

Fall 2016 Synopsis: Bighorn sheep helicopter surveys in the San Andres, Caballos, Sierra Ladron, and San Francisco River

Helicopter surveys were flown October 12-16, 2016. E. Rominger and C. Ruhl were the NMDGF observers and E. Watters the pilot for all surveys. The San Andres survey was a cooperative effort with WSMR and SANWR. The Fish and Wildlife Service funded a second helicopter and White Sands Missile Range supplied 2 additional observers, G. Villegas, and P. Morrow.

SAN ANDRES--10/15/16 & 10/16/16

Two helicopters surveyed for a combined 15.91 hours on October 15th and 16th. E. Rominger and G. Villegas (WSMR) flew with pilot E. Watters, while C. Ruhl, and M. Weisenberger/P. Morrow were observers with pilot C. Stallings. This survey resulted in a total of 142, down from the 174 seen last year. The majority of the decline is in the ram cohort (76 versus 48) which generally is under-observed. Therefore, we have no reason to predict a decline and the estimate will remain the same at 180-220, although with 22 lambs this herd might have increased slightly. The largest group of bighorn observed included 18 animals and the average group size was 3.46. Crews saw a total of 54 groups. The ram:ewe:lamb (R:E:L) was 67:100:31.

As in 2015, 18 out of 21 survey blocks were completed. Based on the fact that 1) it appeared that a substantial number of bighorn had moved north from the Black Mountain core (73 versus 29) and 101 versus 57 in Blocks 1-3. There were 27 bighorn sheep in Block 6 and 14 in Block 8, and therefore Block 7 should be flown in 2017 and 2) bighorn were observed after the census in Block 19 from the ground therefore Block 19 should also be flown in 2017.

Bighorn/hour was 8.9 compared to 9.7, 6.5, 5.8, and 9.5 in the last 4 surveys.

Table 1. San Andres desert bighorn sheep surveys 2007-2016.

Year	Total	Ewes	Y. Ewes	Lambs	CI	CII	CIII	CIV	Total Rams	Type/Time
Aug 07	72	36		12	4	4	12	4	24	A (7.6)
Oct 08	73	31	5	9	6	8	11	3	28	A (12.6)
Dec 09	69	32	3	12	4	3	10	5	22	G
Oct 10	115	44	8	15	8	14	15	11	48	Est.
Oct 12	102	56	2	11	1	10	7	15	33	A (15.8)
Oct 15	174	81	4	12	7	20	19	30	76	A (17.9)
Oct 16	142	71	*1 unk	22	5	12	11	20	48	A (15.9)

Table 2. All blocks flown in 2016

DNF—
did not
fly

San Andres		Females			Males										
Block	Tot	A	Y	U	Juv	I	II	III	IV	U	# Group s	Oryx	J a v	Survey Time (hrs)	Pilot
<u>1</u>	29	19			4			1	5		5			1.08	EW
<u>2</u>	24	10			5	4	2	1	2		9			1.43	EW
<u>3</u>	4						2		2		1			0.62	CS
<u>4</u>	25	14			4	1	2	3	1		7			1.93	EW
<u>5</u>	3	1		1	1						1	19		0.47	CS
<u>6</u>	27	17			4		1	2	3		8	2		1.03	CS
<u>7</u>	DNF														
<u>8</u>	14	5			2		2		5		3			0.6	CS
<u>9</u>	2						1	1			2			1.22	CS
<u>10</u>	2	2									1			0.72	CS
<u>11</u>	5	1					1	2	1		3	7		1.07	CS
<u>13</u>	0										0			0.97	CS
<u>14</u>	0										0	3		0.82	CS
<u>15</u>	0										0	1		1.17	EW
<u>17</u>	0										0	7		1.12	EW
<u>18</u>	0										0			0.48	EW
<u>19</u>	DNF										0				
<u>20</u>	7	2			2		1	1	1		1	1		1.18	EW
TOT	142	71		1	22	5	12	11	20		41	40	0	15.91	

CABALLO MOUNTAINS 10/14/2016

Survey time in the Caballos was 4.7 hours. Total bighorn seen was 130 which is the high count for this survey (Table 3). Bighorn sheep observation rate was 27.7/hour. Twenty-six groups were seen for an average group size of 5.0. The largest group was 15 bighorn. R:E:L was 91:100:55 which is the highest L:E ratio since 2010. The population estimate is 145-165.

Three collared bighorn were identified during the survey. Given the uncertainty of the number of collars on live sheep, a mark-resight estimate would be entirely speculative. Also saw 16 javelina in 2 groups.

Table 3. Caballo desert bighorn sheep surveys 2010-2016

Year	Total	Ewes	Y. Ewes	Lambs	CI	CII	CIII	CIV	Total Rams	Type/Time
Nov 10	60	18	3	16	3	10	7	3	23	G
May 11	50	21	6	10	2	2	7	5	16	A (3.8)

Nov 12	93	37	4	18	4				30	G
Oct 13	85	34	3	13	9	8	9	9	35	A (5.8)
Oct 14	67	30	1	7	2	7	9	11	29	A (5.4)
Oct 15	115	48	2	14	3	18	10	20	51	A (6.4)
Oct 16	130	50	3	29	3	15	13	17	48	A (4.7)

Sierra Ladron

As in several previous years, ground crews were assigned to attempt to locate radiomarked bighorn sheep. These bighorn had been ‘pinned-down’ the previous day in the Department aircraft. Bighorn that had not been seen by 1500hr were then searched for using the helicopter. This combination of techniques has proven to be superior to conventional helicopter survey techniques in this range, however we have the least confidence in the population estimate for the Ladron herd. Although no survey was conducted in 2014 i.e., we have no data for the 2014 lamb cohort, there were 21-24 lambs documented since 57 bighorn sheep were observed in 2013.

