2024

Big Game Research Report

BORDERLANDS RESEARCH ◆ INSTITUTE

CONSERVING THE LAST FRONTIER

OUR MISSION:

Conserving the natural resources of the Chihuahuan Desert Borderlands through research, education, and outreach.

Since 2007, the Borderlands Research Institute has encouraged effective land stewardship of the ruggedly beautiful terrain of the Chihuahuan Desert. By providing land managers with the most current scientific information, the Borderlands Research Institute is helping to conserve one of the most biologically diverse regions of the world.

Housed at Sul Ross State University, the Borderlands Research Institute builds on a long-lasting partnership with private landowners, the university's Range and Wildlife Program and cooperating state, federal, and non-governmental organizations. Faculty scientists and the graduate students they mentor are conducting groundbreaking research on every aspect of the desert landscape and the wildlife it supports.

The Chihuahuan Desert never ceases to amaze me! In good years, the diversity of landscapes can be brimming with life.

But one thing I've learned watching populations of wildlife over the last 26 years, is we should never take our wildlife resources for granted. This is especially true in the desert, where prolonged periods of drought, disease episodes, or anthropogenic factors like fences and roads can have detrimental impacts on even our large charismatic big game species.

The Borderlands Research Institute is committed to better understanding and conserving wildlife populations and their habitats of the Chihuahuan Desert. Although our team is composed of scientists and researchers, we are managers at heart. Ultimately, our goal is to put science to work. We take pride in sharing science-based management alternatives with our stakeholders, including landowners, land managers, natural resource professionals, partners, donors, and anyone who has curiosity about the natural world.

Louis A. Harveson, PhD
Dan Allen Hughes, Jr., Endowed Director

Our research seeks to identify solutions to big game management issues backed by an ever-increasing body of solid science.

The Chihuahuan Desert borderlands are among the most diverse regions in the world. The variety of habitats in this region makes it home to every native big game species in the state. However, it also leads to a corresponding diversity of management considerations.

Through partnerships with agency personnel, private landowners, and other stakeholders, we seek scientific answers to a range of pressing questions in big game management. At the same time, we train the next generation of managers by teaching them how to solve these real-world problems.

We could not do it without the support and cooperation of our partners. Just as we appreciate the variety of big game in the region, we truly appreciate the support of our agency partners, private landowners, and our donors. Thank you!

Justin T. French, PhD
Big Game Specialist and Assistant Professor of Natural Resource Management

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DESERT BIGHORN SHEEP AND MULE DEER:

Influence of Release Methods on Habitat Selection and Survival of Translocated Desert Bighorn Sheep and Mule Deer

Preston L. McKee, Taylor M. Daily, John Clayton K. Campbell, Justin T. French, Carlos E. Gonzalez, Louis A. Harveson, Shawn S. Gray (TPWD), and Froylan Hernandez (TPWD)

In partnership with Texas Parks and Wildlife biologists, we evaluated success of hard and soft release methods for desert bighorn sheep (above) and desert mule deer (right). Bighorn photo credit: Ty Goodwin/BRI. Mule deer photos credit: Julie Myers/TPWD.

Translocation is one of the most commonly used tools to restore declining big game populations in the Trans-Pecos and beyond. However, the outcomes of such efforts can be challenging to predict, and the stakes are often high. As a result, managers seek tools to maximize the chances animals will survive to successfully reestablish or bolster the target population. These generally include pre-release habitat assessments and associated habitat management actions to place animals in the best conditions possible. Still, there are a few things managers can do once the animals arrive.

