

DESERT TRACKS

BORDERLANDS
RESEARCH ♦ INSTITUTE

CONSERVING THE LAST FRONTIER

Fall 2024 | Volume 17, Issue 2

Restoration of Native Vegetation in Areas Invaded by Lehmann's Lovegrass

Andres Solorio Pulido, Carlos E. Gonzalez, Justin T. French, Louis A. Harveson, and J. Silverio Avila



The Trans-Pecos region of Texas supports a host of native plants and wildlife, with 268 native grasses and 447 woody plant species. However, the introduction of non-native species has often led to the dominance of invasive species over native plants, negatively impacting both livestock and local wildlife.

Invasive plant species have a high capacity to spread and create monocultures, outcompeting native species

and reducing biodiversity. These invasive species are often more resistant to drought, fire, and pests, making them highly adaptable to new environments. Lehmann's lovegrass, which was introduced as a tool for erosion control and forage production for the cattle industry, is one such species that has a propensity to take over landscapes.

On 200 plots at Nine Point Mesa Ranch in Brewster County, we investigated practices for controlling Lehmann's lovegrass

Non-native species such as Lehmann's lovegrass, pictured within the article, have become widespread, covering millions of hectares in the American Southwest and disrupting native grassland ecosystems.

and restoring native vegetation in the Trans-Pecos by comparing the effectiveness of soil disturbance, seeding with native grasses and forbs, and a combination of both.

Results indicate that biodiversity improves with the seeding of locally adapted native species and combined seeding-soil disturbance treatments. However, despite early success in recovering native vegetation, Lehmann's lovegrass can quickly recover, especially in areas where it has already established dominance. Therefore, there is a need for strategic selection of restoration sites, such as areas with deeper soils and natural depressions where water accumulates during rains. Seed mixes must be selected from locally adapted resources for their suitability to the harsh and unique conditions of the region, prioritizing species that can compete with aggressive invaders like Lehmann's lovegrass.

Enhancing native plant abundance might require multiple treatments and a long-term commitment to monitoring and managing invasive species. Moreover, adaptive management is needed to account for the varied environmental conditions across the Chihuahuan Desert. Success is subjective, and may depend on adjusting management practices based on local microclimates, soil conditions, and historical disturbances. Employing a combination of techniques, such as prescribed fire, mechanical removal, or selective herbicide applications, in conjunction with native seeding, may improve restoration outcomes in these challenging environments.



From the Director – A New Cooperative Doctoral Program

For the last 10 years, our research team has had serious discussions about taking our research program to the next level. These conversations have been based out of need, as many of our projects have expanded both spatially and temporally, requiring more extensive investments and analysis. A doctoral program would allow us to conduct more meaningful projects.

Those dreams will soon become a reality, as Sul Ross State University recently received word from the Department of Education that they have funded a \$7.5M proposal to bolster graduate programs across the university. The new grant funds multiple

programs, but the lion’s share (\$4M) of this funding is dedicated to help jumpstart a new Cooperative Doctoral Program in Range and Wildlife Science in partnership with Texas A&M University-Kingsville and Texas Tech University, both longtime partners. For BRI, this funding will be used to support stipends and scholarships for 10 PhD students, two new faculty positions, two new research scientists and several other items over the five-year span.

Needless to say, we are very excited about developing the new Cooperative Doctoral Program over the next five years!

–Louis A. Harveson

BRI Students Awarded \$130,000 in Scholarships

Sixteen students at Sul Ross State University have been awarded \$130,000 in scholarships from nine different sources through BRI and Borderlands Research Foundation.

“This is such welcome news,” said Dr. Louis A. Harveson, who is the Dan Allen Hughes, Jr., Endowed Director of BRI. “Our students are so appreciative of the support from the many fine organizations and donors who make these scholarships available. It is truly an investment in the future of conservation.”

Graduate and undergraduate students experience unique opportunities to work side by side with wildlife professionals. These students receive hands-on experience with habitat restoration projects and wildlife, including grassland birds, pronghorn, mule deer and more. Upon graduation, our students gain employment with state and federal resource agencies, as well as with private consultants and ranches and as educators. Currently, BRI graduates influence wildlife management decisions on over 31 million acres in Texas, some 20% of the state’s acreage.



2024-2025 BRI scholarship recipients, front L-R: Hayley Shultz, Audrey Taulli, Eliana Dykehouse, Asia Cornelius, Emily Blumentritt, Jesse Ellgren. Back L-R: David Tønnessen, Andres Solorio Pulido, Andrew Dotray, Hailey Barton, Nicole Dickan, Ty Goodwin, Elle Sutherland, Gray Hancock, Eddie Santoya, Jon Lomas. Photo credit Bobby Greeson/SRSU.