There were 7 functional radiocollars during the 9/18 fixed-wing flight. We saw all 7 collars and at least 1 non-functional radiocollar in 3 groups. Several BLM employees were able to locate 9 bighorn sheep with 1 functional radiocollar from the ground in the Polvadera Mountain area. The majority of the census is derived from photographs from EMRTECH employees of bighorn sheep on M-Mountain. This included a mixed group of 33 bighorn and a group of 11 rams. A group of 16, with 3 functional radiocollars, was observed from the helicopter in the area of the Salado Box.

Using the combination of data, a minimum of 17 individual rams were identified, 31-34 ewes, and 10-13 lambs, and 3 unidentified bighorn sheep. Therefore, the minimum known population is 64 which is the highest number of bighorn documented in the Sierra Ladron. The lamb:ewe ratio is calculated based on 2 interpretations of the photograph, i.e., not all 33 are positively identified. If there are 13 lambs the ratio is 42:100, if there are just 10 lambs the ratio is 29:100; including all ewes. The population estimate is 80-95, however we think this may be conservative. Two rams/year have been harvested since 2012, when the population was estimated to be just 50-60, yet there continues to be a high proportion of older age class rams observed.

There were 2 radiocollared mortalities following the October helicopter capture and 1 mortality during the capture (1 ewe/2 rams). During the capture operation, no bighorn were seen on the Laguna Pueblo, the Four-Daughters Ranch, or Mesa Sarca. The first bighorn sheep encountered during the capture were near the Salado Box. We are currently monitoring 8 GPS radiocollars and 7 VHF radiocollars.

Table 4. Bighorn sheep observed or accounted for in the Sierra Ladron, 2008-2016.

Year	Total	Ewes	Y. Ewe	Lambs	L:E	CI	CII	CIII	CIV
2008	21	10	2	4	40:100	1		2	2
2009	23	11		5	46:100	1	1	2	3
2010	29	9	1	7	78:100	2	3	4	3
2011	3	1	1	1					
2012	48	23	1	8	35:100	1	4	6	5
2013	57*	18		11	61:100	3	5	10	7
2014	43	12+1	1	11	92:100	4	1	6+1	5+1
2016	64*	31-34		10-13	See above	2	3	5	7

*Three bighorn were not classified

SAN FRANCISCO RIVER —10/13/2016

The survey was flown in 3.5 hours and 58 bighorn were observed for a rate of 16.6/hour. Twelve groups with a mean group size of 4.8. Fourteen bighorn was the largest group size, although this was thought to be part of a group of 28 broken up by the helicopter. The R:E:L ratio was 44:100:26. This is the largest number of ewes observed since prior to the dieoff in 2006. The number of rams was lower than the last 2 surveys (Table 6). Just 4 ewes were observed in 2012, at which time an effort to mitigate high mountain lion predation was initiated. The dieoffs documented in the early 1990's and 2006 were associated with high ewe numbers. It is my understanding that there are still domestic sheep at the Martinez Ranch in Arizona. The estimated population size is 65-80.

As in most years, the portion between the confluence of Big Dry and the state-line was flown on a 'high-grade'. We observed 12 bighorn near the state line, 6 in NM and 6 in AZ. One radiocollared ewe was observed during this survey.

Table 6. San Francisco River surveys 2010-2016.

Year	Total	Ewes	Y. Ewes	Lambs	I	II	III	IV	Unk	Total Rams	Type/Time
Oct 10	44	16	1	2	6	4	4	10	1	24	A (1.6)
Dec 11	17	6		2		1	5	3		9	A (2.1)
Oct 12	11	4		3			1	2		3	A (2.2)
Oct 13	25	8		8	2		5	3		10	A (3.7)
Oct 14	72	27	2	16		1	12	6	8	27	A(2.2)
Oct 15	47	21	2	4	2	1	10	7		19	A(3.2)
Oct 16	58	34		9	1	2	7	4		15	A(3.5)

2016 LAMB EWE RATIOS AND POPULATION ESTIMATES FOR DESERT AND ROCKY MOUNTAIN BIGHORN SHEEP IN NEW MEXICO

Table 8. Population estimates for desert bighorn sheep populations in New Mexico, 2016. Minimum number of lambs observed in parentheses.

Herd	L:E (lambs/100 ewes) w/ yearlings	Population Estimate
Fra Cristobals	62:100 (68)	290-305
Caballos	55:100 (29)	145-165
Peloncillo	73:100 (38)*	125-140
Little Hatchets	52:100 (23)*	90-110
Big Hatchets	37:100 (21)*	135-155
Sierra Ladron	n/a	80-95
San Andres	31:100 (22)	180-220
Totals		1045-1190 Midpoint = 1118

*Spring ratio, **2016 survey

Table 9. Lamb:ewe ratios and population estimates for Rocky Mountain bighorn sheep populations in New Mexico, 2016.

Herd	L:E (lambs/100 ewes)	Population Estimate
Pecos	40:100 (69)	350-400
Wheeler Peak	51:100 (37)	230-275
Latir	15:100 (4)	85-100
Culebres	36:100 (9)	45-50
Rio Grande Gorge	73:100 (70-80*)	300-330
Dry Cimarron	60:100 (28)	125-150
San Francisco River	26:100 (9)	65-80
Turkey Creek	No survey	20-25
Manzanos	No survey	40-50
Jemez	46:100 (15)	60-75
Red River Valley	No Survey	80-100
Totals		1400-1635 Midpoint=1518

*45 observed—70-80 expected