actions today won't harm our wildlife tomorrow. I urge the commission to continue prioritizing a long-term vision for New Mexico's wildlife.

Sincerely,
Will Hergenrader

From: [Andre Santistevan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The Silent Contributions of Hunters to NM's Ecosystem
Date: Thursday, August 24, 2023 9:04:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Andre Santistevan

From: [donald.thompson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Thursday, August 24, 2023 12:41:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
donald thompson

From: [John C](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Saturday, August 19, 2023 9:47:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
John C

From: [Cody Swift](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Wednesday, August 23, 2023 8:08:48 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Cody Swift

From: [Chase Phillips](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Monday, August 21, 2023 9:31:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Chase Phillips

From: [Stephen Sowder](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Monday, August 21, 2023 5:52:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts! Hunting is Conservation.

Sincerely,
Stephen Sowder

From: [Doug Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Monday, August 21, 2023 8:47:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Doug Johnson

From: [Nick Kufalk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Monday, August 21, 2023 6:45:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Rooted in both tradition and research, New Mexico's wildlife management strategies, such as the bear and cougar rule modifications, underscore its dedication to conservation. This holistic approach ensures that the beauty and diversity of New Mexico's wildlife landscape are preserved for future generations. Let the hunts stay!

Sincerely,
Nick Kufalk

From: [BAKER LEAVITT](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Monday, August 21, 2023 4:43:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
BAKER LEAVITT

From: [Jordan Thurman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Sunday, August 20, 2023 2:37:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Jordan Thurman

From: [Brady Fincher](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Sunday, August 20, 2023 12:50:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico state law that spells out the state's bedrock policy of wildlife management. The law calls for providing "an adequate and flexible system for the protection of the game and fish of New Mexico and for their use and development for public recreation and food supply, and to provide for their propagation, planting, protection, regulation and conservation to the extent necessary to provide and maintain an adequate supply of game and fish within the state of New Mexico." It is not only necessary and appropriate for NMDG&F to use scientific based management strategies including hunting to manage predator populations, but it is also the law.

Sincerely,
Brady Fincher

From: [Larry Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The True Bearers of Conservation: Hunters of NM
Date: Friday, August 25, 2023 9:26:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep cougar and bear hunting! The relentless work and commitment of the New Mexico Department of Game and Fish biologists have always impressed me. They exhibit a profound understanding of wildlife, its habitats, and the nuances of maintaining a healthy ecological balance. Supporting their scientifically-backed recommendations for the bear and cougar rule is paramount to ensure New Mexico's wildlife thrives.

Sincerely,
Larry Jones

From: gmarmot1@everyactioncustom.com on behalf of [Mark Gall](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The bear and cougar rule to protect New Mexican wildlife is WRONG
Date: Monday, August 14, 2023 12:26:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

The New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through the following is wrong:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
Mark Gall
Albuquerque, NM 87114
gmarmot1@hotmail.com

From: [lee steinle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The predators, bear and lions , are an extreme strain on our deer and elk populations as well as our livestock. We as ranchers and wildlife managers need every tool possible to control the populations of these predators. These predators ar...
Date: Wednesday, August 16, 2023 11:43:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [DENISE FORT](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] The state needs to manage wildlife for all of us
Date: Friday, July 21, 2023 12:52:26 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

It is distressing to learn that the state is considering allowing greater killing of bears and cougars. We know about how diminished wildlife populations are across the world as the result of development, drought, hunting and other factors. New Mexico is behind much of the country in failing to incorporate the values of New Mexicans who value wildlife, as well as failing to understand the tremendous economic value of wildlife viewing. I've been at the Bosque del Apache and watched tourists stop their cars to photograph a lone coyote crossing a field. People pay large sums to go to Africa or Latin America to watch wildlife. But after 50 years hiking around New Mexico I've never seen a mountain lion in the wild. I hope the Commission reverses course and allows our populations of bears and cougars to recover.

Best, Denise Fort
Professor Emerita, UNM School of Law

From: [Sandra Noll](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Tomorrow's Commission Meeting re hunting
Date: Thursday, August 24, 2023 3:59:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs, as you meet tomorrow I ask that you strike the proposed kill quotas for bears and cougars. The proposed kill quotas are far too large.

Given the current and anticipated impacts of drought, fire and subsequent habitat loss, and given that these apex species are both self regulating regarding their own numbers and an important element in regulation of ungulates, overhunting can cause serious harm and damage to their populations and the ecosystem as a whole.

Your attention to these concerns is most appreciated.

**Sandra Noll
2293 Highway 1
Socorro, NM 87801**

From: [Jana Floersheim](#)
To: [DGF-Bear-Cougar-Rules](#); blazingseven@bacavalley.com
Subject: [EXTERNAL] Tonight's meeting in Raton
Date: Monday, July 17, 2023 3:08:15 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

There is some confusion as it is written, to allow an increase on draw permits for certain fall hunts. A deer or elk hunter can harvest a bear or cougar if the zone is open they hold a license. My input would be to put strict harvest limits, zone boundaries and start dates. This seems like a lot of details that each and every hunter will need to know and follow. I hate seeing bear and cougar wiped out for sport. Or any of them for that matter but putting meat on the table is different than killing just because you can!! I know many hunters having lived here for 69 years and know detail is not their strong point. I hope any rules are followed and infractions for deviating are strictly enforced with jail time and hefty penalties. This is an area where the animals are treasured. I accompanied my Dad to hunt our meat for the freezer and grew up strictly on wild game as that's all we had. But still I urge caution on these game rule changes. Thank you for a chance to comment. Jana Floersheim of Raton NM

From: drmc726@verizon.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Trophy Hunting
Date: Friday, October 20, 2023 3:41:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Ban all trophy hunting, baiting and trapping. These are ineffective, unnecessary and cruel actions.

Sincerely,
Debra Curci

[Sent from the all new AOL app for iOS](#)

From: [Hans Loehr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Trophy Hunting
Date: Sunday, August 6, 2023 7:59:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please do not increase the quotas for hunting bear and cougars.

The Department of Fish and Game aka Department of maim and kill, should consider the scientific knowledge that we need those predators more than we need hunting licenses and quotas in the name of managing the wildlife populations.

Hans Loehr
505-660-1085

Sent from my iPad

From: [Moranda Meyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Trophy Hunting
Date: Monday, August 14, 2023 9:30:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't apply the best available science, and ignore dangerously changing climate conditions. Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

NM has recently experienced severe drought and wildfires, both of which will almost certainly continue and intensify into the next four years. There is no indication that NM Game and Fish has accounted for these factors in their habitat or population estimates. Our climate trends weigh in favor of lowering kill quotas, not raising them.

Scientifically rigorous studies of bears and cougars have recently been conducted in New Mexico, but the areas where data exist are very limited. Moreover, given the newness of these studies, they are only a snapshot of the current population in a given area. We do not yet have long-term on-the-ground field studies of bear and cougar populations throughout the state that could indicate population trends. Absent good data, the department should be exercising great caution with managing the population of bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree.

Sent from my iPad

From: [Victoria](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Trophy hunting of Bear / Cougar , New Mexico
Date: Saturday, August 12, 2023 5:25:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am offering my comments for submission regarding Bear and Cougar Rule Proposed Changes.

1. I understand kill quotes for both bear & cougar have been unjustifiably high for many years. Given insufficient information regarding their populations, quotas should be reduced to protect a healthy gene pool.
2. With regard to severe drought and wildfires, how is this being accounted for in population or habitat estimates. Changing climate and fires are changing the landscape drastically. Hunting season should not be starting earlier in the season during summer high temperatures.
3. Where is a management plan detailing measurable objectives for both bear and cougar populations? How is this information being disseminated to the public?
4. I oppose the use of dogs for bear and cougar hunts. It is like shooting fish in a barrel and not a fair practice.
5. Trophy hunting does not aid in reducing human-wildlife conflict. The removal of “trophy” animals can disrupt the biological balance of hierarchy in the species, potentially contributing to more human-wildlife conflicts.

Thank you for this opportunity to comment.

Victoria Linehan
43 Hollimon Rd.
Glenwood, NM 88039

From: [david.ortiz](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] UNFAIR Draw hunts
Date: Wednesday, August 16, 2023 8:06:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Maybe focus on the unfair deer and elk draw hunts for regular NM hunters. These draw hunts are supposed to be lottery draws and the same favored groups get drawn every year, outfitters, ranchers and out of state hunters with lots of money. I haven't drawn a deer tag in three years and elk in over 5 years. Same for my brother and father who are veterans. Yet there are those that draw and kill every year. I pay taxes like others in my same predicament. Feel free to contact me for my voiced opinion.

David Ortiz

[Sent from Yahoo Mail on Android](#)

From: [maria.elvira](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Unjustified cougar-bear killing spree
Date: Thursday, July 20, 2023 8:17:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Nex Mexico Game Commission members

We are concerned about the cougar- bear decimating tendency embedded in the new F&W proposal.

Killing Bears and Cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates. Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Both bears and cougars are mostly hunted using dogs that chase them, following their scent until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs, usually by using their electronic collar beacons as they keep the animal treed. When the hunter arrives at the scene, the hunter will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles. Surveys of the general public also show opposition to killing bears and cougars using these methods for 'trophies' and recreation. Ask NM Game and Fish to consider broad public opinion and adopt hunting rules that ban the use of dogs in cougar and bear hunting.

With due respect

Mari Elvi

Forest City, NC

From: [ERIC.VANDENBRINK](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Until
Date: Wednesday, August 16, 2023 11:36:27 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Until the bear and Cougar population becomes a problem for diminishing the deer and elk population and or proof of Domestic animals, tags should be limited to those areas only. No dogs!!

From: [Justin Thomas](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Uphold our history
Date: Wednesday, August 16, 2023 8:36:58 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Commissioner(s),

As an avid New Mexican hunter I implore you to continue to make decisions that uphold our native history of hunting by the means that we currently have. We cannot continue to chip away at our culture and heritage until we have none left to be proud of. This is why I support the scientific management proposal submitted by game department biologists and the continuation of scientific predator management programs in our state. I urge you to continue to stand with New Mexican hunters and allow us to experience these hunts the same way our fathers and grandfathers did.

Kind Regards,
Thomas

From: [Jace Horak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Tuesday, August 22, 2023 12:36:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Jace Horak

From: [Maurilio Maldonado Jr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 2:48:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Seeing the bear and cougar rule proposals, it's clear that the game department has been responsive to both challenges and successes in wildlife management. Such adaptability is essential to cater to evolving ecosystems and changing societal perspectives. Continue with the hunts!

Sincerely,
Maurilio Maldonado Jr

From: [Shawn Kowalski](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 2:29:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Observing the repercussions of hound bans in places like California has been alarming. Predator populations must be managed responsibly for the health of the ecosystem. Let's learn from others' mistakes and maintain the balance here in New Mexico. Continue with cougar/bear hunting!

Sincerely,
Shawn Kowalski

From: [Ryan Miller](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 9:37:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the constantly shifting landscape of wildlife management, one thing remains constant: the importance of informed, science-based decisions. This ensures that traditions are respected, ecosystems are preserved, and future challenges are anticipated. The proposed adjustments to the bear and cougar rule, rooted in both science and historical context, embody this approach.

Sincerely,
Ryan Miller

From: [James Perkett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 7:47:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
James Perkett

From: [Thomas Read](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 7:43:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Thomas Read

From: [Shawn Reed](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 7:02:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Shawn Reed

From: [BRANDON PENZKOVER](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 6:57:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
BRANDON PENZKOVER

From: [Luke VandenBrink](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Tuesday, August 22, 2023 12:34:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Luke VandenBrink

From: [Luke VandenBrink](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Tuesday, August 22, 2023 12:33:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Luke VandenBrink

From: [Kyle Murray](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Tuesday, August 22, 2023 12:33:29 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar/bear hunting. In a rapidly changing world, New Mexico has a golden opportunity to refine hunting practices, emphasizing responsibility and sustainability. Considerations such as mandating the retrieval of edible game portions can not only elevate the state's hunting ethos but also address concerns raised by various sections of the populace. Adapting while preserving New Mexico's valued hunting traditions is the way forward.

Sincerely,
Kyle Murray

From: [Brian Goble](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Tuesday, August 22, 2023 12:04:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Brian Goble

From: [Cody Kimsey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Monday, August 21, 2023 12:37:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a legacy of cherishing its biodiversity and making informed decisions to conserve its wildlife. It's pivotal for this legacy to persist, and that means leaning on the well-researched recommendations of the New Mexico Department of Game and Fish concerning the bear and cougar rule. Keep the hunts!

Sincerely,
Cody Kimsey

From: [Curt Lebsack](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Monday, August 21, 2023 1:25:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Curt Lebsack

From: [Justin Younkens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Monday, August 21, 2023 1:09:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Engaging in the conversation about wildlife management in New Mexico means acknowledging the value of all stakeholders. While it's essential to respect diverse opinions, grounding decisions in research, history, and long-term planning ensures the state's wildlife remains abundant and healthy. The knowledge offered by biologists and the tangible contributions of hunters are instrumental in shaping New Mexico's wildlife narrative. Keep the hunts!

Sincerely,
Justin Younkens

From: [Brad Pearson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Sunday, August 20, 2023 8:51:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I am in support of bear/cougar hunting. I've seen firsthand the increasing challenges posed by uncontrolled predator populations. Removing tools like hound hunting only exacerbates these issues. Collaboration, rather than compromise, with groups opposed to such practices can lead to balanced solutions that cater to everyone's interests.

Sincerely,
Brad Pearson

From: [Zack Ellis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding NM's Rich Hunting and Conservation Legacy
Date: Thursday, August 24, 2023 12:47:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting is vital to keeping a healthy predator vs prey balance on the landscape. Please vote to continue Predator management.

I've always admired the New Mexico Department of Game and Fish for its unwavering dedication to wildlife conservation. Their informed, scientific stance on the bear and cougar rule is commendable. Their findings and recommendations stand as a beacon for how New Mexico should approach its cherished wildlife.

Sincerely,
Zack Ellis

From: [Anthony White](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Tuesday, August 22, 2023 12:40:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunts need to be supported. We're witnessing the fruits of diligent and scientifically-sound management through the increased populations of various species. I commend the department's efforts and wholeheartedly support the proposed changes to the bear and cougar rule.

I live in Oregon. Due to a law change here, we are no longer able to bait bears or use hounds for hunting cougars. Both predators are thriving at the expense of our grass eaters - deer, elk etc.

Sincerely,
Anthony White

From: [Andrew Knaup](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 6:23:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management isn't a popularity contest; it's about making informed decisions that best serve the ecosystem and our communities. It's crucial to resist populist views that might compromise the long-term health of our wildlife. Let's lean on evidence and historical successes. I support the cat and bear hunts in NM.

Sincerely,
Andrew Knaup

From: [roger.Lees](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Monday, August 21, 2023 10:30:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
roger Lees

From: [Jackson Martini](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Tuesday, August 22, 2023 12:10:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunts need to be supported. We're witnessing the fruits of diligent and scientifically-sound management through the increased populations of various species. I commend the department's efforts and wholeheartedly support the proposed changes to the bear and cougar rule.

