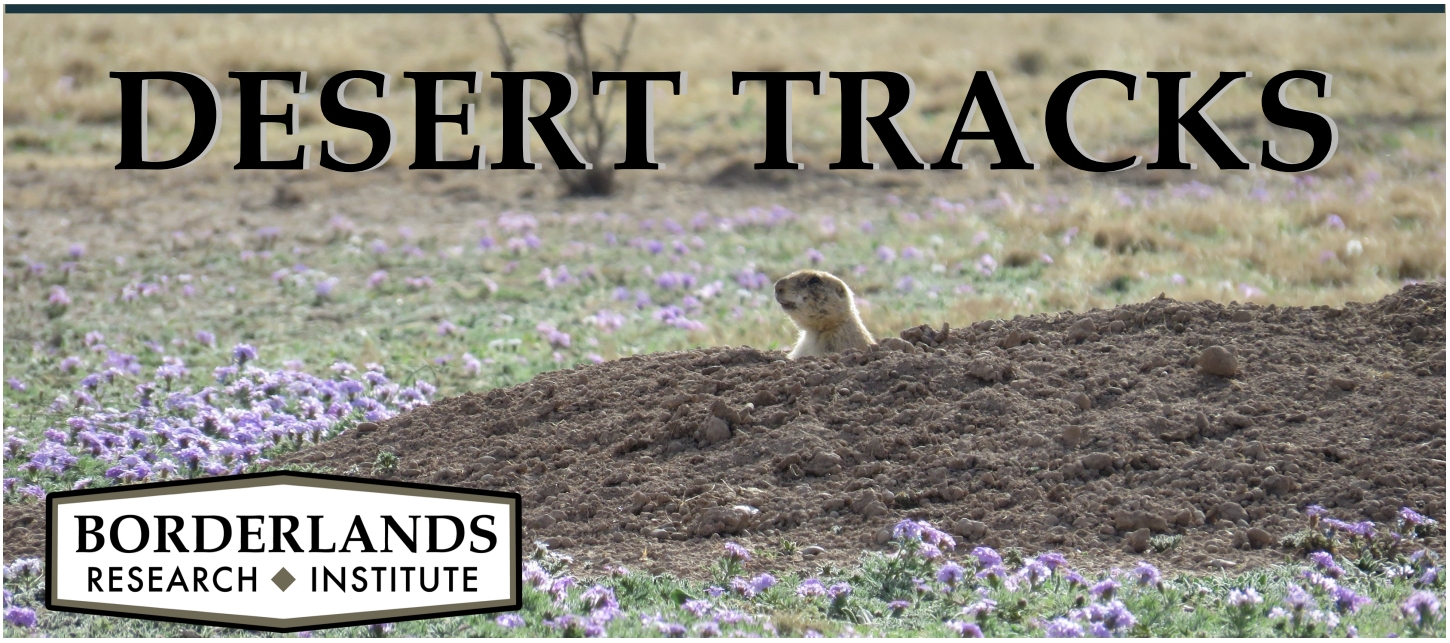
A publication of the Borderlands Research Institute at Sul Ross State University



CONSERVING THE LAST FRONTIER

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Influence of Black-tailed Prairie Dogs on Vegetation and Cattle Movement

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Top: A black-tailed prairie dog in prairie verbena on The Nature Conservancy's Marathon Grassland Preserve. Above: Hereford and Red Angus cattle grazing on the Marathon Grassland Preserve.

The black-tailed prairie dog (*Cynomys ludovicianus*) plays a key role in preserving biological stability in western grasslands. Public perception about potential competition between prairie dogs and cattle influences conservation and management strategies for these native herbivores.

The continuous grazing of plants by prairie dogs creates unique vegetation communities, with a positive feedback loop in which removal of plant biomass is offset by improved forage quality. Constant grazing by prairie dogs, and the subsequent increase in vegetative nutritional quality, is attractive to a variety of herbivores.

To better understand how prairie dog grazing behavior influences vegetation and cattle, we examined spatial and temporal variation and trade-offs between forage quantity and quality across landscapes with and without prairie dog colonies. We also evaluated cattle movements and grazing patterns across landscapes with and without prairie dog colonies. Vegetation samples were collected every month from June 2017 to June 2018 from a grid across the Marathon Grassland Preserve. Cattle (n = 25; 10 with GPS collars) were rotated through three pastures with differing amounts of prairie dog colony to evaluate movement and grazing patterns. Vegetation collected from the sampling was prepared for nutrition analyses, and collar data was used to determine cattle use on prairie dog colonies.