One of the few direct actions available to managers is the choice of release method. Currently, there are two release options. The first is a hard release, where animals are set free directly into their new habitat. The other is a soft release, where individuals are first released into a large holding pen, containing a few dozen to a few hundred acres of otherwise natural habitat conditions. Translocated animals spend two to three weeks in the relatively protected pen to acclimate to their new habitat before being released into the wild. While it requires considerable infrastructure and active monitoring, soft release methods are often thought to increase site fidelity (the tendency of an animal to return to a location it has previously visited) and prevent risky and energy-demanding exploratory movement, leading to increased post-release survival. The evidence of whether soft release methods provide these benefits is mixed, so Texas Parks and Wildlife Department (TPWD) implemented both approaches in two mule deer translocations (2015 and 2016) and a desert bighorn sheep translocation (2017) to Black Gap Wildlife Management Area (WMA).

In each translocation, animals were separated into hard and soft release groups and a subset of each were fit with GPS collars. We used data from these collars to compare habitat selection behavior and site fidelity of both groups following full release into their new habitat. For hard release animals, this began the day after release from the trailer. For soft release animals, monitoring began after release from a two-week acclimation period in a 500-acre pen.

We found that soft release resulted in higher site fidelity to areas near the acclimation pen in both species, particularly in desert bighorn sheep. However, the survival of soft released individuals was consistently 15-17% lower than their translocated counterparts. We found no differences in habitat preference between the two groups for either species, but there was less preferred habitat in the areas used by soft released animals of both species compared to the areas used by hard released animals. In effect, the soft release increased animals' fidelity to marginal habitats, resulting in lower survival.

While this does not appear to bode well for soft release methods, it is important to consider habitat quality near the acclimation pen. Although the pen at Black Gap WMA was not in preferred habitat, it still reduced the long-distance movements and energy expenditures associated with hard release. Increased site fidelity could be beneficial if the pens were placed in high-quality habitat. Thus, it appears the increased site fidelity associated with soft release methods could be a double-edged sword, and careful consideration of the habitat surrounding the acclimation pen is essential to maximize its benefit to translocation success.

POST-RELEASE SURVIVAL OF MULE DEER

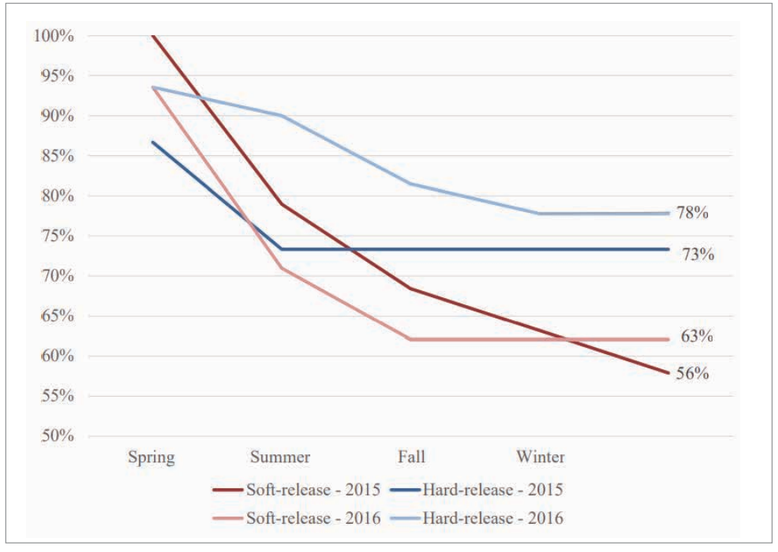


Figure 1: Post-release survival of hard and soft released mule deer across two translocations at Black Gap WMA. Soft release methods consistently resulted in lower post-release survival in both mule deer and desert bighorn sheep.

PRONGHORN:

Cattle Grazing Systems and Winter Forage Production for Pronghorn on the Marfa Plateau

Leanna Morin, Justin T. French, Carlos E. Gonzalez, Louis A. Harveson, and Shawn S. Gray (TPWD)

Common pronghorn-preferred forbs include evening primrose (top left) and Indian rushpea (bottom left). Rotational cattle grazing can improve these forbs' distribution on the landscape. Photo credits: top left: Kaylee French/TNC; bottom left: Cullom Simpson/BRI; right: Dana Karelus/BRI.