The North American Model of Wildlife Conservation has saved many species from extinction. Do NOT allow ballot box biology to threaten that proven model. Many countries have taken a page from our book and saved species from extinction due to mismanagement, unregulated hunting, and poaching. Listen to science, not emotion.

Sincerely,
Jackson Martini

From: [Shannon Sheffert](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Monday, August 21, 2023 6:12:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting and trapping are a necessary tool for wildlife conservation. Bear and Mountain Lion management are important and should not be curtailed as proposed.

Conservation and wildlife management practices are an evolving discipline that depends on both scientific data and historical context. The changes proposed in the bear and cougar rule reflect a dedication to this balance. The significant contributions made by hunters, anglers, trappers, and recreational shooters, not just in New Mexico but nationally, cannot be overstated. Prioritizing the insights of dedicated department biologists ensures a sustainable and healthy future for all wildlife.

Sincerely,
Shannon Sheffert

From: [Jeremy DeWeese](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 6:01:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Responsible game management is essential, not just because it's tradition, but because it's the law. New Mexico's legislation clearly underscores the importance of maintaining a sustainable game population. Adhering to scientific strategies, as proposed by NMDG&F, aligns perfectly with this mandate. Let the hunting of cougar and bear continue.

Sincerely,
Jeremy DeWeese

From: [Gregory Doell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 12:16:08 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Gregory Doell

From: [Michael Spink](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 9:55:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Michael Spink

From: [Timothy Hill](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 8:26:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Timothy Hill

From: [lane stephens](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 7:27:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

First of all, keep cougar and bear hunting! Hunting, as a conservation tool, needs continuous adaptation to ensure it aligns with both the welfare of animals and the changing perspectives of society. Suggestions like requiring hunters to remove edible portions from the field not only demonstrate responsible hunting but also can foster a more positive image. Proactive actions, rooted in both respect for wildlife and acknowledgment of hunting traditions, will go a long way in preserving this practice.

Sincerely,
lane stephens

From: [Jeff Darrah](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Sunday, August 20, 2023 6:56:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Keep the bear and cat hunts! It's essential to appreciate that every region has its unique ecological challenges and solutions. Drawing parallels with other states without understanding the underlying dynamics can be misleading. For instance, the consequences faced by states that banned certain hunting practices should serve as valuable lessons. Collaboration and understanding between various stakeholders can lead to informed decisions that are beneficial in the long run.

Sincerely,
Jeff Darrah

From: [Howl For Wildlife](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding Our Trust: Science Over Sentiment
Date: Wednesday, August 30, 2023 12:49:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect cougar and bear hunting!! Each region boasts its unique challenges and merits when it comes to wildlife management. New Mexico's diverse ecosystems and longstanding hunting traditions demand policies tailored to its specific needs. Turning to evidence-based approaches and learning from the successes and failures of other regions will ensure a prosperous future for New Mexico's wildlife.

Sincerely,
Brandon Kyniston

From: [Mark Walker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Friday, August 25, 2023 7:37:16 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I support the NMDG&F bear and cougar rule change proposal. The game commission should take some important steps to protect our state's hunting heritage from criticism from non-hunters. During the last legislative session a bill failed to pass that would have required hunters to remove the edible portions of bear, cougar and javelina from the field. Enacting such a requirement would do much to head off anti-hunting sentiment.

The game commission needs to do what it can to enact and support prohibitions on the waste of game including bear and cougar and other game species. Hunting bears and cougars is a longstanding tradition for many New Mexicans and people who travel to New Mexico from across the country. In addition to providing conservation funding, economic benefits from outdoor recreation, being a critical population management tool and bringing families together in the outdoors, the harvest of a bear or cougar provides countless nutritional meals for the lucky hunter and all those he/she shares the bounty with.

Sincerely,
Mark Walker

From: [Zack Fonseca](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Saturday, August 19, 2023 8:47:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
Zack Fonseca

From: [Todd Boyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 4:17:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Each year, thousands of hunters contribute both economically and ecologically to our state's wellbeing. Their contributions extend far beyond mere sport; they play a pivotal role in habitat restoration, wildlife population management, and conservation education. It's essential that we acknowledge and support their role in our ecosystem. I applaud the efforts to continue cougar and bear hunts.

Sincerely,
Todd Boyer

From: [Mark Rizvi](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Monday, August 21, 2023 9:42:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm for keeping the bear and cougar hunts. One of the key strengths of New Mexico's wildlife management lies in its adaptability and foresight. Suggestions such as requiring hunters to utilize all edible portions from their hunts are not just progressive but ensure that hunting remains sustainable and respectful in the state.

Sincerely,
Mark Rizvi

From: [Jason Butler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 11:09:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife management policy emphasizes a well-balanced approach. The state's commitment to ensuring an adequate game supply while conserving our natural habitats is commendable. Incorporating scientific strategies in predator management is not just a best practice, it's mandated by law. Let the bear and cougar hunts continue!

Sincerely,
Jason Butler

From: [Seth Holcomb](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 11:07:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
Seth Holcomb

From: [Trevor Raborn](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 11:04:42 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Trevor Raborn

From: [Richard Byrum](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 11:02:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Richard Byrum

From: [Gus Buerkle](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 10:18:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Proposed modifications to the bear and cougar rule are more than just policy changes; they signify New Mexico's commitment to the judicious and informed management of its wildlife resources. Such decisions, rooted in a blend of tradition and modern research, solidify New Mexico's standing as a pillar in wildlife conservation. Let the hunts stay!

Sincerely,
Gus Buerkle

From: [Steven Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 10:18:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife management policy emphasizes a well-balanced approach. The state's commitment to ensuring an adequate game supply while conserving our natural habitats is commendable. Incorporating scientific strategies in predator management is not just a best practice, it's mandated by law. Let the bear and cougar hunts continue!

Sincerely,
Steven Johnson

From: [Dennis McClure](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Sunday, August 20, 2023 7:04:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability.

Sincerely,
Dennis McClure

From: [Emalee Hunt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Upholding the North American Model in NMDG&F
Date: Friday, August 25, 2023 9:22:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Please support cougar and bear hunting. Emphasizing the role of experienced biologists in decision-making is vital. Their recommendations stem from extensive research and offer an unbiased, scientifically-grounded perspective. This isn't just about tradition; it's about making decisions based on empirical data and long-term sustainability. My daddy guides hunts in New Mexico. Keep the hunts!!

Sincerely,
Emalee Hunt

From: [David T](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] VOTE NO ON EXTENDING CURRENT HUNTING LIMITS ON MOUNTAIN LIONS
Date: Sunday, October 15, 2023 12:34:56 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom It May Concern:

Here's the main point: **PLEASE, DO NOT ACT TO EXTEND THE CURRENT HUNTING LIMITS ON MOUNTAIN LIONS (COUGARS).**

The state of NM is quite complex. We tend to be lauded for our natural beauty and artistic community and jeered for our bottom of the list standing when it comes to public education, etc. We just finished up a successful 51st Balloon Fiesta which continues to make us a "bucket list state destination." We personally have met some of the best human beings on the planet in this very state.

Meanwhile, students at local public high schools continue to have ridiculous access to guns that wind up shooting their peers. Across the world, Israel and Palestine are going at it among other world conflicts like say, Ukraine... Global warming is contributing to wild weather swings resulting in loss of life and property. And, Covid19 still looms. There is plenty to cry over and lament.

Can we at least agree on NOT decimating slowly and surely the mountain lions of our state by **NOT granting the extension of current hunting limits on these majestic animals? Can we do something peaceful for once?**

Keeping the faith...

Martha Glenn, David Tichnell and Conor Tichnell

From: [Christopher Casey](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Monday, August 21, 2023 10:54:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Christopher Casey

From: [Gordon Cook](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Monday, August 21, 2023 3:27:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's stance on wildlife management provides a compelling blueprint for balancing conservation with sustainable usage. Embracing scientifically-backed strategies, including regulated hunting, fortifies New Mexico's position as a forerunner in wildlife conservation. With that in mind, keep the bear and cougar hunts!

Sincerely,
Gordon Cook

From: [Dustin Ashley](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Sunday, August 20, 2023 6:40:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Dustin Ashley

From: [Colter McLaughlin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Sunday, August 20, 2023 9:22:07 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunting is not just a pastime; it's a way to connect with nature, to understand our ecosystems better, and to promote conservation. I support the bear and cougar rule change proposal. Addressing criticisms proactively, like the requirement for hunters to remove edible portions, can strengthen our traditions.

Sincerely,
Colter McLaughlin

From: [Linden Loren](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Sunday, August 20, 2023 7:48:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunting has my support. It's essential to recognize the broader implications of abolishing hound hunting. The effects are evident in states like California. Our ranchers, who are deeply connected to the land, rely on such methods to maintain balance. I urge the commission to consider these broader ecosystems when making decisions.

Sincerely,
Linden Loren

From: [Cade Lockett](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Sunday, August 20, 2023 7:35:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico has a rich history of game management, grounded in science and the traditions of its people. Changes to bear and cougar hunting are rooted in both. It's a careful balance of respecting the past while preparing for the future. I commend the game department's efforts and urge their continued commitment to evidence-based practices. Support the hunts!

Sincerely,
Cade Lockett

From: [Jeff Hofman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Sunday, August 20, 2023 7:29:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The lessons from the trapping ban debacle must not be forgotten. Unity is essential to stand against the relentless drive of some anti-hunting groups. Seeking middle ground often results in a slippery slope of continuous concessions. Let's remain firm in our evidence-based approach.

Continue the bear and cougar hunts!

Sincerely,
Jeff Hofman

From: [Jeff Hess](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Sunday, August 20, 2023 7:08:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Jeff Hess

From: [Jeff Brown](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Monday, August 21, 2023 7:48:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

Sincerely,
Jeff Brown

From: [Roy Taylor](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Valuing Tradition and Conservation Together
Date: Monday, August 21, 2023 11:11:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Roy Taylor

From: [jayson.grover](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Voice in support of proposed minor changes
Date: Tuesday, August 22, 2023 3:00:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

I respectfully request that the State Game Commission prioritize the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/trail cameras, GPS collars, and other traditional measures.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

Respectfully,

Jayson L. Grover, P.E.

From: [Richard Senatro](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Vote against the ban.
Date: Wednesday, August 16, 2023 2:02:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Nearly a dozen people in California have been killed by cougars since cougar hunting with dogs was banned in California. The previous cougar killing of a human in California had been in the 19th century. Hound hunting is not inhumane. Stop this bad idea.

Sent from my iPad

From: [SAIL NEW MEXICO](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Want August bear season
Date: Wednesday, August 16, 2023 8:49:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my iPhone

From: [Stefan Stefanovich](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Thursday, August 24, 2023 12:10:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm calling for support of the bear and cougar hunts! The longstanding tradition of hunting in New Mexico brings numerous benefits, from conservation funding to family bonding. I believe it's essential to recognize these contributions and protect our state's hunting heritage. Adding provisions against game waste can further elevate the perception of hunting.

Sincerely,
Stefan Stefanovich

From: [Christy Bryan](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Monday, August 21, 2023 1:18:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

As a long-time observer of wildlife management techniques, I'm always pleased to see practices rooted in science. I urge you to trust the expertise of biologists in making decisions about bear and cougar hunting. The North American Model has consistently demonstrated its value and I trust it will guide us well in the future. I'm in support of bear and cougar hunting!

Sincerely,
Christy Bryan

From: [Christopher Oswalt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Monday, August 21, 2023 7:24:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is a careful act of balance. In New Mexico, this balance has been maintained by understanding the interconnectedness between hunters, the game, and the ecosystem at large. Hunters have poured resources, time, and effort into conservation, shaping the flourishing landscapes we see today. It's critical to recognize and preserve these contributions, ensuring that decisions are informed and not based on fleeting sentiments. Protect bear and cougar hunting!

Sincerely,
Christopher Oswalt

From: [Cristina Jones](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Monday, August 21, 2023 5:03:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The commendable efforts of the New Mexico Department of Game and Fish biologists reflect a deep understanding and dedication to the intricate balance in wildlife ecosystems. Their proposed changes to the bear and cougar rule aren't arbitrary but reflect the successes and learnings from years of active management. Recognizing and supporting these evidence-based adjustments is crucial for the long-term well-being of these species.

Sincerely,
Cristina Jones

From: [Jeff Erickson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Sunday, August 20, 2023 8:29:26 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

When we talk about wildlife management, it's not just about numbers but also about ethical considerations. The foundational policies of wildlife management, as outlined in state law, provide a comprehensive framework that emphasizes both the protection of wildlife and their sustainable use for recreation and food. Implementing science-based management strategies, including regulated hunting, ensures the vitality of these principles. Keep the cougar hunts, keep the bear hunts!

Sincerely,
Jeff Erickson

From: [Erik Scarr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Sunday, August 20, 2023 7:38:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

History has shown us that hunters have played an invaluable role in the conservation efforts of regions like New Mexico. Their contributions, both tangible and intangible, have bolstered game populations and fostered a culture of respect for the wild. It's pivotal that we recognize these efforts and ensure that they aren't undermined. Bear and cougar hunts? I'm in full support.

Sincerely,
Erik Scarr

From: [Alex Bauman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Sunday, August 20, 2023 7:19:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Bear and cougar hunts need to be supported. We're witnessing the fruits of diligent and scientifically-sound management through the increased populations of various species. I commend the department's efforts and wholeheartedly support the proposed changes to the bear and cougar rule.

Sincerely,
Alex Bauman

From: [Colton Titus](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Sunday, August 20, 2023 7:15:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

It's crucial to remember the broader context when it comes to wildlife management in New Mexico. The interconnectedness of ecosystems means that decisions made regarding the bear and cougar rule have far-reaching implications. Given this, the science-based insights of experienced biologists should guide us. Let the hunts continue!

Sincerely,
Colton Titus

From: [Nate Blazejak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Sunday, August 20, 2023 7:11:08 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The value of a united front in wildlife management cannot be overstated. As we've seen from past challenges, the best way forward is through collaboration, evidence-based decisions, and a steadfast commitment to New Mexico's rich hunting traditions. Leave the cat and bear hunts in place!

Sincerely,
Nate Blazejak

From: [Doug Padilla](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We Hunt for Food
Date: Friday, August 25, 2023 6:09:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife management is not a popularity contest. The charge to manage our game populations to provide public recreation and food supply is essential to the commission's responsibilities.

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Doug Padilla

From: [Joe Bevers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We are for hunting with dogs I'm new mexico
Date: Tuesday, August 15, 2023 6:33:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is Joe and my family and I support bear and cat hunting with hounds!

From: sanacionmundo@everyactioncustom.com on behalf of [julian laroza](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We must protect our predators to regain balanced ecosystems
Date: Monday, August 14, 2023 12:26:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico Department of Game & Fish,

I oppose the New Mexico Department of Game & Fish's proposal to kill more black bears and cougars through:

- 1) Making unspecified increases to hunting quotas.
- 2) Lengthening hunting season for bears in some areas.
- 3) Allowing elk and deer hunters to opportunistically shoot bears and cougars.

