



An **Interim Year 2 Report** for

New Mexico Department of Wildlife and Share with Wildlife program

Agreement Contract Number: 25-516-0000-00034

June 30, 2026

***Ecological Immersion: Teaching High School Students Through
Lesser Prairie-Chicken Habitat Improvement Research***



Photo Credit: Zane Corman

Submitted by:

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Background

Center for Environmental Health Monitoring and Management (CEHMM) is a non-profit organization committed to working towards solutions that are beneficial for conserving the lesser prairie-chicken (*Tympanuchus pallidicinctus*) while cooperating with industrial activities, such as oil and gas development, agricultural development, and livestock grazing. Through Candidate Conservation Agreements (CCA) and Candidate Conservation Agreements with Assurances (CCAA; collectively CCA/As), collaborative conservation efforts with local ranchers promote the livelihoods of ranchers while also advocating for threatened and endangered species and habitat conservation. By voluntarily enrolling in the CCA/As, ranchers agree to follow grazing plans that support lesser prairie-chicken habitat conservation. Habitat improvement projects implemented on enrolled ranches, such as fences and water improvements, are funded through the CCA/As to aid ranchers in meeting these grazing requirements, thereby benefiting both the habitat of the Lesser Prairie Chicken and the ranching activities of the enrollees.

Additionally, CEHMM strives to engage in educational outreach to increase awareness and participation of community members in the CCA/As and other organizational events. Our educational outreach efforts offer opportunities for students and other members of the community to learn about the importance of protecting the lesser prairie-chicken and grassland environments.

Purpose

CEHMM has partnered with Dora High School in Roosevelt County, New Mexico, to provide education to local students and teachers about grassland ecosystems, the lesser prairie-chicken, the CCA/As, and the methods that CEHMM employs in grazing protocols within the CCA/As to protect the lesser prairie-chicken. CEHMM will develop a curriculum to educate students and teachers on these topics. The classroom curriculum will be delivered to the students at Dora High School in a PowerPoint format. PowerPoint will include information on the previously mentioned topics as well as background on CEHMM employees' educational and career history and potential conservation careers available. A hands-on field day will also take place on CEHMM property. The field day will consist of teaching data collection methods used to monitor grazing protocols within the CCA/As and other aspects of grassland ecology.

Results to Date

Project Year 1

This section details the progress made during Year 1 of CEHMM's *Ecological Immersion* project (April 9th, 2025 – April 9th, 2026). This encompasses the New Mexico Department of Wildlife (NMDOW) Fiscal Year 25 (April 1st, 2025 - June 30th, 2025) and a portion of the NMDOW Fiscal Year 2026, which began July 1st, 2025.

CEHMM developed a classroom curriculum and field modules for the agriculture students at Dora High School in Dora, New Mexico. The classroom curriculum was a one-hour PowerPoint lesson that included multiple Next Generation Science Standards, including LS2.A: Interdependent Relationships in Ecosystems, LS2.C: Ecosystem Dynamics, Functioning, and Resilience, LS4.D: Biodiversity and Humans, ESS3.C: Human Impacts on Earth Systems, ESS3.D: Global Climate Change, and ETS1.B: Developing Possible Solutions. The lesson also included information on lesser prairie-chickens, grassland ecosystems, how conservation initiatives can be designed to work alongside anthropogenic activities that are of economic and cultural importance, and how CEHMM accomplishes initiatives through implementation of CCA/A programs and grazing protocols. Although the primary focus of the lesson is conservation of lesser prairie-chicken, the curriculum highlights the importance of grassland ecosystems and the variety of wildlife biodiversity these systems support (i.e., birds, mammals, herptiles, and invertebrates). A PowerPoint presentation was delivered to 17 students at Dora High School on September 15th, 2025. Prior to the lesson, students were given a pre-assessment to evaluate their prior knowledge on the focal topics. Field modules were created to demonstrate numerous data collection methods that CEHMM utilizes to observe lesser prairie-chicken and monitor the CCA/As grazing protocols including forage utilization, canopy cover, ground cover, and visual obstructions. The field modules also included demonstrations of other data collection methods often performed by biologists to monitor grassland ecology such as monitoring wildlife via camera traps, monitoring invertebrate diversity using pitfall trap grids, and monitoring bird diversity by conducting visual encounter surveys. Field modules were divided into four stations: 1) grazing monitoring, 2) bird diversity, 3) invertebrate diversity, and 4) wildlife diversity. A kit was assembled for each station and contained appropriate gear, supplies, and additional materials including snake gaiters, binoculars, clipboards, data collection sheets, and bird identification guides. Immediately following the classroom lesson, students were transported to CEHMM's property in Milnesand, NM. Students were divided into four groups that rotated to a new station hourly. Students received an in-field demonstration of each method at each station

by a CEHMM biologist and were given the opportunity to have a hands-on learning experience performing each data collection method themselves.

