

DESERT TRACKS

BORDERLANDS
RESEARCH ♦ INSTITUTE

CONSERVING THE LAST FRONTIER

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ENHANCING HYDROLOGY AND HABITAT WITH WATTLES

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Habitat degradation, driven by unsustainable grazing and brush encroachment, has significantly altered the plant communities of the southern Trans-Pecos region. The once grass-dominated desert shrublands, with 60% grasses and 10% forbs, have shifted to communities with over 80% brush, less than 5% grasses, and significant bare ground.

Land stewards invest considerable resources to remove brush and restore grass-dominated habitats, but in hot, dry areas like the Trans-Pecos—where over 70% of rainfall is lost to evaporation and transpiration—limited water makes reestablishing desirable plants the greater challenge.

To address this, in 2022 we launched an intensive restoration project in southern Brewster County, Texas, focusing on a heavily degraded site dominated by creosote bush and experiencing severe erosion. After mechanical brush removal and native reseeding, we tested methods to increase plant cover using biodegradable wattles, which slow runoff and enhance soil moisture infiltration. Five treatments were tested across 156 wattles: wattles alone, wattles with soil disturbance upslope, wattles with seeding, wattles with brush cover from the cleared vegetation, and wattles combining seeding with brush cover.

Surveys before and after monsoon season showed wattles boosted soil moisture by 3–5% and lowered soil temperature by up to 7°F, improving germination conditions. Our most successful treatment, the wattles with seeding and brush cover, saw plant ground cover from the existing seedbank almost triple after the monsoon; however, the plant response can be attributed to shade and the moisture that collected in soil pockets created by the seed drill which germinated the existing seedbank, as virtually none of the planted seed mix germinated.

To better target high-water-potential areas, we used airborne lidar to develop a high-resolution digital elevation model and calculated the Topographic Wetness Index. This guided a second round of wattle placement in 2023, further refining our approach to maximize plant recovery in key microtopographic areas.

Ultimately, our study shows that combining targeted wattle placement, soil disturbance, and brush cover creates “micro-islands of good” that restore herbaceous cover, improve habitat for wildlife, and support rangeland health. These methods offer a path forward for land stewards confronting brush encroachment and erosion in arid environments.



Groundcover before (left) and after (right) wattle treatment, showing the increase possible in areas of high Topographic Wetness Index when using wattles with loose brush shading. Identifying where water will gather, retaining that water so that it infiltrates the soil, and shading to keep soil cool and wet can help establish areas of desirable plant cover.



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From the Director – Outreach is Core to Our Mission

As researchers and educators, one of our biggest challenges is bridging the gap between research, teaching, and outreach. This is especially true when it comes to getting pertinent information in the hands of those who make the most difference—land managers.

The Borderlands Research Institute is

committed to providing information to resource managers so they can make informed decisions regarding natural resource conservation. We encourage you to join us for the variety of workshops, symposiums, and conferences we have slated for 2025!

—*Louis A. Harveson*

Charting a Path Forward for Desert Bighorn Sheep



More than 100 stakeholders gathered in Alpine May 15 for a symposium focused on the future of desert bighorn sheep in Texas. Organized by Texas Parks and Wildlife Department and hosted at Sul Ross State University, *Managing Desert Bighorn Sheep in Texas: Challenges of the 21st Century* brought together leading experts from across the country and private landowners from West Texas to address the urgent challenges facing this iconic species.

Once considered a conservation success story, Texas bighorn sheep populations have declined sharply in recent years due to disease transmission—particularly *Mycoplasma ovipneumoniae* (*M. ovi*)—from exotic aoudads. Symposium sessions

explored the latest science, lessons from other states, and emerging strategies to better protect bighorn herds.

West Texas landowners, whose stewardship has been essential to every phase of bighorn restoration, remain central to the solution. Their continued involvement will be critical as partners work together to shape the next chapter of this effort.

Support from Texas Parks and Wildlife Foundation, Texas Bighorn Society, Wild Sheep Foundation, and Borderlands Research Institute made the event possible and ensured a robust exchange of ideas.