Your department has only a hazy notion of how many bears and cougars live in the state, since you estimate their population by extrapolating from limited study areas to much broader regions.

Despite these questionable numbers, your department's proposal gives no consideration to the effects the climate emergency may have on bear food sources and habitat. The climate emergency has been wreaking havoc on the habitat of bears, but this proposal doesn't acknowledge the persistent droughts that New Mexico has experienced over the last two decades. A study in Nature Climate Change revealed that the Southwest is the driest it has been since 800 B.C., making the bears' food and water sources increasingly hard to find.

The proposal also doesn't acknowledge the impact ongoing developments may have on habitat connectivity or how the use of hounds in hunting puts nontarget animals in danger and risks human safety.

Instead of killing more bears and cougars, the department should reject the bear and cougar rule and err on the side of caution by:

- 1) Reducing the hunting quotas of these two ecologically beneficial carnivores.
- 2) Refraining from increasing the lengths of their hunting seasons.
- 3) Prohibiting the use of hounds in bear and cougar hunting.

Thank you.

Sincerely,
julian laroza
San Cristobal, NM 87564
sanacionmundo@protonmail.com

From: [Rodney York](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We must use Scientific Research and data for making Recommendations
Date: Thursday, August 24, 2023 11:03:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policies provide a well-rounded approach to ensure the protection and sustainable use of its diverse species. The law's emphasis on both conservation and recreational use offers a comprehensive framework for decision-making. By actively implementing scientific strategies, including monitored hunting, New Mexico can continue to uphold these principles. Protect cat and bear hunting!

Sincerely,
Rodney York

From: markcerf89@gmail.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] We need predator management
Date: Wednesday, August 16, 2023 2:58:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I urge you to follow the science, the wonderful eco systems we enjoy today are in part because we play an active part in managing wildlife including predators. Mt. Lions and bears are magnificent and to keep negative human conflict low and ensure that they have plenty of wild prey to eat we need to manage their populations. This is all backed by extensive science and to deny it is to be a science denier. I'm sure you are not that.

Respectfully,
Mark

Sent from my iPhone

From: [noblehoy65](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Why would you stop hunting anything they would over populate and die of starvation and diseases,plus it brings millions of dollars to the economy.
Date: Wednesday, August 16, 2023 3:01:04 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my Verizon, Samsung Galaxy smartphone

From: [Chris Matlock](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Monday, August 21, 2023 6:00:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Maintaining traditions and safeguarding the future is a delicate balance. I appreciate the commission's dedication to both. The proposed changes are a testament to the effectiveness of the game department's strategies, and I believe they'll ensure a bright future for hunting and conservation. I'm in full support of the bear/cougar hunts.

Sincerely,
Chris Matlock

From: [Luke Wyss](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 7:16:19 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Navigating the complexities of wildlife management requires wisdom, foresight, and a commitment to science. Emotions and public opinions change, but the laws of nature remain constant. I implore the commission to remain grounded in the principles that have served our state so well over the years. Let the hunting of bear and cougar continue!

Sincerely,
Luke Wyss

From: [Matthew White](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 6:48:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

In the whirlwind of politics and public opinion, it's vital to remember that emotion and conjecture should never replace science. Our wildlife deserves an evidence-based approach. Please, let's uphold our commitment to professional, scientific stewardship. Continue bear and cougar hunting.

Sincerely,
Matthew White

From: [Chase Watson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 10:03:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Chase Watson

From: [Ashley Granger](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 9:55:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Ashley Granger

From: [Anthony Phillips](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 9:45:21 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Anthony Phillips

From: [Anthony Hamilton](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 9:43:10 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

The bear and cougar hunts should stay. New Mexico's wildlife discourse is enriched by the perspectives of all its stakeholders. While differing opinions are inevitable, basing policy decisions on sound science, historical context, and a vision for the future guarantees that New Mexico's wildlife continues to flourish.

Sincerely,
Anthony Hamilton

From: [Nathan Boyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 9:08:32 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I'm writing in support of the cougar and bear hunts. The intricate web of ecosystem balance is maintained through various tools, with wildlife management being a crucial one. This isn't about favoring one group over another, but about understanding the symbiotic relationship between hunters, the game, and the larger ecosystem. The investment, both monetary and in terms of conservation efforts by hunters, has played a significant role in maintaining flourishing game populations. The challenge is to ensure that these efforts are recognized and not undermined by misconceptions or unscientific arguments.

Sincerely,
Nathan Boyer

From: [Bradford Hanson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 8:47:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Bradford Hanson

From: [Dennis Donati](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 8:32:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Around the globe, hunting has always been a key player in wildlife conservation. The funds accrued, the management of animal populations, and the monitoring of habitats have yielded positive results. It's imperative to understand that discontinuing practices such as the use of hounds for bear and cougar hunting in New Mexico might have ripple effects. Such decisions, if made, should be backed by scientific data and not merely popular sentiment. Keep the hunts!

Sincerely,
Dennis Donati

From: [Jeremy Indes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Sunday, August 20, 2023 8:32:13 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

I've always believed in acknowledging hard work and dedication. The Department of Game and Fish has displayed commitment to sustainable management, and I support their proposed changes wholeheartedly. It's crucial to recognize and champion the benefits of such efforts. Let the bear and lion hunts continue!

Sincerely,
Jeremy Indes

From: [Drake Dury](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife Management: Upholding New Mexico's Mandate
Date: Thursday, August 24, 2023 3:18:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's approach to maintaining its rich biodiversity, especially regarding the bear and cougar rule, speaks to its deep commitment to conservation and management. It's crucial to continue placing trust in the expertise of New Mexico Department of Game and Fish biologists, who ground their recommendations in rigorous scientific research. Protect the hunts!!

Sincerely,
Drake Dury

From: [Elizabeth Ziers](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wildlife
Date: Sunday, July 30, 2023 1:31:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

The wildlife of New Mexico is a resource which all residents and visitors have a right to enjoy. How are we going to enjoy it if you encourage the culling of bear and cougar populations?

Are you aware that a cougar was recently trapped in Rio Rancho of all places? Does this not indicate to you that heat and drought are forcing desperate conditions upon bears and cougars? It is your job to protect these animals and be aware of conditions which can lead to their decline.

What studies have been done to indicate that bear and cougar populations require culling? What studies have been done to give you an educated indication of the number of these animals in the state? What studies have been done to indicate how much income the state can accrue by allowing increased extermination of these animals versus potential tourist dollars which people spend to come to the state and enjoy its natural resources?

Hunters' right to kill animals does not surpass my right to see them in the wild.

Elizabeth Ziers
ABQ

From: [JT Mitchell](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Written Comment
Date: Monday, October 2, 2023 4:56:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Del Oso. It's something I see all around New Mexico. Which means, of the bear. Arroyo del Oso, Casa del Oso, Mesa del Oso, Boca del Oso, and so on. Oftentimes, places are represented with a logo of a bear.

The Oso is one of the iconic symbols of New Mexican culture I think about, up there with kokopelli, the Zia Symbol, and the lobo. I was disappointed to see that the kill quota on bears is increasing in a state that holds the bear in such high regards.

It's a fearsome, yet beautiful creature that captivates anyone lucky enough to lay eyes upon them. New Mexicans should be doing all we can to preserve the livelihoods of these behemoths that hold a dear place in our hearts.

I am JT Mitchell of Albuquerque, NM and do not support the increase in bear harvesting totals.



JT Mitchell
Development Associate

A 1718 Central Avenue SW, Suite B Albuquerque, NM 87104
O 703 424 6184 **E** jt@dxd.capital **W** www.dxd.capital

From: [Antoinette Reyes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Written comment - bear & cougar rule
Date: Friday, August 25, 2023 10:56:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

My name is Antoinette Reyes. I am a 15th generation New Mexican. Born in the Silver City area and now living in Las Cruces.

Unlike other game species, bears and cougars are not hunted for sustenance but for a trophy, much of the kill goes to waste and it is cruel for that reason. What was a good methodology eleven years ago isn't necessarily still a good methodology today.

Bears and cougars are extremely important to the integrity and health of ecosystems. They are also self regulating species. Killing larger, more established individuals increases possible wildlife-human conflict as it disrupts important bear and cougar social structures. They are territorial animals and if an individual with no history of conflicts is killed, younger and less experienced individuals can move into the now vacant Territory now opening up possible conflicts with the new less experienced individual. Aside from ignoring this basic fact about predator behavior from wildlife science, the hunting proposals lack scientific rigor and actually ignore well established science for emotional reasons that actually make any valid concerns worse.

The hallmarks of good science and respecting the history and culture of local communities when it comes to living in harmony with nature has been thrown out in favor of catering to out of state trophy hunters or in-plants that have moved to the area that lack an understanding of the region and the true needs.

New Mexicans deserve good science when it comes to wildlife management, a suggestion includes consulting with independent, outside experts to revamp the estimates and models used for this program. A lot has changed nationally in the last ten years when it comes to the scientific understanding and research that has been done on predators such as those in this rule. The science for the hunting rules for bears and cougars need to be revisited. Some of the concerns I had with the presentation given today include:

It does not appear much has been done to account for migration between zones through the hair follicle snare data. Not to mention that it does not appear much has been done to account for wildlife moving around and finding new homes in the post-fire data. The dept also does not mention why the population density multiplication factor is so high basically multiplying the hair snare study by 16-18 times.

However to end my comment I would like to thank the dept for keeping the female limit intact.

From: [María Elvira Sagarzazu](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Wrong turn
Date: Tuesday, August 8, 2023 2:28:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Department of Game and Fish officials

I'm writing to express my opposition to your enlarged bear and cougar quotas. Also, to G&F despicable decision to prolong the trophy hunting season..

Game and Fish has not provided sufficient or coherent information about bear or cougar populations allowing the public or even wildlife biologists to judge whether Department recommendations are justified.

No transparency reads as no data to back your recommendations..

Sincerely

Marina Sagardua
Boston, MA

From: [Rocky Medina](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Yes to hunting!!
Date: Tuesday, August 15, 2023 10:55:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Yes to hunting!!

[Sent from Yahoo Mail for iPhone](#)

From: [Gloria Constantin](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] You already know, or should know, the commentary below. Does it make a difference?
Date: Thursday, August 24, 2023 4:48:28 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

What gives with the killing mentality? What is it with the need to kill these animals who have a right to live, and who are part of our ecosystem? Do you know that worldwide, we have lost 60 - 70% of all animals in the last few years?

How can you continue to issue licenses to kill when there is no need to kill other than for fun? What is the NEED?

Are you aware of the decimation that will occur of already decimated populations?

How many times do you have to hear that this is bad, bad policy? Do you believe that bears and cougars can grow from seeds? Of course you don't. So why continue to issue licenses to kill? Do you not read the science? Do you not heed what climate change alone has done to habitat?

Bottomline, what about the cruelty and the barbarism? Or uou don't think this is cruel?

Given the uncertainty of habitat and population estimates of both bears and cougars, the quotas for both should be reduced, not raised. Kill quotas for both species have been unjustifiably high for many years.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species can self-regulate their own numbers. Therefore, erring on the side of killing fewer of these animals is not problematic. Killing too many can impact their populations for a long time.

Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting important bear and cougar social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Bears and cougars are extremely hard to count accurately, so Game and Fish should exercise extreme caution when calculating kill quotas, to ensure the populations are not negatively affected. Current proposals to raise the kill quotas are reckless, don't

apply the best available science, and ignore dangerously changing climate conditions.

Adding more bear hunting permits and starting the season earlier in the heat of summer will likely result in more bears dying. This is both reckless and cruel. The hunting proposals lack scientific rigor. There is no management plan detailing measurable objectives for these species, and no attempt to address the uncertainty of the population estimates.

Transparency is so lacking that the public has no way of knowing how the populations for either species have been derived. And there has been no external review of those population estimates by independent, outside experts. In short, the hallmarks of good science, which the people of New Mexico deserve when it comes to wildlife management, are absent in the hunting rules proposed for bears and cougars.

Surely these statements of what is true have come across your desk before.
Please do the right thing and stop all quotas, all this needless destruction of life.

Gloria Constantin
Taos, New Mexico



Virus-free www.avast.com

From: [Richard Skolnik](#)
To: [DGF-Bear-Cougar-Rules](#)
Cc: [Skolnik, Richard](#)
Subject: [EXTERNAL] Your Cougar Proposal
Date: Thursday, October 19, 2023 3:32:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NM Fish and Game,

As the Albuquerque Journal wrote about so clearly, the rules you are proposing for the hunting of cougars are not based on sound science and would not leave us with a sustainable cougar population.

As such, they also fail to reflect the values of conservation held by most New Mexicans.

Please DO NOT enact the proposed rules. Instead go back to the drawing board and come up with much more sustainable limits on hunting.

Many thanks,

Richard Skolnik
White Rock, NM

--

Richard Skolnik
703-627-6646

From: [Ángel-Adri Vargas López](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Your Inboc
Date: Thursday, August 17, 2023 2:40:20 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

State of New Mexico,

Please listen to the hunters, hounds men and other wildlife stewards that have the existence of the cougar and bear in their best interests. These people are usually civil.

Do not listen to AI generated emails from anti activist groups, or the the fanatics themselves that do not understand ecology nor have actually ever seen a bear or cougar in their natural habitat.

Texas resident
Angel Vargas

From: [bill.brandt](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Your awful plan
Date: Sunday, October 15, 2023 3:35:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Your awful plan to slaughter New Mexico Cougar is a disgrace and must be set aside. There is no redeeming justification for the slaughter of this defenseless animal by hunters just after a trophy to hang on their wall. Stop this insane plan immediately. Dr. William Brandt, Placitas.

From: [Lynn Barker](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] Your unethical cougar hunt rules!!
Date: Monday, October 16, 2023 1:54:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Your proposed rules for amount of mountain cougars killed by trophy hunters are not appropriate. 563 mountain lions killed each year for the next four years is just too many. Nobody is killing these animals to eat. Hunters just want the "joy" of the kill. 16% of the population (not counting deaths from other sources) amounts to just too many of these beautiful, iconic animals to slaughter for "fun".

Lower the amount allowed for trophy kills! Too many wild animals are being murdered for sport as it is!

Lynn Barker
Albuquerque

--

Lynn Barker

From: Orozcotorres.julian@yahoo.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] *Please Read* Upcoming Bear and Cougar regulation
Date: Wednesday, August 16, 2023 6:17:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear New Mexico State Game Commission,

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and we support legal bear and cougar hunting (with the use of dogs) as an appropriate management tool. As caretakers of this trust, we believe you will advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

The proposed changes to the bear and cougar rule represent modest adjustments to the current rule which has been proven to maintain healthy and abundant populations of both species over time.

We respectfully request that the State Game Commission prioritizes the opinions of our dedicated department biologists and the recommendations developed from their science-based data such as non-invasive scat or hair sampling, remote/ trail cameras, GPS collars, and other traditional measures.