Following the field day, CEHMM biologists analyzed and compiled the data for each collection method. A step-by-step guide for analyzing grazing monitoring data to determine if an enrollee is passing or failing CCA/A protocols was created. CEHMM biologists attended Dora High School on September 22nd, 2025, to teach the students this step-by-step guide and to show them the compiled data collected from bird, wildlife, and invertebrate monitoring. At this time, a post-assessment quiz was given. A comparison of the pre-assessment prior to the classroom lesson/field day and the post-assessment showed a significant increase in the average score from 51% to 90%.

FY26 and Project Year 2

This section details the progress made on CEHMM's *Ecological Immersion* project from the beginning of project Year 2 (April 10th, 2026) to the end of the NMDOW Fiscal Year 26 (June 30th, 2026). This section encompasses only a small portion of project Year 2, which will end October 30th, 2026. A final project report encompassing the entirety of project Year 1 and 2 will be submitted by October 30th, 2026.

No major adjustments have been made to the developed learning modules, including the PowerPoint lesson and the field modules. Tatum High School was not included in the project, therefore, the number of students included in the project was reduced from 40 to 17.

FY27 and Project Year 2 Upcoming Tasks (July 1st, 2026 - October 30th, 2026)

- CEHMM will review and update the previously developed PowerPoint lesson and field modules as needed. Prior to meeting with the students, CEHMM will provide the updated curriculum to the SWW Coordinator, Dora Schools Principal, and Dora High School Agriculture teacher for review and approval.
- CEHMM will coordinate with the Dora Schools Principal and the Agriculture teacher to schedule a planning meeting to finalize dates and logistics for two classroom visits and one field day.
- CEHMM will conduct a classroom visit in September 2026 to deliver the PowerPoint-based instructional lesson to the Dora High School students.
- CEHMM will coordinate and facilitate a field day with participating students in September 2026.
- CEHMM will conduct a second classroom visit in September 2026 to instruct students on grazing monitoring data analysis, including evaluation of enrollment

performance (pass/fail determinations), presentation of station-level datasets, and comparison of FY26 and FY27 data to demonstrate multi-year trends.

- CEHMM will submit a final project report detailing all work completed under the project by October 30, 2026. A final invoice for the FY27 portion of the project will be submitted concurrently with the final report.



Figure 1: Dora High School students collecting invertebrates at a pitfall trap grid.



Figure 2: Dora High School students collecting grazing protocol data with CEHMM's Range Conservationist.