Much of pronghorn management focuses on facilitating movement so pronghorn have access to forage resources they need. However, many human land uses also influence the distribution, variety, and abundance of forb species available to pronghorn. Livestock grazing is a primary land use throughout the pronghorn's range, and how a manager grazes their livestock can profoundly impact the vegetation communities in the areas they manage. Different grazing systems have been demonstrated to affect the diversity and abundance of grass, forb, and woody species in many areas. However, little is known about how the choice of grazing system might impact forage resources available to pronghorn.

To that end, we compared the forb communities between areas under different grazing regimes on the Dixon Water Foundation's Mimms unit, just north of Marfa, Texas. The ranch is divided into areas that are grazed under two different systems, and features numerous grazing exclosures throughout the ranch. This is specifically designed to facilitate comparisons among continuously grazed areas (where cattle occupy a pasture all year), rotationally grazed (where cattle are moved frequently through a set of smaller pastures), and not grazed at all. We focused on winter forb communities, as this is the most nutritionally stressful time for pronghorn in this region.

We found that grazing systems had subtle but meaningful effects on pronghorn forage. While the average productivity and quality of forbs were similar across systems, areas of particularly high quality and quantity were more frequent and more dispersed in the rotational system compared to continuously grazed or ungrazed areas. This means the pronghorn had to move less to find high-quality foraging patches under the rotational system. Thus, while grazing systems did not appear to affect how much forage was available to pronghorn, rotational grazing can improve its distribution on the landscape.

Acclimation Behavior of Translocated Pronghorn

Erin C. O'Connell, Justin T. French, Carlos E. Gonzalez, Louis A. Harveson, Shawn S. Gray (TPWD)

A pronghorn buck stands next to an unmodified section of fence at Rocker b Ranch. Two hundred sections of fence on the ranch were modified to allow for pronghorn movement. We found that translocated pronghorn readily crossed modified fences, whereas residents, by and large, did not. The memory of past restriction still limited resident pronghorn's use of the landscape. Photo credit: Erin O'Connell/BRI.

Translocation, the managed movement of individuals from one area to another, is a key method for restoring big game populations. However, translocated animals have quite a bit to learn about their new habitat following release, creating an acclimation period after translocation where animals are naïve to the distribution of predators and resources in their new home. The acclimation period is associated with a higher risk of predation and energy expenditure, leading to higher mortality. While many aspects of a translocation contribute to its success, survival over the acclimation period is a crucial short-term measure of success.

Despite this, little information exists to guide when this benchmark should be measured. As a result, most managers make assumptions about the length of the acclimation period based on professional opinion. This was the case for large-scale pronghorn reintroduction efforts in Texas until the 2020 translocation of pronghorn to the Rocker b Ranch (hereafter Rocker b) from the Texas Panhandle. We GPS-collared 20 resident pronghorn a year before the release of collared translocated individuals. In January of 2024, 125 pronghorn were translocated from the Pampa area to the ranch, 44 of which were fit with GPS collars. This project provided a way to compare behaviors of naïve translocated pronghorn to those of residents with an established knowledge of the area.

To measure acclimation, we monitored how an animal's behavior changes. In particular, we modeled how much space each pronghorn—resident or translocated—used each week following the translocation. Space use is a manifestation of several processes associated with acclimation. It takes energy to cover ground and exposes an individual to more predators, so it pays for a pronghorn to be efficient while seeking resources. Initially, weekly ranges should be relatively large; however, their space use should decline as they learn where (and where not) to go. If resident pronghorn already understand how to use their habitat optimally, the translocated pronghorn

range sizes should converge to that of the residents' as the acclimation period ends. Indeed, this is the operational hypothesis many biologists use: If and when translocated pronghorn begin acting like the residents, they have acclimated.

With a statistical model tailored to the conventional wisdom of acclimation, we estimated the length of the translocated acclimation period, the average resident weekly range size, and the initial and post-acclimation weekly range size. We then evaluated how well this model fits reality by examining the variability remaining in the data after we account for what acclimation behavior explained.