We have seen how politics and emotion has played a large part of laws being passed in California banning the use of dogs for mountain lion hunting and then outright banning the hunt altogether. Cougar attacks and populations then explode and become an issue which the government and state biologist then have to pay for depredation. Another example is New Jersey where black bear hunting is outlawed and due to this, there has been a spike in bear encounters which lead to bear having to be euthanized.

Very Respectfully,
Julian Orozco

From: [BATCGentry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] allow bear and cougar hunting
Date: Wednesday, August 16, 2023 12:59:24 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am a hunter, a fisher, a camper, a backpacker, fortunate to live in a country, and a state where I can do these things that are so important for me, my family, my friends.

Hunting and trapping is part of our package of rights as citizens of this country. It needs to be done responsibly and managed properly by professional wildlife managers, not by extremist political organizations that speak for a small minority of the actual population, or for political intreats that truly do not understand science.

Population of all species must be managed by these professionals, in order to continue the idea and ideals of conservation of resources. This includes management of predator populations such as bears and mountain lions. Hunting with a variety of weapons and tools is one means of maintaining this science, fact based control. This includes hunting with hounds in this state, and this practice should continue.

Please maximize the ability of this state to manage our wildlife populations by trained professional Game and Fish professionals.

Thank you,

William and Anita Gentry
Albuquerque, New Mexico

From: [Adam Ressler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] aressler@ptc.com
Date: Sunday, August 20, 2023 9:08:34 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Adam Ressler

From: [Jon](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] aug bear
Date: Tuesday, August 15, 2023 6:49:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please re-instate aug bear in the southern zone.

my only hunt option this year

thank you

Jon Giles

Sent from my iPhone

From: [Mike DePauli](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar comment period
Date: Wednesday, August 16, 2023 1:44:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

I am writing you today to let you know of my opinion on Bear and Cougar hunting in NM. I believe bear and cougar hunting is a VERY IMPORTANT part of habitat/animal management in NM. I believe hunting these animals NEEDS TO CONTINUE long into the future to ensure continued population control of bears and cougars and all the species they share the forests with. To many of any species in not a good thing, there needs to be a balance which can only be supported with hunting. In my opinion there are already to many bear and cougar which negatively effects the deer and elk population. As hunting other animals such as deer and elk we help the not only the habitat but help their population thrive as does hunting bear and cougar.

Once again please know of my opinion on these matters as a life long New Mexico resident hunter that continued hunting of bear and cougar is very very important, that I am AGAINST any changes that would not allow hunting of these subject animals

Respectfully,

Mike DePauli

303 E. Green Gallup NM 87301
505-870-3020 cell

From: [MELVIN VARELA CONSTRUCTION](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar harvesting
Date: Wednesday, August 16, 2023 11:35:28 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

it is very important to continue to leave the hunting laws in place as they are today. I am a hunter and I think the quotas for harvesting bear and cougar today should stay the same.
Melvin

From: [Jennifer Wolff](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting in New Mexico
Date: Wednesday, August 16, 2023 1:57:17 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support bear and cougar hunting with the use of hounds in New Mexico. I also support Fish and Games proposed rule changes.

Limiting the hunters' ability to reduce these predator populations not only affects the livelihood of outfitters, hunters, and ranchers, but also greatly decreases revenue received by the state by out of state hunters. Allowing the bear and cougar population to continue with no control leads to more disease in the predator population, more risk of unhealthy animals due to insufficient food supplies, and aggressive animals preying on livestock and becoming a danger to people as they roam to more populated areas.

Please continue to support bear and cougar hunts with hounds in New Mexico.

Thanks,
Jennifer Wolff

From: [christine lowry](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting limits
Date: Monday, August 28, 2023 4:40:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs,

Please do not increase hunting permits on black bear and cougars. These animals already are pressed to the edge of their historical ranges and are on the verge of becoming endangered. As people move further into these animals territory more are euthanized due to ignorant people feeding them then having them killed when those interactions become too intense. Limits need to be placed on humans not wild animals. Thank you for NOT INCREASING HUNTING PERMITS ON BEAR AND COUGAR!!!

Sincerely,

Christine M. Lowry
cmlr6263@msn.com

From: [JOHN J GILLIS](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting rule
Date: Thursday, August 17, 2023 8:52:03 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I support the Game Department's proposed rule to continue allowing the responsible hunting of bears and cougars. If future hunting is prohibited, the population of both species will grow and with it the depredation of livestock and domestic pets. The biologists have years of experience and statistics to back up their proposal.

Anti-hunters won't be content until they've abolished all forms of taking game animals and the next generation of kids won't experience and understand the natural cycle of life.

Sincerely,

John Gillis
Santa Fe

From: tomsimpson@tularosa.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting
Date: Wednesday, August 16, 2023 8:40:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commissioners,

We need to hunt bears and cougars to keep the a good balance between predators and ungulates.

You have trained biologists in your department to determine what numbers should be harvested.

Go by sound science to manage game populations.

Thanks

Tom Simpson

575-430-3008

From: [Tommy Orr](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting
Date: Wednesday, August 16, 2023 5:34:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

we need more control even government trappers to population under control theres way to many when your seeing four or five in a group theres too many encourage people to save other wild life and get out and hunt lions and bear . bears are devastating on deer fawns and elk calves

From: [Joe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting
Date: Wednesday, August 16, 2023 5:25:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We support cougar and bear hunting utilizing hounds.

Thank you

Joe

Joe Schmieder
joe@desertshotcrete.com

Desert Shotcrete, Inc.
3230 N. Showdown Pl.
Tucson, AZ 85749

520-749-4640 office
520-954-4848 cell

From: [Jack Lehman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting
Date: Wednesday, August 16, 2023 11:36:54 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

These two species need to be managed and Game and Fish know how to do it. They brought back the elk and have managed, through hunting, the elk heard VERY WELL. Jack Lehman

Jack Lehman, MA, MA, LPCC
Certified Trainer - Center for Nonviolent Communication
Equine Assisted Psychotherapy
CEU'S approved by the NM Counseling & Therapy Practice Board
505-988-5464

<https://JackLehman.org>

www.cnvc.org

<https://www.buzzsprout.com/1554039/8691095> - "Dao of Domination" Audio

"So when we use the word 'meditation' we do not mean something that is practiced. We have no method. Meditation means awareness: to be aware of what you are doing, what you are thinking, what you are feeling, aware without any choice, to observe, to learn. Meditation is to be aware of one's conditioning.... Out of this awareness comes attention, the capacity to be completely attentive. Then there is freedom to see things as they actually are, without distortion. The mind becomes unconfused, clear, sensitive."

J. Krishnamurti "Beyond Violence", 80

From: [james.dyer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunting
Date: Thursday, August 17, 2023 7:34:51 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please ban all large game hunting with dogs. with radio collars, atv's and packs of dogs there is no fair chase possibility with this type of hunting. dogs chase any and all game for miles without respite during times when the animals need to be putting on weight and works to weaken large game and make them more susceptible to death. in a successful hunt an animal is run for miles through rough terrain until it is treed at which point the "hunter" simply walks under the tree and shoots the exhausted animal. this tradition of hunting with dogs is outdated and needs to end immediately. thank you James Dyer

From: [Marion Houston](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar huntinh
Date: Tuesday, August 15, 2023 8:14:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi, my name is marion houston. iv hear there's a lot of opposition to bear and cougar hunting with the new rules your seeking input on. Though i'm not a resident i do plan on making a trip out if i'm ever lucky enough to draw for a cougar tag. please don't let the Anti hunters take something like this away. id say honestly I don't care if i ever kill one, as a houndsman myself i'd just like to see the out west dogs work. I appreciate the time you've taken to read my email. thank you have a great day.

From: [Michael Curtis](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar hunts
Date: Wednesday, August 16, 2023 2:45:41 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sirs;

I would like to enter my opinion in favor of continuing bear and cougar hunts as currently regulated by the New Mexico Game and Fish Department. Well regulated harvesting of these animals maintains a balance that is good for both people and animals. If hunting is stopped then the numbers will likely grow to a point that will substantially increase the frequency of human-animal contact. When this happens they become nuisance animals and greatly increase the likely hood of injury to both people and animals.

Thank you for your consideration;

Michael S. Curtis MSES

Environmental Consultant (Ret.)

--

This email has been checked for viruses by AVG antivirus software.
www.avg.com

From: [sandra.anderson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar killings
Date: Thursday, August 24, 2023 11:57:23 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Humans

With the current state of the climate change I believe the bear and cougar populations are being controlled by nature's droughts and wildfires.

When will these animals quit being treated as objects? They are intelligent forms of life—we will never understand all their contributions to the web of Life. They should not be murdered just because of a number system.

Appalling that hunters are using dogs to track these animals for the kill—they should at least be given a fair chance in this sport called hunting.

Sincerely—Sandra Anderson

From: [richard.lara](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar laws
Date: Wednesday, August 16, 2023 12:01:50 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Do not allow a few people to dictate what, how and where we hunt!! These groups are the ones that would love to outlaw hunting and have us sit on the couch playing a video game on hunting from rabbits to bears.....STOP It!! richard

From: [Tom Simpson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar limits
Date: Monday, July 17, 2023 2:36:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I believe the number of permits should be raised, especially the cougar quota.
We have way too many predators and not enough ungulates.
Sent from [Mail](#) for Windows

From: [Arts Science](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar quotas
Date: Sunday, August 6, 2023 12:58:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose NMG&F's bear and cougar quotas and long trophy hunting seasons. The estimated numbers of these animals by the department are potentially flawed and should be redone and directed by statisticiens, drawing on expertise at LANL or SNL for instance.

I am requesting that kill quotas be significantly reduced to protect apex wildlife.

Sincerely

Paul Johnson
4 CR 113 S
Nambe NM
87506

From: [Chris Francia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar rule
Date: Wednesday, August 16, 2023 12:32:14 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of continued bear and cougar hunting/harvest with the use of hounds.

Thank you,

Chris Francia

From: [CURTIS MARTIN](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar rule
Date: Wednesday, August 16, 2023 12:58:43 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,, I support the continued hunting of, bear and cougar.
Thanks, Curtis Martin,, Farmington, NM

From: [Larry Layne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear and cougar rules
Date: Wednesday, August 16, 2023 12:59:23 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commission:

I annually purchase tags for both cougar and bear for purposes of hunting, and have been doing this for the past 15 years. I request the full support of the New Mexico Game Commission's continuation of maintaining the current bear and cougar hunting rules.

Larry Layne

From: [harry.mud](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear cougar rule
Date: Wednesday, August 16, 2023 12:40:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Greetings:

My name is Joey Cahill, and I am writing to oppose any new restrictions to the hunting rules on bear and cougar. New restrictions are NOT necessary, and would only restrict legal and ethical hunters in New Mexico. Once again, please do not add new restrictions to the hunting laws / regulations to hunt bear and cougar.

Thank you,

Joey Cahill
PO Box 428
Salem, NM 87941

From: [Snowden](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear cougar rules
Date: Tuesday, July 18, 2023 11:14:15 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I would like to submit a comment on the subject of state hunting rules for bear and cougar.

Current proposals to raise the kill quotas are not based on the best available science including the dangerous and rapidly changing climate conditions, namely heat, drought, wildfires, flooding, and loss of habitat.

I have lived next door to a rancher who frequently hunts bear and cougar with his hunting dogs for recreational sport and brags about the number and size of his trophies. This is so contrary to fair chase hunting principles.

Bears and cougars are an important part of the integrity of our ecosystems. Killing too many may impact their

populations for years to come. We have seen the benefit of reintroducing wolves into the Yellowstone National Park.

This is another predatory animal that has been almost hunted to extinction in this region because of antiquated policies.

Wildlife Management needs to base its decisions on the most recent sound scientific data and make their decisions from that perspective as well as share the Information with the public.

Thank you for your attention to my concerns,

Janet Snowden

From: [Brett Jensen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear cougar rule
Date: Tuesday, August 15, 2023 9:02:22 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This is an absolute horrible idea and rule change idea to bear and lion rule. Leave as is why change something that is not broken, and because the bleeding hearts want to turn NM into California.

From: [dclgetcha](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear hunting, & bear hunting in zone 10 specifically, I believe the limit is very conservative, I believe they should re-open the August 15 - 30, bear hunt, possibly bow only, but re-open, bow or any legal weapon.
Date: Wednesday, August 16, 2023 7:31:19 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sent from my Galaxy

From: [ke metcalfe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear-cougar rule
Date: Wednesday, August 16, 2023 5:03:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I live in Datil New Mexico, A very rural part of the state. I am blessed to see elk herds in my yard and hear the coyotes in the night. I am an avid animal lover. I also support the humane and responsible management of predators and herds through responsible hunting practices.

It is unfortunate that we simply don't have enough space for everyone. I wish it were the case. If herds or populations go unchecked in the wild, the consequences are devastating- starvation, illness, overpopulation.

This applies to top of the food chain predators too. When there are limited food sources, they become emboldened and attack domestic animals in their search for food. I know firsthand. I have a territorial male cat in my neighborhood. He has stalked elderly neighbors, killed the neighbors' turkeys just feet from his home, and lives dangerously close to my home where I rescue horses.

Is he a beautiful and incredible creature? Absolutely. An over population however causes an imbalance in an already struggling ecosystem. We must be good and responsible stewards. Wise and intelligent management through hunting can be part of the solution.

Thank you,

Kelly Metcalfe- Smith

.

From: [Ray Nelson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bear/cougar hunting
Date: Wednesday, August 23, 2023 1:18:13 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game Commission:

Please give our bear and cougar population the benefit of doubt on your population estimates. These animals, our major predators, deserve the right to live and do their jobs in maintaining the balance of nature.

You know that bear and cougar hunting is the most unsporting kind of hunting we have in our state, an easy hunt following trained hounds to a cornered or treed animal so that a wealthy hunter can have an expensive trophy for his den.

Please do not increase the kill quotas of these animals. They are not commodities.

Raymond C. Nelson
9816 Alexandria Road NE
Albuquerque, NM 87122
Please do not c

From: [cindy kreiman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] bears/cougars
Date: Sunday, August 13, 2023 12:52:11 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I am writing to you in the hopes that you will take into consideration the importance of the bears and cougars to the ecosystems and all life. These beings are self-regulating, unlike people who are encroaching and over-populating this Earth. Killing the bears and cougars for trophy hunting, recreation, status, money and power does not say very much about people and their ethics. The hurt and pain and grief we cause these animals and others, only causes more conflict. We are pushing them out of their homes, taking the lives of family members and using horrific methods to do this. Using dogs with collars and killing them when they are cornered and exhausted is barbaric. With climate change in our midst, the effects it has on their lives and ours should tell us not to ignore the problems we have created and keep creating because of our selfish and ignorant ways.