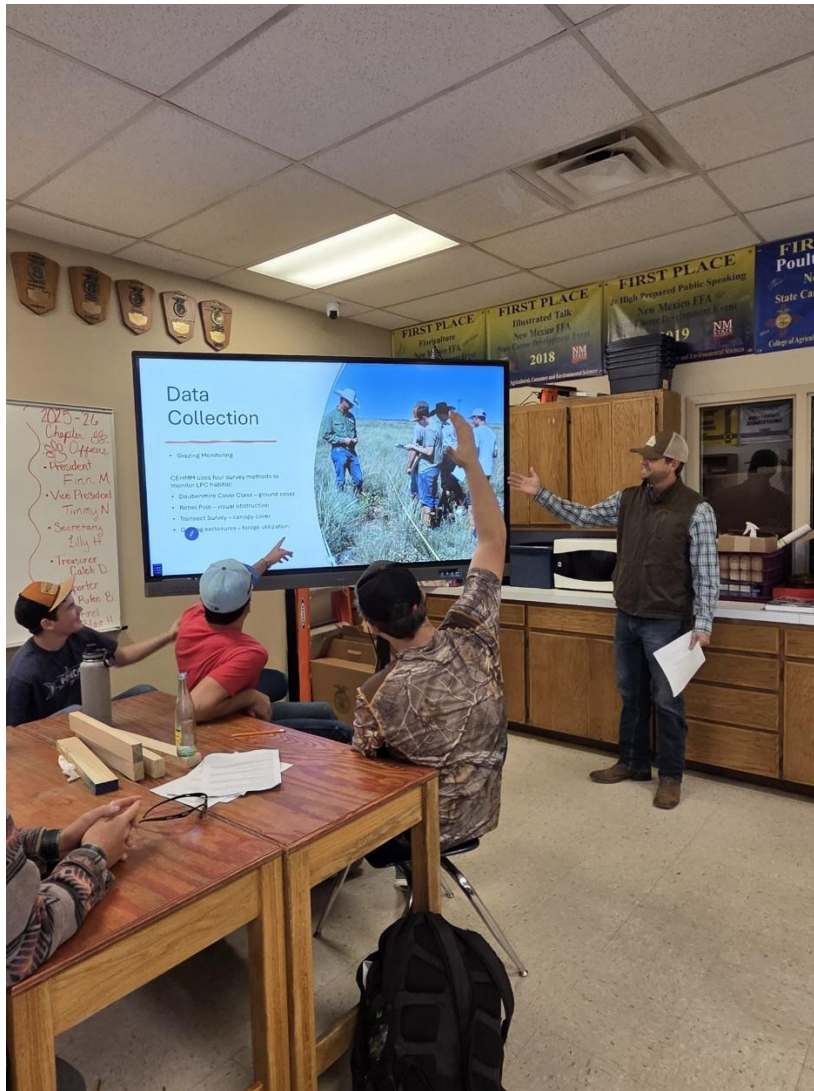


Figure 3: CEHMM Wildlife Biologist instructing students at Dora High School through a PowerPoint presentation on the analysis of collected data.



Figure 4: Dora High School Agriculture students, Agriculture teacher, and CEHMM Wildlife Biologists.

Share with Wildlife

Ecological Immersion through Lesser Prairie Chicken

Habitat Improvement



New Mexico Department
of Game & Fish



Center for Environmental Health
Monitoring and Management

Zane Corman – Wildlife Biologist

Education

- Bachelors of Science in Agriculture w/ an emphasis in Wildlife Science – New Mexico State University 2015
- Graduate Certificate in Sustainable Natural Resources – Oregon State University 2021

Career Path

- NMDA Forest Service – Recreation field technician – (2015)
- CEHMM – Environmental Services field technician – (2016)
- CEHMM – Conservation field technician – (2016 to 2018)
- CEHMM – Wildlife Biologist – (2018 to Present)