We found translocated pronghorn range sizes were initially 2.4 times larger than those of residents, and that they did decline over time, settling into a similar average size to their resident counterparts after 40 weeks. This time period is substantially longer than the operational assumption of approximately three weeks. However, we also found that translocated pronghorn ranges swelled seasonally, with a second wave of large movements a year after release.

Together, these results suggest post-release acclimation is a much more protracted process than previously thought, and that translocated animals may still display different behavior than residents after acclimation. It is difficult to determine whether the seasonal range expansion we observed is a carryover behavior from life in the Panhandle or if these pronghorn needed to expand their ranges to meet their needs.

Additionally, it was clear that residents were constrained by their memory of past barriers, while translocated pronghorn were not. Translocated pronghorn readily crossed fences throughout the ranch, while resident crossings were rare and limited to just a handful of specific fence stretches. This is consistent with other work, as pronghorn in Montana and Alberta were shown to respect previously restrictive fences for up to two years after they were modified or even replaced.

These results demonstrate that acclimation takes longer than we previously thought, and post-acclimation survival is best measured nine months after release. They also show that acclimation does not necessarily mean translocated animals begin to behave like residents. Counterintuitively, translocated animals' naivety can expedite a population's expansion into restored habitat and, ultimately, make restoration efforts more successful.

RESIDENT AND TRANSLOCATED PRONGHORN RANGE SIZE

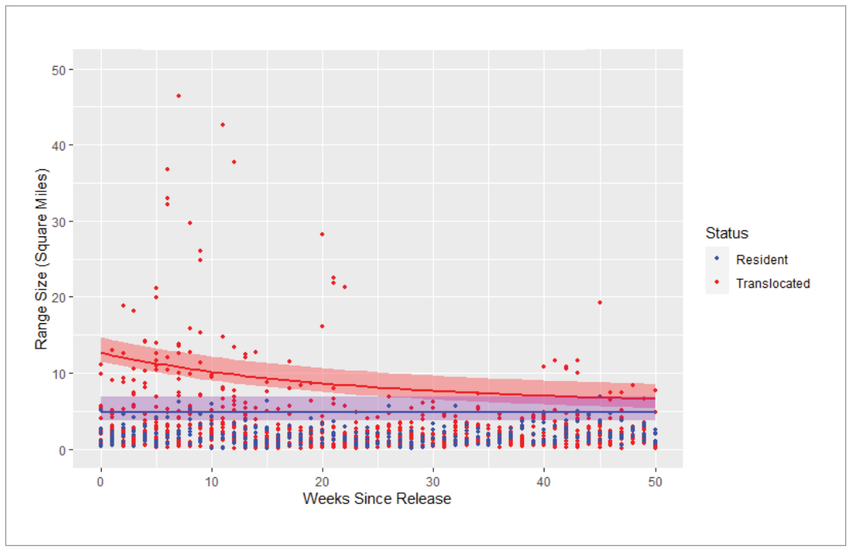
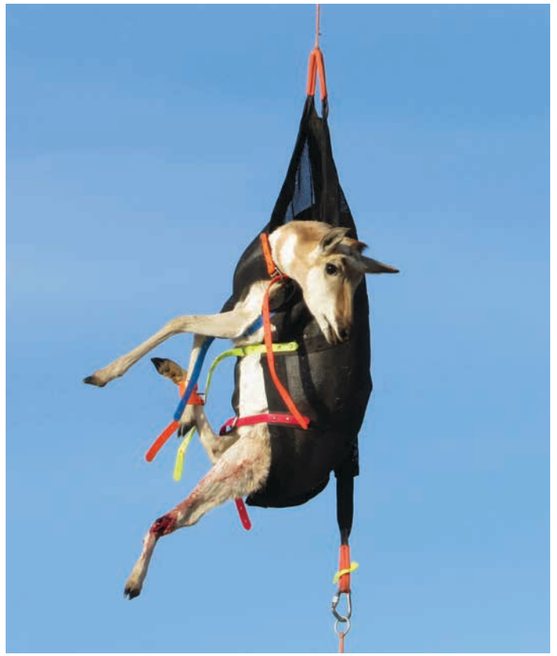


Figure 2: Weekly range sizes of resident and translocated pronghorn following release. Each dot represents an individual pronghorn's weekly range size, while the lines show the trend in range sizes over time for resident (blue) and translocated pronghorn (red). The blue and red ribbons are the confidence regions for each group, which begin to overlap at 27 weeks, or approximately six months, indicating similar behavior.