Results of the study indicated that plant species composition and biomass was similar on and off prairie dog colonies. However, we documented 10% higher crude protein levels on the prairie dog colonies compared to non-prairie dog colonies. Movement data indicated that cattle graze within the prairie dog colonies during the warm-dry and warm-wet seasons because of the highly nutritious forage regrowth that's promoted by prairie dogs grazing. These results suggest that by using appropriate stocking rates and rotational grazing, cattle can take advantage of the seasonal shifts in vegetation nutrition caused by the continuous grazing of prairie dogs.

Phainopepla, pictured here, has a mutualistic relationship with mistletoe. Photo by Michael Gray.

Director's Note—Mutualism in the Desert, Academia, & Philanthropy

In biology, mutualism refers to the nature by which the relationship between two organisms is mutually beneficial. A great example of mutualism in the Chihuahuan Desert is the relationship between phainopepla and mistletoe. Phainopepla eat mistletoe berries, gaining nutrients, and mistletoe benefits from the seed dispersal.

The relationship between Sul Ross State University (SRSU) and BRI is also mutualistic. BRI is an academic unit within SRSU that was created in 2007 to advance our understanding of the natural world, educate students, and to share our scientific discoveries.

SRSU provides BRI operational, logistical, and financial support. BRI recruits, employs, and trains students; secures funding from grants and gifts to support students and staff; and serves the communities and landowners of the region through our outreach efforts.

We also view our relationship with our supporters as mutualistic. BRI benefits from our supporters, as they provide financial resources so that we may do our work. And our supporters receive a return on investment, in that we advance conservation for the region.

By supporting BRI you are investing in our students, in our science, in our community, and in the conservation of the Chihuahuan Desert!

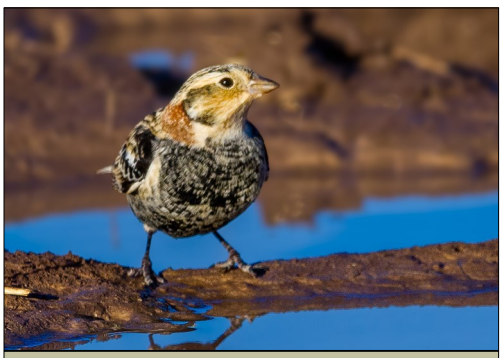
—Louis A. Harveson

NFWF & ConocoPhillips SPIRIT of Conservation Grant

The National Fish and Wildlife Foundation (NFWF) and ConocoPhillips has awarded a grant to BRI for a grassland restoration project that will benefit wintering grassland birds in the Trans-Pecos. The grant was awarded through the ConocoPhillips SPIRIT of Conservation Program, a partnership between NFWF, ConocoPhillips and the U.S. Fish and Wildlife Service.

The $180,674 grant to BRI will pay for brush treatment of approximately 3,500 acres of private land in the Marfa and Marathon grasslands of Texas, which are critical wintering habitat for migratory grassland priority bird species. The grant will leverage private funding from landowner and conservation partners dollar for dollar, effectively doubling the impact of the grant.

"The restoration of desert grasslands is a nexus for conservation for the Borderlands Research Institute," said Dr. Louis Harveson, who is the Dan Allen Hughes, Jr., BRI Endowed Director and Regents' Professor of Wildlife Management at Sul Ross State University. "We have built a team of experts spanning our core conservation programs, including BRI experts in habitat/rangelands, big game, bird conservation, stewardship services, and conservation biology. We are grateful to receive this SPIRIT of Conservation grant, which will allow us to maximize efforts to restore grasslands in West Texas."



Chestnut-collared longspur is one of the focal species of BRI's grassland restoration efforts. Photo by Michael Gray.