Thank you for your time

Cindy Kreiman

4928 Stonewall Jackson Highway

Bentonville, Va 22610

fatiesnoop@gmail.com

703-507-4648

From: bobyers@byerscompany.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] comment on Bear & Cougar hunting
Date: Wednesday, August 16, 2023 11:26:45 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To Whom it may concern,

I do not hunt bear or cougar in New Mexico but I am a large land owner (approximately 800 acres) in the Gallinas Canyon, NE of Las Vegas NW. I have personally witnessed both of these species on my property over the past 2 decades. I definitely see the value in continued monitoring and hunting of these species, in conjunction with wildlife biologist management protocols. These animals are needed to maintain a healthy ecosystem by keeping some of the other species in the area in check. Bottom line, I support continued hunting of Bear and Cougar in New Mexico.

Thanks,

Bo Byers
Treasurer ECH Corporation / Harvey Ranch

From: [Candace Bogart](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] comment on DGF Bear Cougar Rules
Date: Thursday, October 19, 2023 10:55:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

October 19 2023

Dear Sir or Madam,

I wish to comment on the NM Game & Fish proposal to increase the hunting limits on both cougars and bears.

I am a lifelong outdoors recreation person. I have worked for multiple land management agencies across the western US. I have been witness to the loss of open space, habitat loss for threatened and endangered plants, as well as increased losses of native fish, plants, aquatic species, and mammals.

In addition, I have seen that most agencies have databases to track species. Unfortunately most agencies have not kept the kind of information systems that accurately record, over time, species counts. In addition, I suspect that in most areas, poaching is considerable although I do not have direct proof of this. Therefore it is difficult to realistically assess species numbers and err in over counting the animals that are out there.

In watching the Ken Burns show about Buffalo, one can see that much of the destruction came from those who enjoyed the sport of killing for its own sake. As far as I know, there is no reasonable need to kill mountain lions other than killing for its own sake. In addition, I do not believe that the mountain lion species are sustainable given the impact of human encroachment, habitat loss, poaching, etc.

I want to go on record as I oppose extending hunting limits on mountain lions and bears. I do not believe increased hunting limits are ethical and sustainable. I want to urge you to conserve our game species and stop further increased limits.

Sincerely
Candace Bogart.

From: [shannon Applegate](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] comment on the pending bear and cougar rule.
Date: Friday, August 18, 2023 7:29:00 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hello,

Thank you for the considerations and modest rule changes considered for the upcoming bear and cougar cycle.

I have No comment on the rule changes, and am in support of the decision

[Sent from Yahoo Mail on Android](#)

From: [Dorothy Noe](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] comment
Date: Thursday, August 24, 2023 9:26:30 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Bears and cougars can co-exist with humans and unless they become aggressive, there is no need to increase a hunting quota at this point in time. All animals, including humans, are stressed by the changing climate and humans encroaching on animal habitat just adds to their survival and genetic difficulties.

Dorothy Noe
Placitas, NM

From: [Michael Robinson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] comments on bear, cougar hunting proposals
Date: Thursday, August 24, 2023 1:25:44 PM
Attachments: [Center for Biological Diversity comments on bear and cougar hunting proposal.pdf](#)
[NMGF statement on bear-, cougar-killing comment deadline 7 2023.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please see the attached comments from the Center for Biological Diversity.

Please also confirm that these comments were timely received. We also attach a July 25 email from the department stating that the comments would be considered if received by today.

Thank you for your consideration.

Michael Robinson

Michael J. Robinson, *Senior Conservation Advocate*
Center for Biological Diversity
P.O. Box 1727
Silver City, New Mexico 88062

(575) 313-7017

www.biologicaldiversity.org

From: burtongayl@aol.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] comments on proposed rules for bear & cougar hunting
Date: Sunday, July 16, 2023 6:47:53 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I'm writing to express my concern about DGF's proposed rules for cougar and bear hunting.

First of all, I feel strongly that it should not be legal to hunt bears and cougars with dogs. Almost everyone finds it repulsive. You should honor majority public opinion by making it illegal.

Also, there is controversy and a lack of transparency about how population estimates have been determined for both cougars and bears. This is bad public policy. And those estimates apparently do not factor in the effects of climate change such as increased droughts and wildfires.. This makes no sense at all and will obviously lead to quotas that are too high!

The uncertainty of future habitat loss and climate change alone should cause you to err on the side of reducing kill quotas rather than increasing them, at least until the population estimates can be reviewed by independent wildlife experts. If you allow too many to be killed, it could begin a downward spiral that could take many years to reverse.

I implore you to reconsider your proposed quotas.

Thank you for your consideration.

Gayla Burton

From: loghomes@tularosa.net
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] cougar and bear hunting
Date: Wednesday, August 16, 2023 12:32:16 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Cougar and bear hunting should continue in New Mexico. They have always been fair-chase game and should continue to be. Hunting these species keeps predator control in place, and contributes to the income of small communities and ranges in New Mexico. Bunny huggers in New Mexico do not understand predator/prey relationships. They purely have an overwrought knee-jerk reaction to hunting.--Robert Coburn, a senior hunter in New Mexico

From: debby@gilanet.com
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] cougar and bear hunting
Date: Thursday, August 17, 2023 10:29:14 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists. Please allow our hunting to continue.

From: [Alison Hull](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] culling of mountain lions
Date: Sunday, October 22, 2023 5:13:46 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Game and Fish,

I was very distressed to hear of the proposed limits on mountain lion hunts. Your plans sacrifice **too many** lions. It has been such a hard few years with the drought and many of their food sources are limited and/or decreasing. Although I am no expert, I am sure that there have been more deaths among the lion population simply from natural causes. There are natural regulatory forces for animals that control the populations. Why add the stress of out-of-state yahoos with all their gear? Most of those people can't shoot anyway and leave wounded animals and trash behind.

Our lions are a wonderful part of our state. We are so lucky to have big wild chunks of state left, and the animals that go with it. Mountain lions are a keystone species, and to take so many of them out of the picture will have unintended and negative impacts.

I would like to add my voice to others to ask you to reconsider, **and greatly lower**, the numbers of lions that you propose to allow to be killed.

thank you,

M. Alison Hull

From: ["Daniel I. Dockham Jr."](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] dandockham@myfairpoint.net
Date: Sunday, August 20, 2023 6:46:21 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

New Mexico's wildlife policy mandate serves as a beacon, guiding actions and decisions towards a sustainable future. By adhering strictly to these guidelines and incorporating science in our strategies, we not only protect our wildlife but also ensure a lasting legacy for future generations. Cat and bear hunting must be kept!

Sincerely,
Daniel I Dockham Jr.

From: [David Strip](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] excessive hunting of bears and cougars
Date: Sunday, July 30, 2023 4:21:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

This email is to respond to the proposed increase in hunting limits on bears and cougars.

I am against this proposal and have some very pertinent experience with bears and cougars in New Mexico. I live in an inholding in the Santa Fe National Forest , well into the forest (on Forest Road 312, near LLaves). I have lived here since 2002. I hike extensively in the forest in all four seasons. I have NEVER encountered a cougar. I have encountered very few bears. I have noticed the decline in the deer and elk population in our area and am in a good position to notice. I have never been bothered by a bear at my residence, even though I maintain a stock tank and have, for years, put out feed for horses.

I cannot fathom why you might wish to increase licenses and harvest limits for hunting these wild animals. Wild animals are endangered all over the world. New Mexico is one of the few places in this country that has the potential to be a reservoir and haven for the few wild animals that are left. Please do not eliminate these animals from our forests.

David Strip
401 Forest Road 312
La Jara, NM 87027
david@stripfamily.net

DGF-Bear-Cougar-Rules@state.nm.us

From: [Kara A Jensen](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] forgot the feel goods, Focus on Responsibility
Date: Tuesday, August 22, 2023 2:49:10 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Hunters have supported game management in our state for generations. The license fees and excise taxes they've willingly paid over the decades are responsible for the flourishing game populations that anti-hunters now would seek to protect from the very hunters who have nurtured them.

Sincerely,
Kara A Jensen

From: [Jim Waters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] hunting
Date: Wednesday, August 16, 2023 1:53:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

There are so many cougars in SE NM, the deer heard will never recover. Great animal for the zoo, not my deer hunting.

From: [David Carson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] hunts
Date: Wednesday, August 16, 2023 12:24:57 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

We all need to keep our predator hunts in New Mexico in place.
Ranchers are in need for their well being and depend on these hunters

From: [Carl Popp](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] iPending bear and cougar hunting regulations
Date: Wednesday, August 16, 2023 4:34:47 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have been a small and big game hunter for over 50 years but do not hunt predators. Nevertheless I feel that predator hunting is part of the hunting spectrum if conducted under science-based regulations. I hope that the NM Department of Game and Fish will continue to base its decisions on the best available data and science-based information.

Carl Popp

Socorro, NM

Sent from my Verizon, Samsung Galaxy smartphone

Get [Outlook for Android](#)

From: [Jeff Polk](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] in favor of bear and cougar hunting
Date: Wednesday, August 16, 2023 1:42:48 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am in favor of responsible predator hunt programs and the scientific management proposal submitted by game department biologists.

Lifelong NM Hunter

R Jeff Polk

From: [Jed Hovland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] jdhovland1234@gmail.com
Date: Sunday, August 20, 2023 10:03:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Wildlife resources are an invaluable asset for us all. Grounding wildlife management in the North American Model and the Public Trust Doctrine ensures sustainability. Bear and cougar hunting, when executed responsibly, is an important tool. Let's remain committed to evidence-based approaches and prioritize long-term sustainability. I support bear and cougar hunting.

Sincerely,
Jed Hovland

From: [Andy Johnson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] letter in support of hunting bears and cougars in New Mexico
Date: Thursday, August 24, 2023 3:42:25 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to express my support for the continued management and hunting of New Mexico black bear and cougar populations based on data gathered and analyzed by biologists rather than the opinions of people who largely oppose hunting because they believe it is immoral, not because they believe that these populations are in any danger.

The North American Model and the Public Trust Doctrine define fish and wildlife resources as the property of the people, to be managed by state and federal wildlife agencies entrusted with their stewardship. This model is the foundation of science-based fish and wildlife management, and I support legal bear and cougar hunting as an appropriate management tool. As caretakers of this trust, I implore you to advance sound stewardship policies that are guided by science over politics, emotion and conjecture.

Thank you,

Andy Johnson

Edgewood, New Mexico

From: [Miriam](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] on proposed BEAR AND COUGAR Rule changes
Date: Sunday, July 30, 2023 5:07:30 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Glad Im a subscriber to the Abq Journal, and learned about this proposed 'rule change' about Bear and Cougar execution in NM via today's newspaper. The Wildlife in our beautiful state is not "Owned" by the government its entities or wildlife life management agency.

We are NOT overrun by bear or cougar-- (who manage their own populations with respect to food, water and habitat).

Rather, we should be in the business of HUMANELY managing ---not killing our wildlife --- as we are living in a time of mass animal extinction.

Raffling off life of our native critters is short-sighted and without scientific basis or merit. I would like to know that wildlife Management does NOT approve of killing bear or cougar IN LIEU of Relocating those that must be? ...or helicopter executions of feral cattle left to ROT in the forests, because said cattle was a source of "non point contamination" of our streams?

and that every time a resident, most often newly transplanted folks from out of state, freak out because a neighbor mentioned a bear or cougar ..they learn just like the rest of us, that THE ANIMALS were here First and we **CAN LIVE and LET LIVE** in peace and **mutual co-existence**. At least that is the hope..we are not a State-run Game Ranch like the canned 'hunts' they do in Texas..It is unethical, immoral and down right wrong and wasteful to take a life because one has weapons but not heart.

Please take CARE of our wildlife. In my understanding 'care' does **not** include (convenient) executions.

Sincerely
(Mrs) Miriam Adams
USAF Veteran, Widow of a Vietnam Veteran

From: [Ronnie DeMasters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] open the season
Date: Wednesday, August 16, 2023 3:24:09 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

From: [Anna Laidler](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] oppose the proposed trophy hunting rules for bears and cougars
Date: Friday, August 11, 2023 4:33:52 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

the NM Department of Game and Fish is gathering public comments to help inform their proposals for new rules that will govern the trophy hunting of bears and cougars for the next four years. The current draft of the proposed rule recommends raising the kill quotas for bears, extending the bear hunting season, and continues indefensibly high cougar quotas for cougars.

Tell the game commission you oppose the direction of the new game rules.

Sent from my iPad

From: [John Thayer](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] over hunting of bears and cougars
Date: Thursday, August 24, 2023 10:56:12 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Quotas MUST be based on scientific evidence. Top predators are a necessary part of a healthy ecosystem. Please use the best available science when making hunting policy for bears and cougars.

Sincerely

John Thayer

POB 124

Buena Vista, NM

87712

From: [Sue B](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] please DO NOT increase harvest limits for bears and cougars
Date: Sunday, July 16, 2023 9:23:53 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear NMGF--

I have reviewed the Bear and Cougar Rule--Initial Proposed Changes Summary and am writing to urge you to reject increasing harvest limits for these animals.

I live in Los Alamos, and have seen the profound impact of climate change, drought and wildfire on the habitats and behaviors of our local bears and cougars. Conflicts with humans (including pet and livestock depredation) has resulted in the relocation or killing of many animals in recent years. This is not surprising, as Los Alamos has some of the only unburned forest remaining in the region.

These animals are struggling, and as the effects of climate change rapidly accelerate, will only struggle more in future. It seems completely inappropriate to add additional hunting pressure to these animals' list of survival challenges.

Please do not increase hunting limits, but instead work harder to preserve and increase populations of our important large animals.

Thanks very much for your attention to this matter, and for all that you do for NM wildlife!

Susan Barns, PhD
Los Alamos, NM

From: [Ronnie DeMasters](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] problem
Date: Wednesday, August 16, 2023 3:23:40 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

this dates back to 1970's, Ladd Gordon was director of G an F. he set bear season to open August 1 through December 31. guess what bears quit coming to town. Cougar was not a game animal. no set hunt dates no fees.
A MUCH BETTER MANAGEMENT SYSTEM

From: [Kali Bronson](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] proposed bear and cougar rules
Date: Tuesday, August 22, 2023 8:34:33 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I oppose the proposed bear and cougar rules. I have not seen any substantive and wide-ranging (rather than in isolated areas) studies with reliable/well studied data including bear or cougar populations that would support increasing kill quotas and the length of the hunting season. Additionally, we are experiencing extended and substantial drought, already putting pressure on all animal populations, especially top predators. Killing more of these top predators can impact their populations for a very long time. They provide crucial roles in balancing our ecosystems by keeping rodent and deer populations in check.

New Mexico Game & Fish should ban the use of dogs in cougar and bear hunting due to its cruelty. New Mexico Game & Fish should lower the number of cougars the kill quotas and should not extend the hunting season.

From: [barry.weinstein](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] proposed change in hunting limits
Date: Tuesday, July 18, 2023 4:24:07 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern;

I have held a life long enmity for casual hunting practices which are not geared toward providing food or responsible protection of livestock;i.e. trophy hunting. I shall not belabor my thoughts in this regard but rather present a notion long espoused by our Native population which entails the balance in our natural world and the notion that we share this earth with an abundance of fellow living creatures. I cannot speak eloquently on this matter-I refer you to the book Braiding Sweetgrass by Robin Wall Kimmerer for a wonderful exposition on this concept. I write to implore you to please consider this concept-i.e sharing of the earth with our fellow wild creatures-when you gather to decide the rules regarding hunting limits. The loss of any wild being naturally diminishes us all;the loss of a wild creature by virtue of intention in the pursuit of trophies is an atrocity.