In January of 2024, 125 pronghorn were translocated from the Texas Panhandle to Rocker b Ranch in the western Edwards Plateau. Translocations like these are used to bolster declining populations.

ROCKER b
RANCH
18 71

The Rocker b Ranch has been a staple of pronghorn conservation in Texas for almost 50 years. Situated near Barnhart, Texas, in the western Edwards Plateau, the ranch features a somewhat unique habitat for pronghorn, consisting of rolling grasslands punctuated by limestone draws with broad floodplains. The ranch historically supported a strong pronghorn herd, and in the 1970s and 80s provided the source stock for several pronghorn translocations. However, in the intervening years, woody brush encroached on the ranch, slowly transforming pronghorn habitat into that preferred by white-tailed deer.

Rocker b made significant efforts to restore grasslands by spraying, grubbing, and aerating thousands of acres of habitat. They also recently modified or replaced hundreds of miles of fence to facilitate pronghorn movement and habitat connectivity. Their efforts culminated in the decision to supplement the Rocker b herd with a translocation from the Panhandle in early 2020. These animals thrived and the Rocker b observed its highest fawn crop in recent memory this year. We are proud to work with such a committed partner on continued pronghorn restoration.

PRONGHORN:

Pronghorn Habitat Quality and Connectivity on the Marfa Plateau

Justin T. French, Caleb L. Hughes, Alexandra M. Hettena, Carlos E. Gonzalez, Louis A. Harveson, Suzanne A. Walsh (TPWD), and Shawn S. Gray (TPWD)

Pronghorn on the Marfa Plateau. Photo credit: Paul Slocumb/SRSU.

Pronghorn restoration efforts in the Trans-Pecos have met with considerable success over the last decade and a half. Following many projects to enhance habitat quality and connectivity, and six translocations of surplus animals from the Panhandle, Trans-Pecos populations rose from an historic low of 1,200 individuals in 2012 to 6,865 today. Many of these animals were fit with GPS tracking collars, allowing researchers to monitor their survival and movements after release. The data produced showed managers and researchers many things, but perhaps the most enlightening was the importance of habitat connectivity for pronghorn survival.

Early in these efforts, GPS data clearly showed the impact of restrictive net-wire fencing in key pronghorn habitats. Landowners, managers, TPWD personnel and researchers all quickly mobilized to modify or replace these fences and, within five years or so, many interior fencing issues were alleviated in such key habitats as the Marfa Plateau and Marathon Basin. This dramatically increased the connectivity of habitats, as demonstrated in subsequent GPS data collection, which clearly showed pronghorn moving across vast areas in the Marfa Plateau. However, it was also clear that highways and associated right-of-way fencing still presented a barrier to movement between the four quadrants of the Marfa Plateau. These are divided by US 90, running east to west, and US 67 and TX 17 running north to south. Each quadrant encompasses hundreds of thousands of acres, but the movement of collared individuals among them was rare.

In 2021, TPWD, TxDOT, and BRI partnered to investigate how highway infrastructure impacted pronghorn's ability to track the shifting resources they need. This effort was motivated by planned infrastructure expansion along US 67 as part of the Entrada al Pacifico Trade Corridor, which crosses the Marfa Plateau restoration area. If we could predict where wildlife crossing infrastructure might be most beneficial, it could be considered in the planning of the project. This work is built on existing efforts to develop a Trans-Pecos-wide pronghorn habitat monitoring program using new satellite imagery data. By tracking how resources for pronghorn change across the landscape, and how GPS collared pronghorn respond to them, we can predict where pronghorn would most likely cross major highways under different conditions. If any of these areas were consistent across conditions, they would be good candidates for considering crossing infrastructure.