Partners for Habitat Program Provides Funding for West Texas Landowners

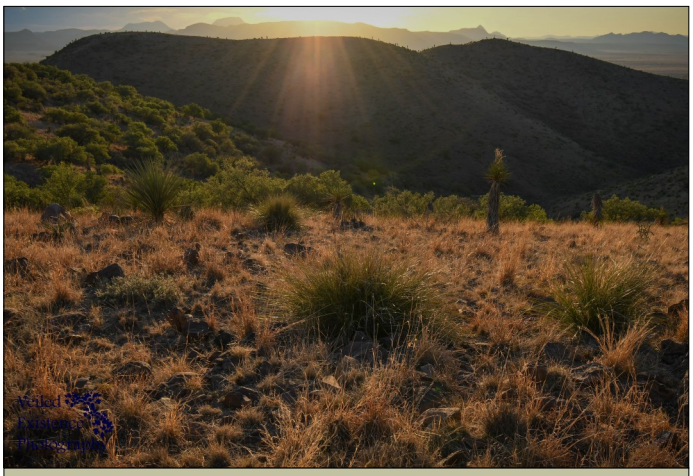
The Borderlands Research Institute and the U.S. Fish and Wildlife Service (USFWS) are partnering to provide assistance to landowners interested in restoring and enhancing wildlife habitat on their land.

The Partners for Habitat Program will provide $150,000 of financial assistance to private landowners across the West Texas counties of Brewster, Terrell, Pecos, Reeves, Culberson, Hudspeth, Jeff Davis and Presidio.

"This new program will provide some additional resources that West Texas landowners need to implement positive conservation practices," said Billy Tarrant, Associate Director of Stewardship Services for BRI. "We'll be accepting applications this fall, and will be providing more information about how to apply for this cost-share program by early August. We're very proud to be partnering with the USFWS to provide this opportunity for West Texas landowners."

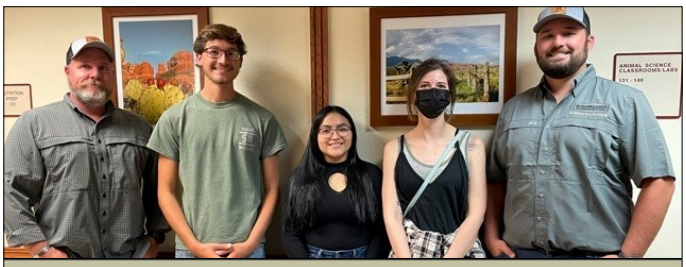
The program is funded through the USFWS Partners for Fish and Wildlife Program.

"The Borderlands Research Institute has an established track record of effectively working with landowners across the region," said Brendan Witt, a private lands biologist with the USFWS Partners for Fish and Wildlife Program. "More than 95% of land in Texas is privately owned, and providing these funds for habitat conservation on private lands will make a difference in terms of healthy terrestrial and aquatic ecosystems."



Through the Partners for Habitat Program with USFWS, BRI will provide landowner assistance toward positive conservation practices.

Undergraduate Students Showcase Their Research



The most recent cohort of BUMP students, pictured left to right: Jason Crosby, Ty Goodwin, Janette Martinez, Ryan Keeling, and Juan Celaya.

At the seventh annual Borderlands Undergraduate Mentorship Program (BUMP) Symposium this April, students gave presentations about the projects they have been working on this past year.

Supported by Houston Livestock Show and Rodeo and the many organizations that fund BRI projects, BUMP is designed to enhance experiential learning opportunities for undergraduates and provide graduate students the opportunity to mentor these students in conducting their projects.

"Not only do students build technical skills in the field, they gain valuable professional soft skills, such as effective written and verbal communication skills," said Dr. Stacey Dewald, BUMP Coordinator and Research Scientist for BRI. "These are the skills that make them great professionals and are essential to being successful in the real world."

BUMP currently has five undergraduate students who are conducting research on topics varying from Montezuma quail in the Davis Mountains, to composing a field guide of Trans-Pecos forbs using microhistology, to social media analysis of the BRI Instagram feed.

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Register Now! Small Acreage—Big Opportunity

Landowners who steward small properties face unique management challenges. Most information currently available to landowners focuses on management of large properties. Statewide, small properties are increasing, but the owners of these properties may have difficulty scaling down big recommendations to fit a smaller acreage.

The new Small Acreage—Big Opportunity program is a joint effort of Texas Wildlife Association and Texas A&M AgriLife Extension to address this need.

On August 28, BRI will be cohosting a Small Acreage—Big Opportunity workshop at the Davis Mountains State Park Indian Lodge. Registration is $80 and includes lunch.

https://www.texas-wildlife.org/program-areas/small-acreage-big-opportunity.

Register at the link above to learn about:

- Native Plants and Pasture Management
- Fire and West Texas
- Water for Wildlife
- Creating Pollinator and Wildlife Habitat
- Earning 1-d-1 Wildlife Tax Valuation
- Cost-share Opportunities