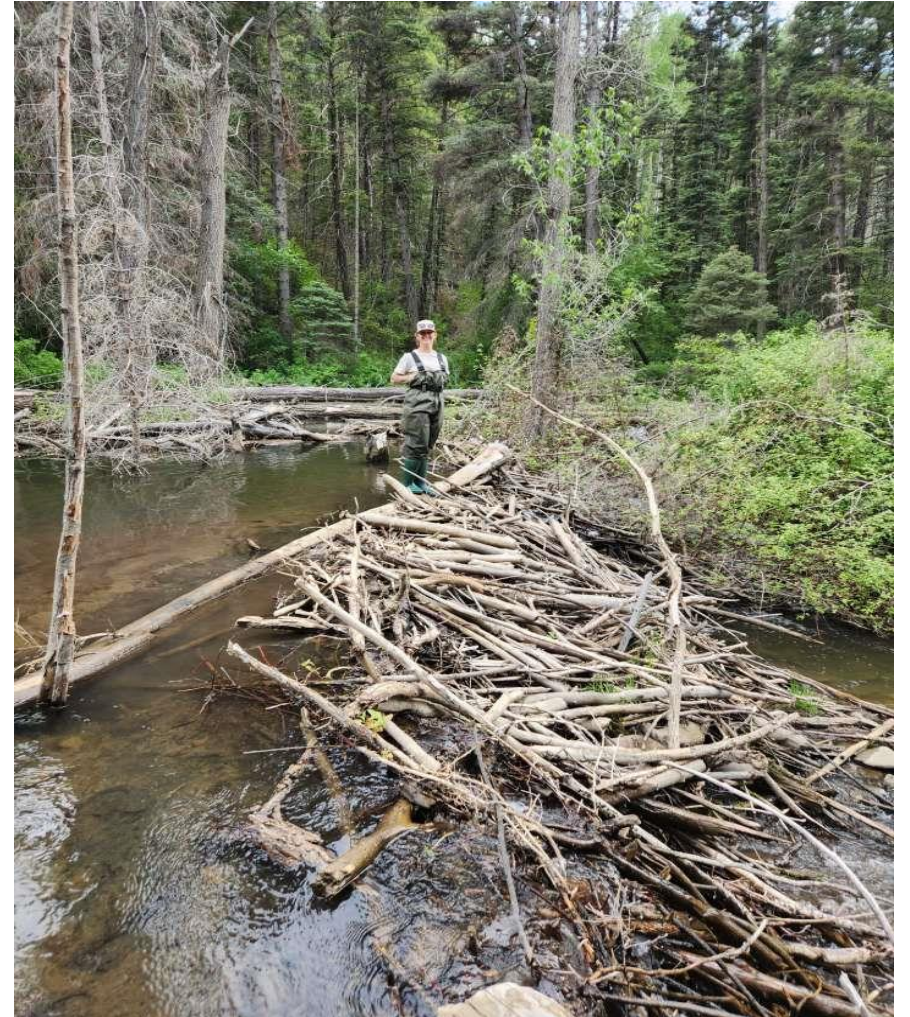
Ashlyn Corman – Wildlife Biologist

Education

- Bachelors of Science in Wildlife and Fisheries Sciences – Eastern New Mexico University 2023
- Masters of Science in Biology w/ an emphasis in freshwater ecology – Eastern New Mexico University – In progress

Career Path

- ENMU – Field technician
- ENMU – Graduate assistantship
- CEHMM – Wildlife Biologist



A wide-angle photograph of a vast, flat grassland under a blue sky with scattered clouds. The grass is a mix of green and yellow, indicating it might be late summer or autumn. In the distance, a low horizon line separates the field from the sky.

Grassland Ecology

What is a Grassland?

Grasslands are ecosystems dominated by grass species with few to no trees or large shrubs.

Healthy grasslands have a diversity of native plant species that vary in size, height, and rooting depth

- Called structural layers:
 - Shrubs
 - Tall grasses and forbs
 - Medium and low grasses and forbs
 - Ground cover

A healthy grassland can support a diversity of plant and animal species



Threats to Grasslands

- Agricultural development
- Invasive species
- Pesticides
- Climate change
- Urban expansion
- Fire
- Overgrazing
- Industrial development

CEHMM's Mission

Preserve and improve grassland habitats for the Lesser Prairie Chicken and their grassland habitat.



Lesser Prairie Chicken (LPC)

Prairie grouse species

Inhabit grasslands of southern and central plains of the U.S.

Morphology

- 1 – 2 lbs.
- Brown and buff colored barring on feathers
- Short tails
- Males have:
 - pinnae: long tufts of feathers on the sides of their neck that stand upright
 - Pale reddish air sacs that inflate
 - Bright yellow eye combs



Lesser Prairie Chicken (LPC) Life History

Mating

- Occurs on leks: specific areas where males and females gather to mate
 - Leks are active in the spring and visited by males and females during sunrise and sunset
 - Males showcase their physical attributes (pinnae, air sacs, and eye combs), vocalizations, and “dancing” display to court females
 - Males compete, sometimes fight, for lekking position

Nesting

- Females use tall grass and forbs for nesting habitat. Tall grasses conceal the nests from predators.