Thank you for your attention to this matter.

Barry G. Weinstein

From: [Barbara Calef](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] proposed changes to bear and cougar rules
Date: Monday, July 24, 2023 1:40:34 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

NM Game & Fish:

Please do not increase the bear and cougar hunting quotas. I live in Los Alamos. We need more predators in this area, not fewer. Coyotes, bear, and cougar self-regulate their own numbers, unlike humans. I do not approve of the proposed changes to the Bear and Cougar Rule.

Sincerely,
Barbara Calef
4777 Sandia Drive
Los Alamos, NM 87544

From: [pat.manaster](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] proposed killing of bears and cougars
Date: Saturday, August 19, 2023 9:16:02 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

After reading the article by Charles Fox in the Albuquerque Journal of July 30th, I was appalled to learn that the NM Dept. of Fish and Game were proposing to kill up to a quarter of bears and cougars in New Mexico. Why would this be done? I can understand removing nuisance bears to places where they would not do damage or scare people, cause any kind of harm. AS for cougars, they are elusive animals and since heir numbers are low, seldom cause a problem. But what is this proposal based on? Do we even have good numbers of just how many bears and cougars we have in our state? I would like to see some answers printed in the Albuquerque Journal.

Our state is blessed with a great variety of wildlife and I would hate to see the loss of any species due to indiscriminate killing of them.

Thank you. Ms. Pat Manaster in Albuquerque

From: [Nancy London](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] public comment
Date: Wednesday, August 23, 2023 8:56:56 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I am writing to speak out against raising the kill quota for bears and cougars. Instead, I urge you to reduce these quotas.

Our ecosystems are fragile and these species are known to self-correct their own numbers. There has been insufficient study done to justify killing more rather than less of these animals.

Trophy hunting bears using dogs is inhumane and does nothing to further peaceful interspecies co-existence.

Sincerely,
Nancy London, MSW

--

**Make your ego porous.
Will is of little
importance,
complaining is nothing,
fame is nothing.
Openness, patience,
receptivity, solitude is
everything.**

- Rainer Maria Rilke -

nancylondonwriter.com

nancylondonwriter.com

From: [Mr DW Wait](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] quotas
Date: Monday, July 31, 2023 9:28:17 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern

Please do not raise kill quotas on cougars and bears in New Mexico. Their population numbers are very uncertain, and they are facing a number of other threats including climate change and habitat loss. Predators at the top of the food chain do not need to be "managed" through hunting. Their numbers will always be controlled by the population of their food sources. Use your taxpayer-funded resources to study these animals and monitor populations in a scientific manner.

Thank you.

David

From: [VICTORIA SEALE](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] raising kill limits on bears and cougars
Date: Thursday, July 20, 2023 6:35:29 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Since there has been a long and sustained drought in NM, the idea of raising the kill limits on bears and cougars is a bad idea. Also due to the extensive fire damage in the state, habitat has been lost. These important predators need to have kill limits LOWERED not raised. The vast number of New Mexicans want these animals to be further protected not destroyed.

thank you,
Victoria Seale
Lamy, NM

From: [Rolland Luplow](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] rluplow@dicksonmd.com
Date: Sunday, August 20, 2023 12:25:12 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Globally, the merits of hunting have been recognized not just as a tradition, but also as a significant conservation tool. The potential impact of discontinuing long-held practices like the use of hounds in New Mexico's bear and cougar hunting cannot be underestimated. The science should always guide these decisions, rather than shifting public opinion. Protect the hunts!

Sincerely,
Rolland Luplow

From: [Peggy Keilman](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] rules
Date: Monday, August 21, 2023 4:09:45 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi,

Please do not raise the quotas for killing bears in this state. Also cease these outrageous quotas for killing cougars. I was astonished to see how many cougars are killed in NM every year when I looked this up on the state site. These animals are being killed for trophies, not for any other purpose. You should use scientific knowledge when making these rules. The game animals belong to all of us whether we hunt or not. So far you are generally representing only those killing our animals. More of us do not believe this should occur. So let us be more representative of the majority's feelings in these matters.

Peggy Keilman

From: [Brent Bonecutter](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] running hounds
Date: Friday, August 18, 2023 8:27:55 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please don't pass any bills restricting the running of dogs. New Mexico is slowly taking away activities for rural communities. We need something to do to keep kids out of trouble like in the cities. Kids that are outdoors with their friends and family won't be causing any mischief. Let's keep kids away from their phones and screens too. We need to allow trapping again too. Don't keep restricting us from trying to lead our kids down a better path.

Thanks for your time.

Brent Bonecutter

From: [Judy Novak](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] save our wildlife
Date: Tuesday, October 24, 2023 10:21:18 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Sirs:

We am writing to oppose the proposed change in the number of wildlife that can legally be hunted in NM. Of particular concern is the increase in the numbers that cougars may be killed. DECREASE the number of licenses rather than increasing them. The animals already suffer from overcrowding as human population expands into their territory.

Please save our majestic wildlife from slaughter!!

Sincerely,
Judith and Jan Novak
250 E. Alameda #333
Santa Fe, NM 87501

From: [Cheri](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] save the cougars!
Date: Sunday, October 15, 2023 1:16:35 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Cougars are one of the most beautiful iconic animals that are native to NM. To hunt them down, just for trophies, is horrendous. If the cougar population goes down, the deer population goes up, giving the hunters even more reason to keep up their bloody 'sport'. This cannot go on. Please stop this practice at once!

(We need to put a stop to hunting all of our native predators.)

Thank you for your time,
Cheri Walden

From: [Reese Bender](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] striperfisher1@gmail.com
Date: Sunday, August 20, 2023 9:35:09 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Commissioners,

Protect bear hunting, protect cougar hunting! While it's easy to generalize practices across states, each region has its distinctive ecological and social nuances. New Mexico, with its unique biodiversity and hunting traditions, must consider its own history and challenges. Lessons from other states that underwent significant policy changes serve as reminders of the need for thorough, science-backed decision-making.

Sincerely,
Reese Bender

From: [Yancy Sanchez](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] support for bear/cougar hunting
Date: Wednesday, August 16, 2023 10:42:11 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I have heard NMDGF has received emails calling for the end of bear and cougar hunting in the state. This would be bad for all wildlife and for people who enjoy outdoor recreation. Please ignore this bad idea, as it is out of step with responsible wildlife management and human/wildlife safety.

Thank you,
Yancy Sanchez

From: [Michael Noland](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] t: Bear and Cougar Rule
Date: Wednesday, August 16, 2023 5:30:51 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Please increase the number of permits for bear and cougar hunting. The number of bears has increased dramatically in the past 5 decades I've been hunting in NM. The first bear I ever saw in the wild was in my tent. On one hunting trip my friend and I saw 10 bears. That is too many. In places like Valle Vidal, the bears are wiping out the elk calves. Not many hunters hunt bear or cougar, because to be really effective at it, you need dogs. Bear and lion dogs are few and far between these days. Allowing bear hunting while deer and elk hunting was a good decision, but cutting off the hunt based on a number of females taken is ridiculous.

I've had 5 cougar encounters, with two of them being up close and personal. I now carry a gun in the woods at all times. A large number of bears and cougars in the woods creates a safety issue for children. When I was a Boy Scout, it wasn't an issue, because predators were treated as the problem they are.

From: [Kirk Gadzia](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] vote no on this ruling please
Date: Wednesday, August 16, 2023 2:21:32 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

New Mexico has a biologically sound and responsibly administered hunting program for bear and cougar. These animals are not at risk from over-hunting by humans as much as they are to resource degradation due to continued development, and other human caused disturbances.

I believe it is a big mistake to begin removing hunting options that are currently within the accepted and traditional range of legal programs for these species.

Thank you for considering this viewpoint.

Kirk Gadzia
Resource Management Services and other
kirk@rmsgadzia.com
505-263-8677

From: [Sherlock Holmes](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] where's the logic?
Date: Monday, July 31, 2023 11:45:38 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

I operate under logic and analysis, as any thinking person would. Clearly no one at your office knows what those thought processes are.

I'd be happy to define and explain logic and analysis to you all. Let me know when you would like to meet.

In the mean time, do tell me how it is that your office has come to the decision to kill more bears and cougars in New Mexico. I want facts of depredation, locations, dates, and so forth. Or perhaps I should rephrase to ask whose deep pockets you are into and who is controlling your choices for mismanagement.

Stop killing non-invasive species of animals that belong in New Mexico.

Dr G Campbell
Silver City

-- Sent with <https://mailfence.com> Secure and private email

From: [Ann Noble](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] wildlife policy
Date: Tuesday, August 1, 2023 3:18:38 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To whom it may concern,

I am writing to express my concern about the rules that are in place and the changes that the Department of Game and Fish are proposing.

I do not think that the cougars and bears in our beautiful state should be "managed" by slaughtering them by a few individuals who pay for their blood-sport. These majestic animals deserve to live and exist as an integral part of our and their environment without being tagged for death as a so-called "sport".

It is hard enough for them to exist and be part of our ecosystem without the Department letting them be "harvested". This is not management. It is letting a few destroy the beauty and diversity of our wild lands for their cruel and disgusting "enjoyment".

I hope you are wise enough to let these animals simply exist in their world as they evolved to do. Your part should be enabling their existence, not destroying it. I hope you have the wisdom and foresight to change the policies of the department to reflect the lives of the wild beings that you have been entrusted to protect.

Ann Noble
40 Calle Varada
Santa Fe, New Mexico 87507

From: [margo byrne](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] wildlife
Date: Friday, August 25, 2023 8:42:39 AM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

LEAVE NATURE /WILDLIFE ALONE....NATURE KNOWS BEST!!!!!!

From: [Naima Shea](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] "Harvesting"
Date: Monday, July 24, 2023 4:23:06 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Dear Sirs/Madams,

First I shall say I am an advocate for allowing animals to live full, wild lives as much as possible. I would like to see Fish & Game advocate for NOT killing animals, especially cougar and bear, for example.

And call it what it is : killing. Not for food or even protection, but for "sport". Our wildlife populations are already suffering immensely from the effects of fires, human population encroachment and climate change. I would like to see your agency help them survive and not be hunted down and killed.

We need not to kill more, but to support and assist our wild creatures to live, flourish and have good lives.

Thank you for considering my input.

Naima Shea
87508

Sent from my iPad

From: [Christina Hess](#)
To: [DGF-Bear-Cougar-Rules](#)
Subject: [EXTERNAL] "Proposal for increasing Bear Hunting", My comments and Disagreements w this proposal
Date: Monday, October 9, 2023 5:44:27 PM

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

To NM Game and Fish: Aug 25,2023 dept. of game and fish meeting in Raton, Nm commissioners heard public comments from NM cattle growers, farm and livestock bureau, hunting guides,houndsmen, and trappers. I am Requesting a Public Hearing be held in Silver city area so we can address our concerns about the increased killing of bears from 146 to 197 in the Gila. Then I also have to wonder what new increases might be asked for further killing of NM/Gila Cougar.... Both this area's and other areas of NM's Bear And Cougar.... A most precious and beautiful life in Nature ... Two incredible species who need to be protected And fully appreciated! So there were comments heard from those who look at these lives as commodities.... Not valuing or fully appreciating NM's Bear and Cougar.... And then trapping to have taken place, shame and I hope Entirely No More of such barbaric actions... And so the excuse to increase hunting?!? I along w many other residents And visitors/tourists So Enjoy exploring this magnificent Gila, Also other areas of this "Land of Enchantment" And, to be able to watch/see these incredible Wild animals on their land/environment Living Their lives is an incredible gift.... Last yr on hiking the Hillsboro Peak trail off Emory Pass lookout I had the incredible gift bestowed upon me by this Earth to watch a Mamma bear and her 3 cubs swim and play in a monsoon rain pocket lake area at the foot of these Mtns.... Lakes created that season due to trapped monsoon rains.... To watch that Bear Family live, swim, play together in their Life is something that will forever be held in my heart.... America sadly has the Ill mentality that everything should be Hunted/Killed, have a hunting season ... In all this extinction and decrease of wildlife isn't it Time to stand up For This Precious Wildlife, End all this desecration of Life, Which Also Has The Right to Life Upon This Earth....?!?!? And Why aren't killings of bear/cougar by Wildlife Services in Grant county, And beyond, Not included in your maximum limits? Wildlife Services in Grant county are shooting bear and Cougar for the cattle industry... Why is there no RELOCATION happening?!?!?!? Instead it's only killing! The Two Year contract is for Relocation HASNT HAPPENED! Their killings Must Be Added to your quota limits, Not just in the Gila, but All Wildlife Service's killings of bear and cougar from around the state! WHY are there not more game wardens out in the field , To watch for poaching, help the public, keep a sharp eye out for Illegal New Roads created for harvesting firewood, etc, etc ...?!?!? I AM SAYING NO TO INCREASED KILL QUOTAS! AND, I AM ALSO REQUESTING A PUBLIC HEARING BE HELD. It is time to remember this Earth and life are not only for the human race but, ALSO for Earth's precious Wildlife And Their Right To Life As Well. Thankyou,I look forward to a Public Hearing and,your comments. Christine A. Hess
91 Armijo Road, Silver City, NM 88061. (575)295-9619
Sent from my iPhone

This Great Old Broad for Wilderness says:

Dear Staff,

Thank you for the public notice

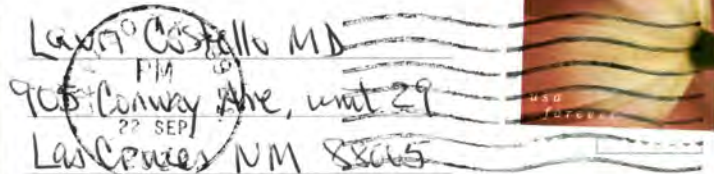
re: Bear & Cougar Quotas.

As a physician, I am aware of the necessity of healthy ecosystems for the health of communities. Top predators in NM are Bears & Cougars; without them (& wolves) in healthy balance, our ecosystems will continue to decline.

Please reduce hunting quotas for bears & cougars & forbid non-resident hunting & use of dogs. Also, do not change the length of hunting season.

Signed:

Thanks!
Lara Costello MD



NM Dept. of Game & Fish

Attn: Bear & Cougar Rule Development

1 Wildlife Way

Santa Fe, NM 87507



This Great Old Broad for Wilderness says:

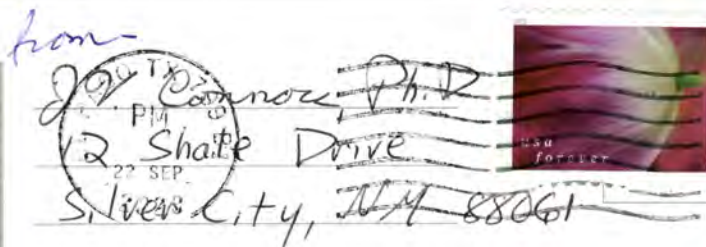
Dear NM G+F Staff,

I would like to express my deep concern about your increased quotas and schedules for hunting bears & cougars. Killing these animals does not reduce conflict with humans as the younger animals that remain are less socially stable.