Borderlands Research Institute Advisory Board

Dan Allen Hughes, Jr., Chair
San Antonio

Sarah Nunley Bledenham
San Antonio

Charles Davidson
San Antonio

Kennon Guglielmo
San Antonio

Elliott G. Hayne, Chair Emeritus
San Antonio

Parker Johnson
Houston

James King
Fort Davis

J. Bryan King
Fort Worth

Nyle Maxwell
Georgetown

John B. Poindexter
Houston

Ruthie Bowman Russell
San Antonio

Allen W. Smith
Austin

Ryan Seiders
Austin

Kelly R. Thompson
Fort Worth

James C. “Rad” Weaver
San Antonio

Justin B. Yarborough
Austin

Dixon Water Foundation to Fund Livestock Grazing Project



BRI received a \$252,000 grant from Dixon Water Foundation in August as part of a three-year project that aims to evaluate and compare the effects of rotational, continuous, and deferred grazing systems on desert grasslands. Desert grasslands play a vital role in the Chihuahuan Desert, but due to drought, mismanagement and urbanization, these ecosystems are at risk.

The study will include comparisons of soil moisture and soil organic carbon across different grazing systems; assessments of grass quality, quantity, and diversity; evaluations of the presence and diversity of mycorrhizal fungi and dung

beetles; and analysis of the financial implications of each grazing practice.

Thanks to the Dixon Water Foundation, the conducted research will not only give valuable insight into ecosystem health but will also inform land managers on how to adopt cost-effective grazing practices that promote long-term sustainability.



A new grant from Dixon Water Foundation allows us to take a closer look at how grazing systems influence desert grassland ecosystems. Top left: Cattle at Dixon Water Foundation's Mimms Unit. Photo credit Dana Karelus/BRI. Bottom right: Dung beetles are an important part of grazing ecosystems. Photo credit Alex Wild/BugGuide.net.

Additional Conservation Resources Offered to West Texas Landowners

Thanks to funding collaborations with federal and state partners, additional resources are now available to West Texas landowners.

A federal grant through USDA's Natural Resources Conservation Service is funding a grazing specialist to assist landowners with grazing management plans and other assistance. Dr. Eduardo Gonzalez-Valenzuela has decades of experience in assisting landowners in achieving their land management goals. Along with providing technical assistance, Dr. Gonzalez will also serve as a visiting professor in the College of Agricultural, Life and Physical Sciences at Sul Ross State University.

A partnership with Texas A&M AgriLife Extension Service has funded an additional position that is a joint appointment for both organizations. Dr. Silverio Avila now serves as Assistant Professor and Extension Range Specialist, embedded with the Borderlands Research Institute team at Sul Ross.

In this new role, Dr. Avila will help plan, conduct, and evaluate educational programs in rangeland management and will

develop research programs in rangeland restoration, soil-plant communities and plant community response to grazing. He will also support and provide technical expertise to Extension Service agents in West Texas. He is on the faculty of both universities and will serve as a mentor on graduate student committees and undergraduate research projects.



Blue grama, a common grass species in West Texas that is valuable to both livestock and wildlife. Photo credit Eliana Dykehouse/BRI.



P.O. Box C-21
Alpine, TX 79832
432.837.8225
bri.sulross.edu

Non-Profit Org.
U.S. Postage
PAID
Alpine, Texas
Permit No. 2

Address Service Requested
162705-204473-20



Connect with us:



Texas State University System
Board of Regents

Alan L. Tinsley, Chair
Madisonville

Dionicio (Don) Flores, Vice Chair
El Paso

Charlie Amato
San Antonio

Duke Austin
Houston

Sheila Faske
Rose City

Russell Gordy
Houston

Stephen Lee
Bastrop

Tom Long
Frisco

William F. Scott
Nederland

Olivia Discon, Student
Huntsville

Brian McCall, Ph.D., Chancellor
Austin

Wildlife Weekend: January 31-February 2, 2025

Join us in Alpine for a weekend of education and fun! Learn about the wildlife of the Chihuahuan Desert from experts on a variety of species and topics, such as:

The return of the American black bear in Texas

Bats as essential pollinators and insectivores

Desert bighorn sheep restoration

In partnership with the City of Alpine, visitors and locals are invited to hear from biologists with Borderlands Research Institute, Bat Conservation International, Texas Parks and Wildlife Department, Texas Wildlife Association, and many more! A scavenger hunt, art workshop, rainwater simulator, wildlife documentaries, and guided hikes will be part of the festivities.

More info to come on visitalpinetx.com.



JANUARY 31-FEBRUARY 2