Lesser Prairie Chicken (LPC) Status

Listing Status

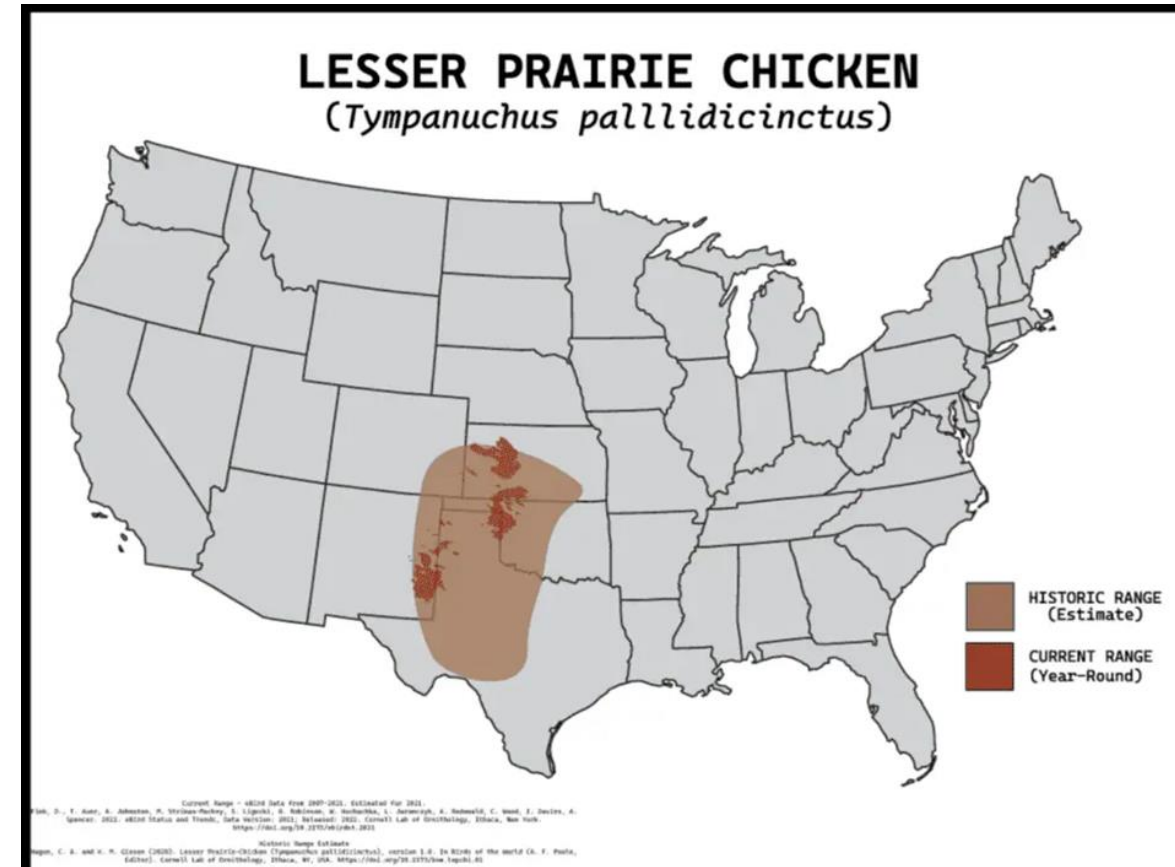
- Recently removed from the endangered species list
 - Under review by the U.S. Fish and Wildlife Service; Conservation programs still in place
 - Endangered: a species of animal or plant that is at serious risk of extinction

Threats

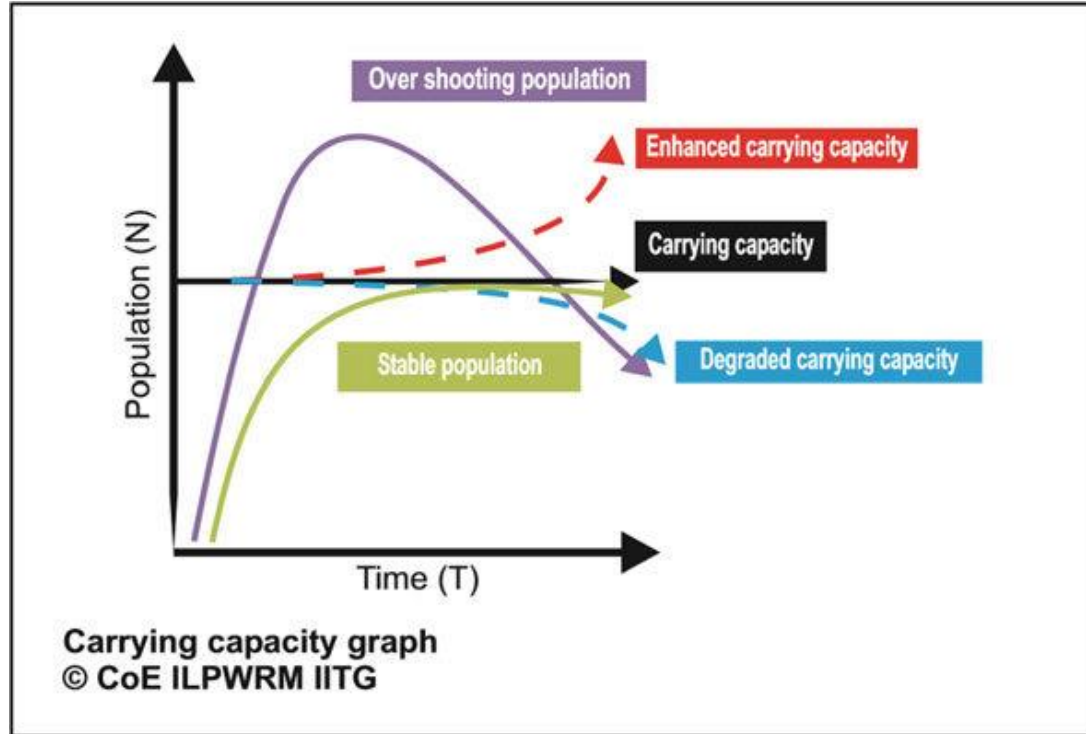
- Loss of habitat due to:
 - Drought
 - Overgrazing
 - Under grazing
 - Encroachment of invasive species
 - Energy development
 - Land use conversion (grassland to cropland)