I understand that your sympathies lie with hunters, but please consider that there are larger numbers of residents (and tourists) that want to hike in safety.

Signed:

Joanne V Connor, PhD



NM Dept of Game & Fish

1 Wildlife Way

Santa Fe, NM 87507

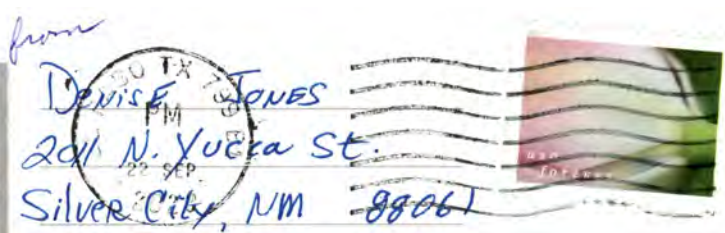


This Great Old Broad for Wilderness says:

Bears and cougars are important to ecosystem integrity and will self-regulate their numbers. Why kill up to 25% of bears and cougars without a reason (except to appease hunters?) when you don't actually know how many there are? When there is no scientific rigor or ethical competence? And allowing hunters to use dogs to chase + exhaust these animals then kill them at point blank range is cruel and unethical.
Be advocates not sell-outs

Signed:

Denise Jones 8750739210 R065



N.M. Dept. of Game + Fish
ATTN: Bear + Cougar Rule Development
1 Wildlife Way
Santa Fe, N.M. 87507

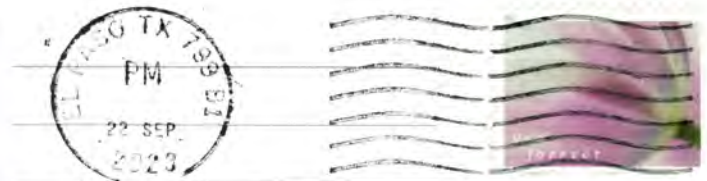


This Great Old Broad for Wilderness says:

Re: Bear + Cougar Rule
I request that you add to the proposed rules, and implement:
Maintaining or lowering existing quotas; keep current hunting seasons; disallow non-resident hunting and the use of hounds; and prohibit elk, deer etc hunters from shooting bears and cougars opportunistically.
We care and we vote!

Signed:

Carolyn Morrison 8750739210 R065
POB 205, Silver City, NM 88062



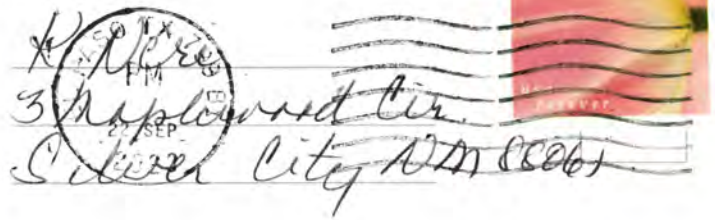
NM Dept of Game + Fish
ATTN: Bear + Cougar Rule Dev.
1 Wildlife Way
Santa Fe, NM 87507



This Great Old Broad for Wilderness says:

The proposed rules re how many bears and cougars can be killed by hunters are high and lead of overkilling of the carnivores. The numbers should be lower than they are. Bears and cougars have evolved to self-regulate their populations based on the availability of food sources

Signed: Kris Ruri 8750739210 R065



NM Dept of Game + Fish
Attn: Bear and Cougar Rule Development

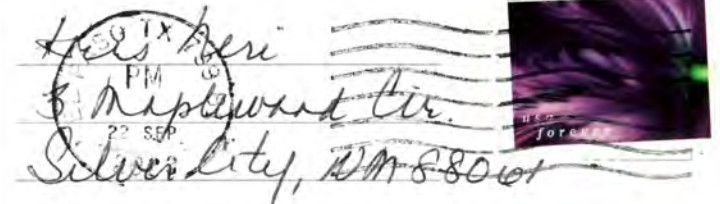
1 Wildlife Way
Santa Fe, NM 87507



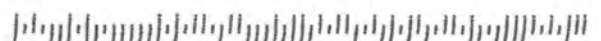
This Great Old Broad for Wilderness says:

The proposed rules regarding how many bears and cougars can be killed by hunters are too high and will lead to overkilling of the carnivores. Numbers should be lowered. Bears and cougars have evolved to self-regulate their populations based on the availability of food sources

Signed: Kris Ruri 8750739210 R065



NM Dept of Game + Fish
Attn: Bear + Cougar Rule Development
1 Wildlife Way
Santa Fe, NM 87507



8/18/2023

Hello Game & Fish Department,

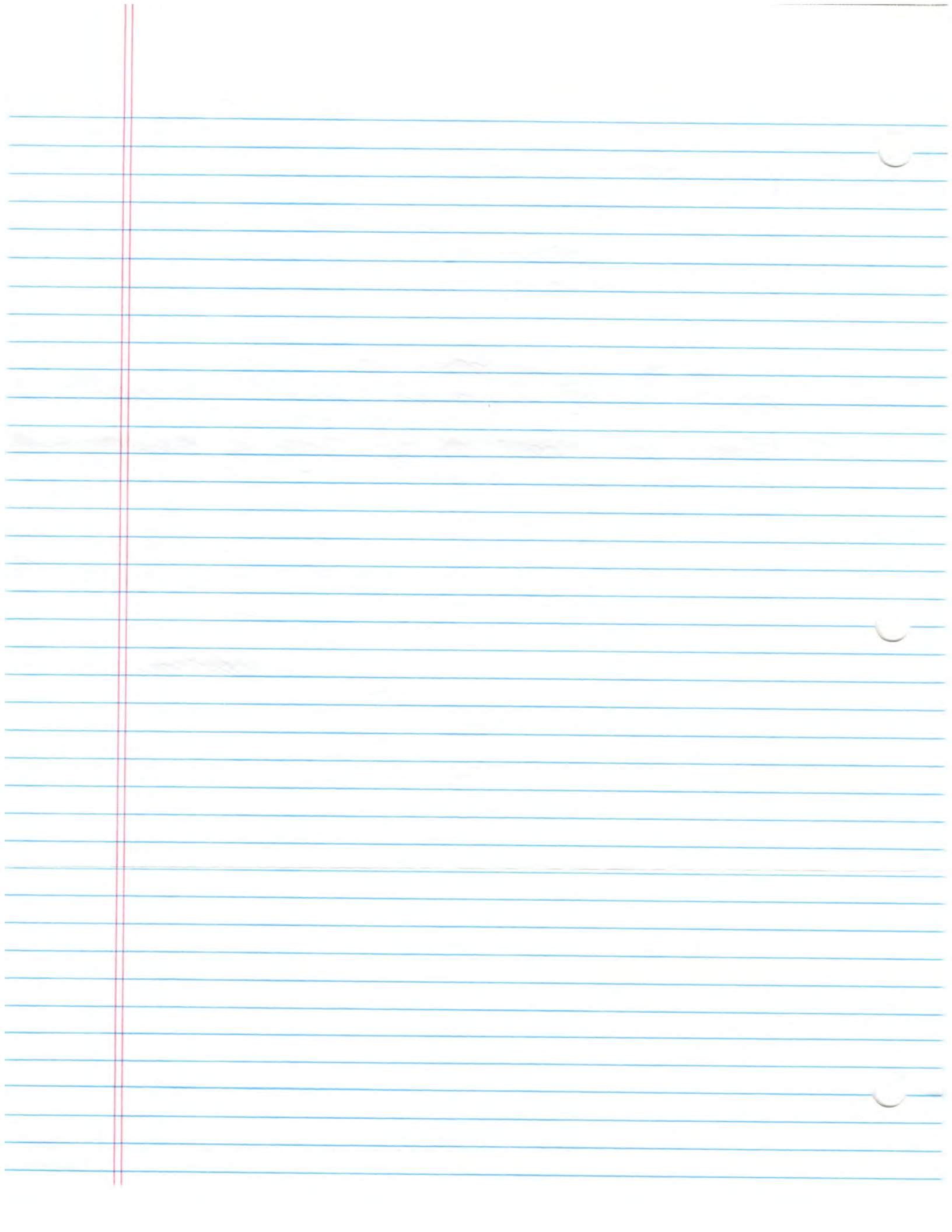
I have become aware of the evaluation of numbers regarding hunting bear and cougar in NM currently being evaluated.

I wish to express my opposition to the killing of either bear or cougar in NM. These wild creatures have a purpose and place in our environment. I have been privileged to see both of these creatures out in the wild, and I regard them as sacred animals.

There is plenty of deer and elk for hunters in NM I believe to satisfy hunting needs in terms of large game.

Thank you for considering my ~~opinion~~ opinion.

Kerri Wamwood
812 Manzano St NE
Albuquerque, NM 87110





Great Old Broads For Wilderness

Get Into The Wild

Sept. 15, 2023

New Mexico Department of Game & Fish
1 Wildlife Way
Santa Fe, NM 87507
DGF-Bear-Cougar-Rules@state.nm.us

Re: Bear & Cougar Rule Proposed Changes

Dear Staff:

We are writing you on behalf of the Great Old Broads for Wilderness, Aldo's Silver City Broadband, a non-profit, all-volunteer organization focusing on education about, and advocacy for, public lands, especially wilderness. We are based in the heart of the Gila/Aldo Wilderness regions, and are an affiliated chapter of a national organization headquartered in Durango, CO, with over forty chapters nationwide. Our grassroots organization, led by women, works to preserve and protect wilderness and wild lands.

We are writing to express our concerns about your new quotas and schedules for bear and cougar hunting in New Mexico. While your proposed changes to the quotas are mixed, the overall numbers to be killed are higher.

Bears and cougars are now known to be extremely important to the integrity of our ecosystems. Both species are known to self-regulate their own numbers, so erring on the side of killing fewer of these animals is better. Killing too many can lead to more conflict over territory.

Killing bears and cougars at random for recreation and trophies does not help address conflict with humans. In fact, it may exacerbate conflict. Trophy hunters typically target larger, established individuals for their kills, disrupting their social structures. Bears and cougars are territorial animals, and if an individual who is not involved in conflict is killed, a younger and less experienced individual who is more prone to conflicts may move into the vacant territory.

Both bears and cougars are frequently hunted using dogs that chase them until the exhausted animal seeks refuge and rest by climbing a tree. The hunter will then find the dogs by using their electronic collar signals as they keep the animal treed. When these hunters arrive at the scene, they will shoot the animal at point blank range. Even segments of the hunting community find this practice contrary to Fair Chase hunting principles.

We have looked into your reports about bear and cougar numbers (such as your "2023-24 Cougar Harvest Update"), and it is unclear where these populations stand in 2023 as it appears that you estimate their population by extrapolating from limited study areas to broader regions. Although sustainable harvest limits and harvests are clearly shown in these charts, there are no actual population totals (or quota percentages) shown for either mammal.

Considering these issues and facts, we ask that you implement the following rules:

- The hunting quotas for bears and cougars are reduced or kept as now, in recognition of the ecological benefits of these large animals.
- The lengths of bear and cougar hunting seasons remain as now, which will protect the animals and their genetic diversity, and will additionally protect other public uses of public lands.
- Non-resident hunting of bear and cougar is forbidden.
- The use of hounds in bear and cougar hunting is forbidden.
- Hunters of elk, deer and other game are prohibited from opportunistically shooting bears and cougars.

We understand that you have a traditional alliance with hunters so that they have a great deal of influence with your work, but we would like to see bird watchers, campers, backpackers, and hikers be included in your concerns. In addition, Southwest New Mexico has numerous businesses which depend on tourists who come here for the wilderness experience. We believe these groups make up a larger percentage of New Mexicans who are concerned with wildlife numbers in the forests of New Mexico than hunters.

Thank you for your consideration.

Sincerely,

The block contains two handwritten signatures in blue ink. The first signature, 'Marcia Stout', is written in a cursive style. The second signature, 'Denise Smith', is also in cursive and appears to be written below the first.

Denise Smith and Marcia Stout
Aldo's Silver City Broadband Leaders
aldosgob@gmail.com

Cc: Rick Winslow, Bear and Cougar Biologist, New Mexico Department of Game & Fish
Frederic.winslow@dgf.nm.gov

October 22, 2023

Christine Schwamberger
1514 Canyon Hills Drive NE
Albuquerque, New Mexico

New Mexico Department of Game and Fish
Wildlife Commission
1 Wildlife Way
Santa Fe, New Mexico 87507

Re: Opposition to Proposed Rule 9.31.11 NMAC
Do Not Increase Kill Limits for Bears and Cougars

Dear Commissioners:

I write to urge the Commission not to increase kill limits for bear and cougar trophy hunts. There are few scientifically rigorous studies of New Mexico's bears and cougars, and limited empirical data exists. Therefore, this proposal cannot be based on science.

Trophy hunts are not for food. There is no good reason for trophy hunts.

Kill limits for cougar and bear trophy hunts should not be increased, but on the contrary, should be reduced by 50%, to account for the population stress they have been under due to fires and climate change.

Cougars and bears belong to all New Mexicans and the majority of New Mexicans oppose trophy hunts. This rule should not be passed.

Thank you,



Christine Schwamberger

COMMISSION MEETING AGENDA BRIEFING

Meeting Date: October 27, 2023

Agenda Number: 7

Presenter: Stewart Liley

Corroborator: N/A

Agenda Title: Hearing on the Bear and Cougar Rule 19.31.11

1. Summary of Agenda Item

The Department will present on proposed changes to the Bear and Cougar rule (19.31.11 NMAC) based on public comment, harvest data, and biological data collected from research in New Mexico and recent literature. Proposed changes will include aligning harvest limits with recent biological data.

2. Background Information

The Department is in the rule development process for the Bear and Cougar rule because the current 4-year Rule expires on April 1, 2024. Proposed changes to the Bear and Cougar Rule are made based on current scientific findings using the results of Department and collaborator research efforts in New Mexico, recent findings in the literature, and Department staff and public observations and recommendations. Harvest limits are set at a percentage of the zone-specific population estimate, which maintains sustainable population sizes while allowing hunting opportunity. Bear population estimates are derived using population density estimates from studies conducted in various locations in New Mexico. Bear population density estimates were updated in April 2023 for two bear management zones based on Department efforts using advanced genetic and statistical modeling techniques. Cougar population estimates are derived using density estimates from studies conducted in New Mexico, and estimates in the literature for nearby arid areas. In most zones, cougar habitat is ranked according to quality, and an appropriate density estimate is applied to each of the habitat types to derive a zone-specific population estimate. In some zones, cougar population density estimates are currently being updated using data collected from ongoing intensive capture and camera trapping efforts, and advanced statistical modeling that determines a density estimate across all habitat types in a zone. Monitoring of age and sex structure through data collected from harvested animals, as well as data on harvest effort provided by hunters, boosts understanding of population trends, especially in the years and areas for which there aren't recent population density estimates.