We found that habitat conditions change rapidly across the Marfa Plateau and, unsurprisingly, the distribution and timing of precipitation strongly influenced the distribution of high-quality habitat. Pronghorn followed vegetation when it greened up, but their movement was still mildly affected by fences and strongly affected by paved roadways.

However, habitats around the roadways were sufficient to overcome these effects in several areas, including at least one area in each direction from Marfa that showed to be particularly important (Figure 3). We investigated each of these areas to field validate our predictions and found they featured high-quality habitat on both sides of the highway. Each had distinct characteristics for how they could impact pronghorn populations, and would require different infrastructure to facilitate connectivity. On one extreme, areas along US 90 might benefit from a wildlife overpass, due to railroad infrastructure along the highway. In contrast, key areas along TX 17 already feature wide right-of-way setbacks and pronghorn-friendly fencing, likely needing no further improvement at this roadway's low traffic volume. Considering the predicted importance and specific context of each crossing area, we can identify the most cost-effective approach to ensure connectivity of this key pronghorn restoration area.

OVERALL RANKINGS FOR POTENTIAL PRONGHORN HIGHWAY CROSSING INFRASTRUCTURE

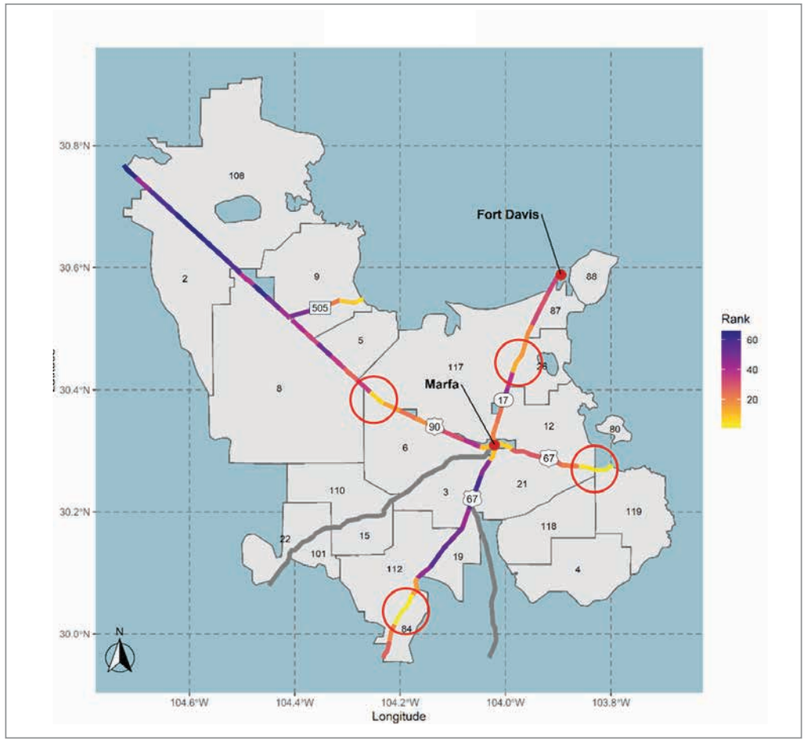


Figure 3: Overall importance of two-mile highway segments for potential pronghorn crossing infrastructure across the Marfa Plateau. Higher priority segments are shown in yellow along the highways, meaning simulated pronghorn would frequently cross these areas across different sets of conditions. We identified four key areas, one in each direction from Marfa, that were consistently important for pronghorn (circled in red).