CEHMM's Mission

Estimated to occupy less than 3% of their historic range
Preserve and improve grassland habitats for the
Lesser Prairie Chicken and their grassland habitat.



Carrying Capacity



- Every ecosystem has a carrying capacity
- What is a carrying capacity?

Carrying capacity (K) is the maximum number of individuals of a species that the environment can sustain without depleting the resources

- K is limited by available living and nonliving resources
 - These resources are impacted by factors such as predation, competition, and disease

K (carrying capacity) affects the number of species and the number of individuals within each species in any given ecosystem

Relationship between Cattle and LPC

Cattle and LPC compete for vegetation

- Cattle eat vegetation
- LPC use vegetation for shelter from predators, nesting habitat, and food resources (seeds and invertebrate production)
 - Open prairies with tall, dense vegetation and a few shrubs are key to successful breeding and survival



Limits the abundance of cattle and LPC that a grassland ecosystem can support (i.e., carrying capacity)





Overgrazing

Livestock or wildlife excessively feeding on and depleting vegetation.

When cattle overgraze, they've exceeded the carrying capacity of the grassland.

Causes

- Reduced plant cover
- Reduced soil quality
- Soil erosion

Leads to

- Biodiversity loss
- Desertification
- Decrease in LPC populations

How does CEHMM manage cattle grazing for the LPC?

Candidate Conservation Agreement

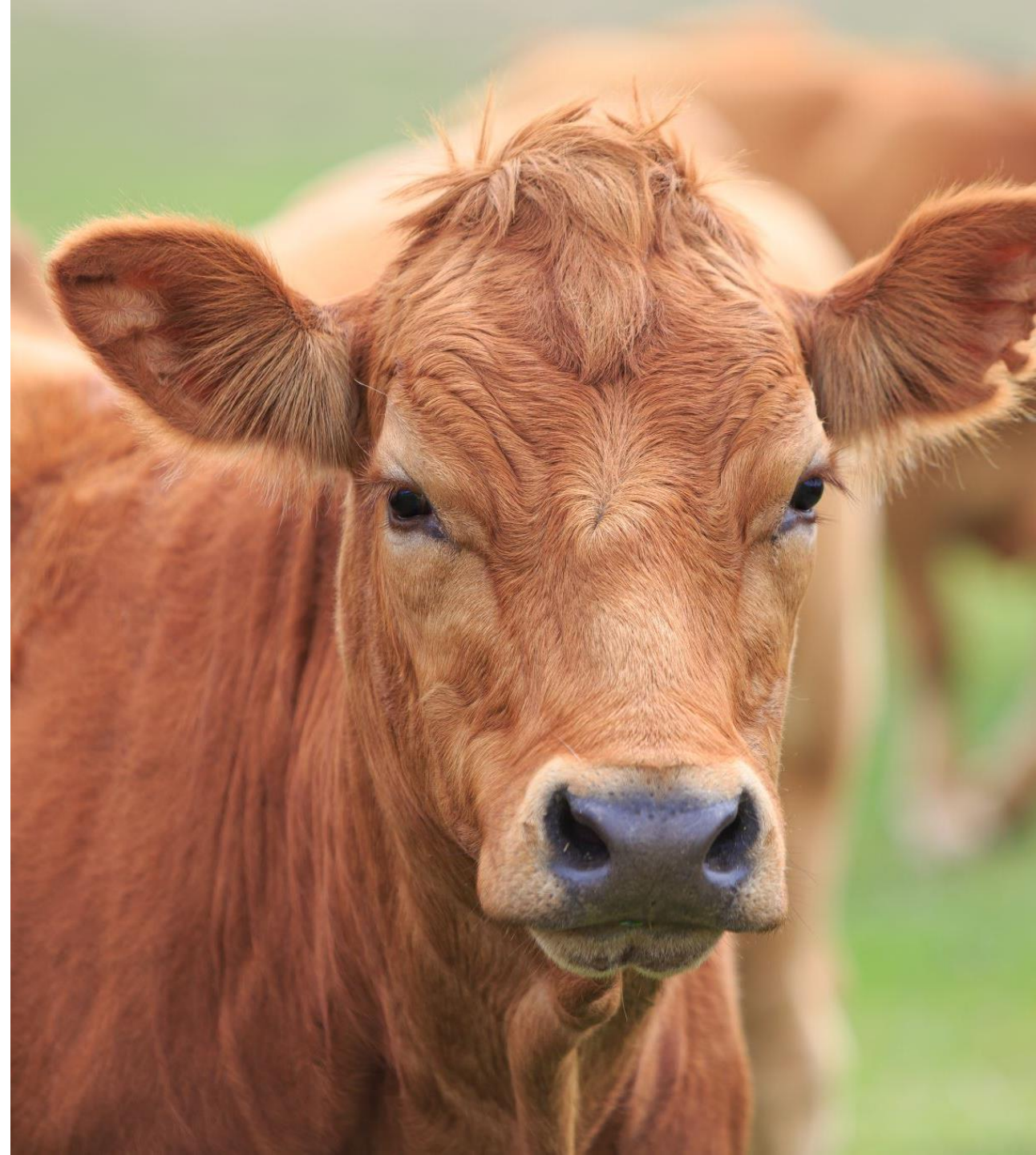
What is it?