Specific proposed changes include:

- Increase the harvest limits in Bear Management Zone 1 (current: 158; proposed: 168) and Bear Management Zone 10 (current: 146; proposed: 197) based on population estimates from new NMDGF research.
- Move GMU 57 from BMZ 7 to BMZ 5, and move GMUs 56 and 58 from BMZ 7 to BMZ 6, thus dissolving BMZ 7.
- Increase the number of permits for bear draw hunts BER-1-103 and BER-1-104.

- Move the season start date for BMZs 12 and 13 from September 1st back to August 16th.
- Decrease the harvest limit in Cougar Management Zone Q (current: 34; proposed: 17) based on population estimates from new NMDGF research.
- Allow licensed deer or elk hunters who draw WMA hunts to harvest a bear or lion during their hunt if the zone is open and they possess a Bear and/or Cougar license.

3. Strategic Plan References and Possible Impacts of Agenda Item

The process as presented to the Commission meets the Conservation Services Program Objectives 1, 2 and 5 of the Department's Strategic Plan: FY 2019 – FY 2023

4. Considerations Regarding Duplications and/or Conflicts with Existing Rules or Statutes

None

5. Description and Summary of Public Involvement Process and Results

The Department posted via its website the proposed changes, and public meetings were held in Raton, Albuquerque, Las Cruces, and Roswell in July. Meetings with stakeholder groups were held, which will be summarized for the Commission. The Department has received 2,790 public comments as of October 20, 2023 via the DGF-Bear-Cougar-Rules@state.nm.us email address and by written comment. The Department disseminated, via reports on its website and through social media content, the results of research conducted over the past 5 years to assess bear and cougar populations in parts of the state where changes are being proposed.

6. Suggested Motion

The Department respectfully suggests the following motion unless Commission discretion indicates a different course of action:

“Move to adopt the proposed changes to 19.31.11 NMAC as presented by the Department and allow the Department to make minor corrections to comply with filing this rule with State Records and Archives.”

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 31 HUNTING AND FISHING
PART 11 BEAR AND COUGAR

19.31.11.1 ISSUING AGENCY: New Mexico department of game and fish.
[19.31.11.1 NMAC - Rp, 19.31.11.1 NMAC, 4/1/2024]

19.31.11.2 SCOPE: Sportspersons interested in bear and cougar management and hunting. Additional requirements may be found in Chapter 17 NMSA 1978 and Title 19 NMAC.
[19.31.11.2 NMAC - Rp, 19.31.11.2 NMAC, 4/1/2024]

19.31.11.3 STATUTORY AUTHORITY: 17-1-14 and 17-1-26 NMSA 1978 provide that the New Mexico state game commission has the authority to establish rules and regulations that it may deem necessary to carry out the purpose of Chapter 17 NMSA 1978 and all other acts pertaining to protected mammals, birds, and fish.
[19.31.11.3 NMAC - Rp, 19.31.11.3 NMAC, 4/1/2024]

19.31.11.4 DURATION: April 1, 20202024 through March 31, 20242028.
[19.31.11.4 NMAC - Rp, 19.31.11.4 NMAC, 4/1/2024]

19.31.11.5 EFFECTIVE DATE: April 1, 20202024, unless a later date is cited at the end of a section.
[19.31.11.5 NMAC - Rp, 19.31.11.5 NMAC, 4/1/2024]

19.31.11.6 OBJECTIVE: Establishing open hunting seasons and regulations, rules and procedures governing the distribution and issuance of bear and cougar licenses and permits by the department.
[19.31.11.6 NMAC - Rp, 19.31.11.6 NMAC, 4/1/2024]

19.31.11.7 DEFINITIONS:

A. “Bear entry permit” shall mean a permit awarded through a public drawing which entitles the holder of an over-the-counter bear license to hunt in a limited entry area during season dates established in rule.

B. “Bear zones” shall define-mean hunt areas consisting of one or more game management units as described in 19.30.4 NMAC.

C. “Cougar zones” shall define-mean hunt areas consisting of one or more game management units as described in 19.30.4 NMAC.

D. “Department” shall mean the New Mexico department of game and fish.

E. “Director” shall mean the director of the New Mexico department of game and fish.

F. “Game management unit” or “GMU” shall mean those areas as described in 19.30.4 NMAC.

G. “Wildlife management areas” or “WMAs” shall mean those areas as described in 19.34.5 NMAC.

[19.31.11.7 NMAC - Rp, 19.31.11.7 NMAC, 4/1/2024]

19.31.11.8 ADJUSTMENT OF LICENSES, PERMITS AND HARVEST LIMITS:

A. The director, with verbal concurrence of the chairperson or their designee, may adjust the number of licenses, permits or harvest limits, up or down by no more than twenty percent within a bear zone or cougar zone, to address critical department management needs, significant changes in population levels or habitat availability. This adjustment may be applied for bear and cougar within the specified zones to any or all of: the specific hunt codes; total harvest limits; or female harvest sub-limits.

B. The director, with verbal concurrence of the chairperson or their designee, may take management actions independent of seasons and restrictions, harvest limits or female sub-limits for population management, or to address critical situations including ungulate population protection, depredation, human health and safety or other wildlife management issues. The decision to take management actions pursuant to this subsection shall be reported to the commission.

[19.31.11.8 NMAC - Rp, 19.31.11.8 NMAC, 4/1/2024]

19.31.11.9 BEAR AND COUGAR LICENSE APPLICATION REQUIREMENTS AND RESTRICTIONS:

A. Bear entry hunt: It shall be unlawful to hunt bear in designated wildlife management areas or other specifically designated special entry hunt areas without having a valid bear entry permit and a valid

bear license in the hunter's possession or as otherwise allowed by game commission rule. Bear entry hunters shall be allowed to hunt in any other open bear zone provided they have a valid bear license.

B. Mandatory cougar identification course: All persons shall complete the mandatory cougar identification course offered on the department's website prior to purchasing a cougar license. [19.31.11.9 NMAC - Rp, 19.31.11.10 NMAC, 4/1/2020]

19.31.11.9 [RESERVED]

[19.31.11.9 NMAC - Repealed, 4/1/2024]

19.31.11.10 BEAR AND COUGAR ZONE CLOSURES, BAG LIMITS AND AREA CLOSURES RESTRICTIONS:

A. Zone closures: Bear and cougar may be hunted or taken only in zones designated as open on the department hotline or website. Zones will close within 72 hours of when the reported number of bears or cougars harvested is within ten percent of the total limit or female sub-limit for that zone, whichever occurs first.

B. Bag limit: The bag limit for bear is one; the bag limit for cougar is two. It is unlawful to kill a bear sow with cub(s) or any bear cub less than one year old, or to kill a spotted cougar kitten or any female cougar accompanied by spotted kitten(s).

C. ~~Areas closed to bear and cougar hunting~~ Limited entry hunt areas: ~~It shall be unlawful to hunt bear or cougar in designated WMAs or other specifically designated special entry hunt areas with the following exceptions:~~

(1) ~~Legally licensed bear hunters possessing a valid bear entry hunt permit may hunt bears in the area(s) specified on the permit, or as otherwise allowed by rule. Bear entry hunters shall be allowed to hunt in any other open bear zone provided they have a valid bear license.~~

(2) ~~Legally licensed deer and elk hunters whose license is valid on a WMA or the Valle Vidal and are in possession of a valid over-the-counter bear or cougar license, may hunt bear or cougar in the WMA or the Valle Vidal as specified on their deer or elk license. Deer or elk hunters choosing to hunt bear or cougar under this provision may not use dogs, may hunt only in open bear or cougar zones, and must adhere to the weapon type restriction and season dates as specified by their deer or elk licenses.~~

D. Cougar hunting requirements and restrictions:

(1) ~~All persons shall complete the mandatory cougar identification course offered on the department's website prior to purchasing a cougar license.~~

(2) ~~Cougar hunting is closed in the Florida mountains hunt area during any open Persian ibex season, except by legally licensed Persian ibex hunters in possession of a valid cougar license. Persian ibex hunters may hunt cougar only if the cougar zone is open, and must adhere to the weapon type restrictions and season dates as specified by their Persian ibex license.~~

C. ~~Areas closed to bear and cougar hunting:~~ ~~Limited entry hunt areas listed in 19.31.11 NMAC are closed to over-the-counter bear hunters who do not possess an entry permit. Cougar hunting in these areas is allowed only by licensed deer or elk hunters in possession of a valid cougar license in the E.S. Barker, Colin Neblett, Humphries, Marquez, Sargent, and Urraca WMAs, and the Valle Vidal. Deer or elk hunters choosing to hunt cougar under this provision may not use dogs, may only hunt in open cougar zones, and must adhere to the weapon type restriction and season dates as specified by their deer or elk licenses. Cougar hunting is closed in the Florida mountains hunt area during any open Persian ibex season, except by legal Persian ibex hunters in possession of a valid cougar license. Persian ibex hunters may only hunt cougar if the cougar zone is open, and must adhere to the weapon type restrictions and season dates as specified by their Persian ibex license.~~

[19.31.11.10 NMAC - Rp, 19.31.11.10 NMAC, 4/1/2024]

19.31.11.11 BEAR HUNTING SEASONS:

A. Over-the-counter bear hunts for the ~~2020-21~~2024-25 through ~~2023-24~~2027-28 seasons: The following table lists bear zones, open GMUs, ~~weapon type~~ sporting arm restrictions, season dates, total harvest limits, and female harvest sub-limits.

Bea r zon e	open GMUs or areas	bow only	any big game sporting arms	2020- 21 2024-25 total limit (female)	2021- 22 2025- 26 total limit (female)	2022- 23 2026- 27 total limit (female)	2023- 24 2027- 28 total limit (female)
1	4, 5, 6, 7, 51, 52	9/1 - 24	9/25 - 11/15	158 (63)168 (67)	158 (63)168 (67)	158 (63)168 (67)	158 (63)168 (67)
2	2	9/1 - 24	9/25 - 11/15	15 (6)	15 (6)	15 (6)	15 (6)
3	49, 50, 53	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	65 (26)	65 (26)	65 (26)	65 (26)
4	45, 46, 48	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	109 (43)	109 (43)	109 (43)	109 (43)
5	54, 55, 57	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	92 (37)108 (43)	92 (37)108 (43)	92 (37)108 (43)	92 (37)108 (43)
6	39, 40, 41, 42, 43, 47, 56, 58, 59	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	33 (13)51 (20)	33 (13)51 (20)	33 (13)51 (20)	33 (13)51 (20)
7	56, 57, 58	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	35 (14)	35 (14)	35 (14)	35 (14)
8	8	9/1 - 24	10/15 - 11/15	11 (4)	11 (4)	11 (4)	11 (4)
9	9, 10	9/1 - 24	8/16 - 8/31 and 9/25 - 11/15	36 (14)	36 (14)	36 (14)	36 (14)
10	12, 13, 15, 16, 17, 18, 20, 21, 22, 23, 24, 26, 27	9/1 - 24	9/25 - 12/15	146 (58)197 (79)	146 (58)197 (79)	146 (58)197 (79)	146 (58)197 (79)
11	37, 38	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	36 (14)	36 (14)	36 (14)	36 (14)
12	34	9/1 - 24	8/16 - 8/31 and 9/25 - 12/15	33 (13)	33 (13)	33 (13)	33 (13)
13	36	9/1 - 24	8/16 - 8/31 and 9/25 - 11/30	16 (6)	16 (6)	16 (6)	16 (6)
14	14	9/1 - 24	10/15 - 11/15	19 (7)	19 (7)	19 (7)	19 (7)

B. Entry hunts for the ~~2020-21~~ 2024-25 through ~~2023-24~~ 2027-28 seasons shall be as indicated below, listing the open GMUs and areas, eligibility requirements or restrictions, hunt dates, hunt codes, legal sporting arms and number of permits.

open GMUs or and areas	2020- 21 2024- 25 hunt dates	2021- 22 2025- 26 hunt dates	2022- 23 2026- 27 hunt dates	2023- 24 2027- 28 hunt dates	hunt code	Licenses permits
2 youth only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-100	5
4: Sargent WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-101	10
4: Humphries WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-102	5

9: Marquez/ LBar WMA only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-103	510
54:55: Uracca, E.S. Barker, and Colin Neblett WMAs, and Valle Vidal	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-1-104	3260
55: Valle Vidal	4/15-5/20	4/15-5/20	4/15-5/20	4/15-5/20	BER-1-105	20
57: Sugarite Canyon State Park/ bow only	8/1-8/31	8/1-8/31	8/1-8/31	8/1-8/31	BER-2-106	5

[19.31.11.11 NMAC - Rp, 19.31.11.11 NMAC, 4/1/2024]

19.31.11.12 COUGAR HUNTING SEASONS:

A. Over-the-counter cougar hunting season shall be from April 1 through March 31, or until the total harvest limit or female sub-limit, whichever comes first, is met in any given cougar zone.

B. The following table lists cougar zones, open GMUs, total harvest limits and female harvest sub-limits for the ~~2020-24~~2024-25 to ~~2023-24~~2027-28 seasons.

zone	open GMUs or areas	2020-24 2024-25 total limit (female)	2021-22 2025-26 total limit (female)	2022-23 2026-27 total limit (female)	2023-24 2027-28 total limit (female)
A	2, 7	42 (13)	42 (13)	42 (13)	42 (13)
B	5, 6, 50, 51	25 (8)	25 (8)	25 (8)	25 (8)
C	43, 45, 46, 48, 49, 53	57 (17)	57 (17)	57 (17)	57 (17)
D	41, 42, 47, 59	15 (5)	15 (5)	15 (5)	15 (5)
E	9, 10	43 (13)	43 (13)	43 (13)	43 (13)
G	13, 17	50 (15)	50 (15)	50 (15)	50 (15)
H	18, 19, 20	29 (9)	29 (9)	29 (9)	29 (9)
I	36, 37, 38	24 (7)	24 (7)	24 (7)	24 (7)
J	15, 16, 21	84 (25)	84 (25)	84 (25)	84 (25)
K	22, 23, 24	45 (14)	45 (14)	45 (14)	45 (14)
L	25, 26, 27	19 (6)	19 (6)	19 (6)	19 (6)
M	31, 32, 33, 39, 40	25 (7)	25 (7)	25 (7)	25 (7)
N	4, 52	13 (4)	13 (4)	13 (4)	13 (4)
O	12	17 (5)	17 (5)	17 (5)	17 (5)
P	56, 57, 58	14 (7)	14 (7)	14 (7)	14 (7)
Q	28, 29, 30, 34	35 (11) 17 (6)	35 (11) 17 (6)	35 (11) 17 (6)	35 (11) 17 (6)
R	54, 55	26 (8)	26 (8)	26 (8)	26 (8)
S	8, 14	17 (5)	17 (5)	17 (5)	17 (5)

[19.31.11.12 NMAC - Rp, 19.31.11.12 NMAC, 4/1/2024]