Videos from the symposium are available here: <https://texasbighorn.org/videos/>.

Luther King Named 2025 West Texas Conservationist of the Year



L-R: Dan Allen Hughes, Jr. (BRI Advisory Board Chair), J. Luther King, Jr. (2025 honoree), Louis A Harveson (BRI Director).

The Borderlands Research Foundation has named J. Luther King, Jr., as the 2025 West Texas Conservationist of the Year, honoring his decades-long commitment to land stewardship and wildlife conservation. King was recognized at a special event held in Fort Worth this spring.

A native of Odessa, King has spent his life protecting Texas' wide-open spaces. At a time when land fragmentation threatens the future of conservation, the King family has assembled and actively manages more than 100,000 acres across six Texas counties.

In addition, the family has managed the 4K Livermore Ranch in the Davis Mountains since 2014. While the ranch has since changed ownership, the Kings continue to oversee its

management—helping steward one of the highest-elevation private properties in the state.

In the Northwest Hill Country, their 4K Brady Creek Ranch reflects a return to family roots on land first settled by King's great-grandfather. The ranch has earned multiple honors, including the Lone Star Land Steward Award for the Edwards Plateau in 2003.

"Luther King is a true conservationist whose actions speak louder than words," said Dr. Louis Harveson, founding director of the Borderlands Research Institute.

A video tribute about Mr. King's life and legacy is available at borderlandsresearchfoundation.org.



L-R front: Mason King, J. Luther King, Jr., Teresa King, J. Bryan King
L-R back: Caroline King, Tres King, Mary Kathryn King

Range Management Meeting in Alpine: October 7-9, 2025



SAVE the DATE

**Texas Section
Society for Range Management
Annual Meeting**

**Tuesday, Oct. 7
through
Thursday, Oct. 9**

Alpine, Texas

Theme:

**"The Future of Grazing and
Agriculture"**

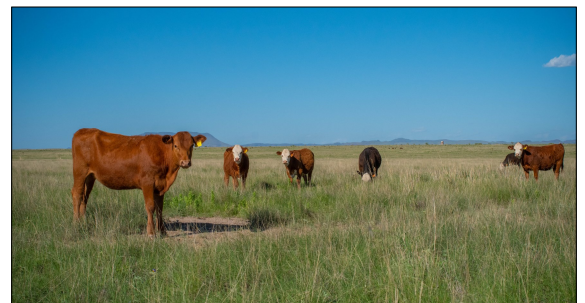
*Integrating Tradition with
Innovation for Management*



TEXAS SECTION
**SOCIETY FOR
RANGE MANAGEMENT**

This year the **Texas Section Society for Range Management Annual Meeting** will be held in our own backyard, at the Sul Ross State University campus in Alpine, Texas!

Visit <https://texassrm.org/annual-meeting> to see the agenda, hotel information, and to register.





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Upcoming Alternative Land Use Practices Conference

Mark your calendars for **November 13, 2025!** BRI will be co-hosting a one-of-a-kind conference: **Diversifying Land Use in the Trans-Pecos: Informing Landowner Strategies for Conservation and Economic Sustainability.**

In Alpine at the Morgan University Center, we welcome you to join fellow landowners, legal experts, conservationists, and industry professionals for a dynamic, solutions-focused conference designed to help landowners in the Trans-Pecos region of Texas navigate a changing landscape. This event will explore alternative land use practices that support **economic opportunity, environmental stewardship, and long-term sustainability.**

Whether you're exploring new revenue streams, facing legal challenges, or committed to conservation, this event offers actionable insights to help you make the most of your land—today and for the future.

Key topics include:

- Legal insights and real-world perspectives on the benefits and risks of energy development (renewables, oil & gas, transmission)
- Opportunities in **ecosystem services**, including carbon credits and emerging markets
- Alternative land uses like ecotourism and conservation easements
- Practical strategies for **land stewardship, rangeland enhancement, and profitable ranching**

A registration link will be available soon on the Texas Wildlife Association and Borderlands Research Institute websites.