A program/contract between enrollees (ranchers) and CEHMM.

How does it work?

Ranchers enroll in the program → agree to follow grazing protocols for their cattle → in turn receive funding for projects on their ranch from CEHMM

- Projects can be anything that benefits a ranching operation: fencing, tank installation, etc.



Grazing Protocols

Grazing protocols are guidelines that enrollees must follow to ensure grassland health for LPC.

Basic habitat needs for the Lesser prairie chicken were set by U.S. Fish & Wildlife Service according to the Bureau of Land Management RMPA (Resource Management Plan Amendment).

Habitat quality indicators are monitored by CEHMM through four survey methods.

Ground Cover (%)		
	Grassland Community	Shinnery Oak-Dune
Grasses and Forbs	15-52	16-40
Shrubs and Trees	3-12	3-17
Bare Ground	14-60	5-20
Litter	8-44	25-70

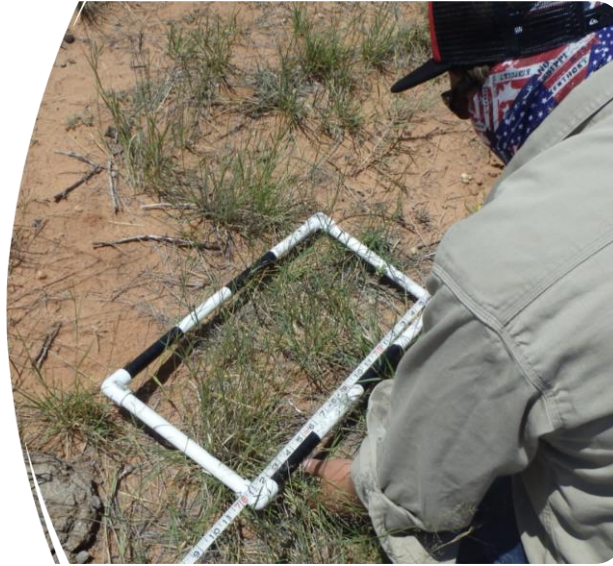
Forage Utilization Rates: the amount of vegetation that cattle has grazed cannot exceed 45% of the grassland vegetation.

Why? - maintains food and nesting resources for LPC.

Visual Obstructions: Enrollees' property must average 4 inches of visual obstructions.

Why? – provides shelter and nesting habitat for LPC and protection from predators.

Canopy Cover (%)			
Grasses	Shrubs	Forbs	Bare Ground and Litter
30-50	25-40	3-10	Less than 42% combined



How do we monitor if these protocols are being followed?

Through Data Collection.

We use various methods to collect data

- Line point intercept – canopy cover
- Robel Pole – visual obstructions
- Daubenmire cover class – ground cover
- Grazing exclosures – forage utilization



What we will be showing students in the field.



Benefits of Grazing Monitoring

Critical habitat for LPC is preserved and improved.

Cattle grazing mimics historic ungulate (bison) populations that supported a healthy grassland ecosystem.

- Hoof action sows seeds
- Increases organic litter
- Promotes soil health



Bird Diversity

- New Mexico is the fourth highest state in bird diversity - 549 bird species
- Roosevelt County has approximately 200 bird species

CEHMM office in Milnesand is a well-known destination for bird watchers

Ecological Importance

- Species diversity is an important indicator of grassland health
- Seed dispersal by birds leads to vegetation growth

Invertebrate Diversity

Ecological Importance

- Indicator of grassland health
 - Greater invert. diversity = greater plant diversity = healthier grassland
- Important food source for LPC and other wildlife (e.g., birds, lizards)

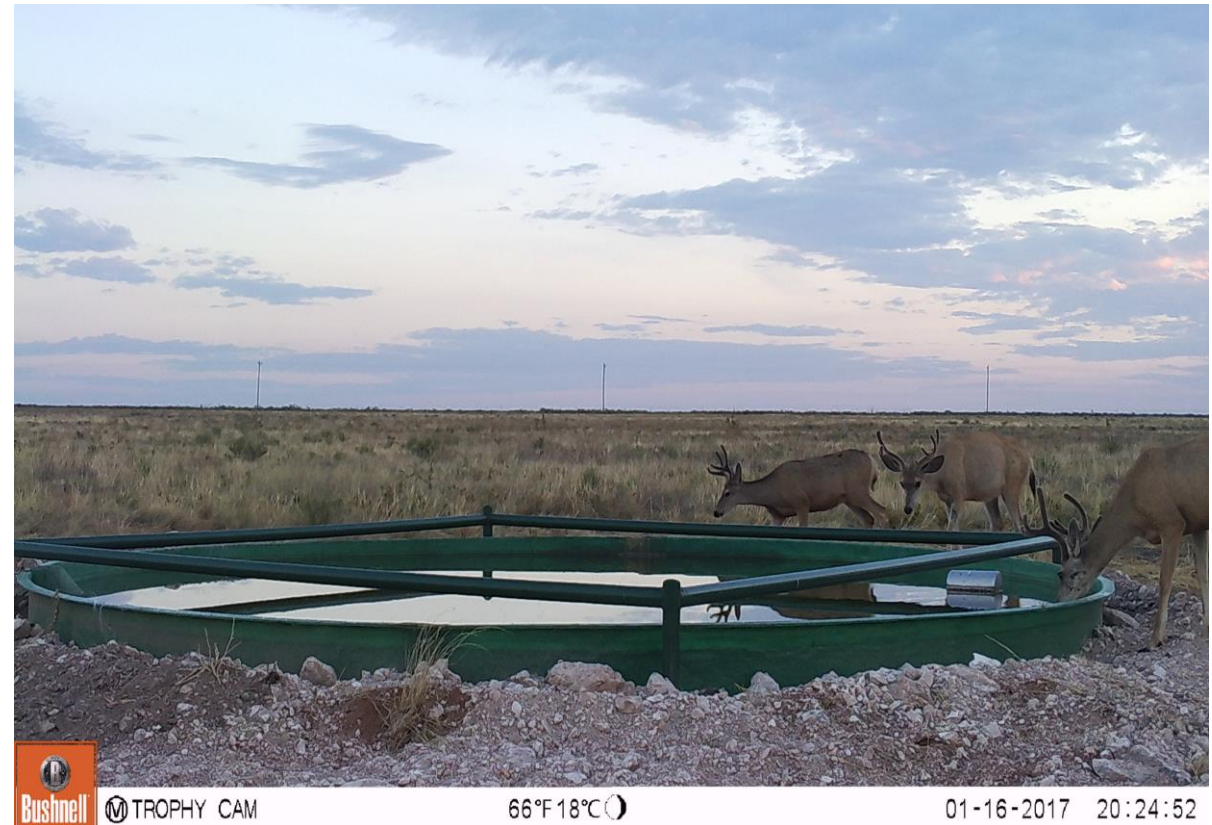
Data Collection Method

- Pitfall traps



Wildlife Diversity

- CEHMM observes wildlife via game camera monitoring
- Allows detection of species presence over long term intervals
- Species diversity is an indicator of rangeland health



References

- *Conserving the lesser prairie-chicken* | U.S. Fish & Wildlife Service. (2023, January 23). FWS.gov. <https://www.fws.gov/lpc>
- <https://southwest.audubon.org/>