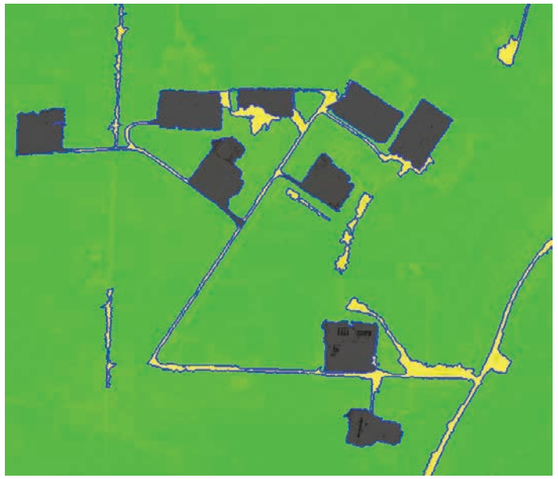
PRONGHORN:

Pronghorn Habitat Selection in an Energy-Producing Landscape

Erin C. O'Connell, Justin T. French, Carlos E. Gonzalez, Louis A. Harveson, Shawn S. Gray (TPWD)

In our study at the Rocker b Ranch, we found no evidence that oil and gas activities excluded pronghorn from preferred habitat and forage. Photo credit: Cullom Simpson/BRI.

Pronghorn are picky creatures—or highly selective, as an ecologist would say. Their diets are almost entirely composed of forbs, which are highly nutritious fleshy flowering plants that come and go with rainfall. Because forbs are fleeting, pronghorn are highly mobile and require large expanses of connected habitat to thrive. This makes them highly sensitive to movement barriers and other forms of habitat disturbance that might limit their ability to follow their food. While we have seen evidence that roadways and fences can pose significant impediments to pronghorn movement, little is known about their response to oil and gas development. The Rocker b Ranch is a unique place for pronghorn, as it is the site of a successful restoration in a highly developed oil field. This allowed us to study pronghorn responses to oil and gas infrastructure and evaluate its effects on pronghorn restoration.



We used aerial imagery and machine learning classifiers to detect caliche pads for oil wells, pressure stations, and other infrastructure (gray areas), and their associated service roads (yellow areas). The algorithm was able to separate these features from the background habitat (green) with 92% accuracy. This resulted in the detection and mapping of 3,259 pads and 5,672 miles of road across 339,329 acres.

We used GPS collar data from the previously discussed translocation to examine how pronghorn selected habitat in relation to well pads and service roads. In addition, we incorporated data describing topography and used near-real time satellite imagery to include the effects of shifting vegetation resources. Obtaining accurate data on oil and gas infrastructure locations proved difficult, so we developed an image recognition algorithm to identify and separate well pads and caliche roads in aerial imagery. Through this, we mapped 3,259 well pads and 5,672.3 miles of service roads across the Rocker b and surrounding areas used by pronghorn. By combining these data with advanced statistical models, we projected how pronghorn habitat changed across the ranch through time, and ascertained pronghorn responses to each habitat factor.

We found that pronghorn followed green vegetation closely and that pronghorn habitat quality varied considerably throughout and between years. We observed a bimodal rainfall pattern in 2020, where habitat conditions improved in the early spring, declined with a dry summer, but bounced back with early fall rains. In 2021, we observed a monsoonal rainfall pattern, where concentrated summer rains lifted habitat quality to much higher levels than observed in 2020, but for a shorter period later in the year. The monsoonal rainfall pattern could impact survival of young fawns, limiting resources for does during gestation and reducing available grass cover for fawn concealment during the first couple of weeks of their life. Pronghorn avoided low-lying areas along creeks and drainages, dominated by clay soils that often supported thick cover of Texas wintergrass. This cool season grass tends to form dense, carpet-like stands that prevent the growth of most forbs, which may limit the usefulness of these areas to pronghorn.

Contrary to some expectations, it did not appear that oil and gas activity impeded pronghorn's use of habitat. In fact, pronghorn does appeared to select for areas closer to well pads, rather than further, even after accounting for the fact that most wells were in upland sites more likely to be used by pronghorn anyway. With existing data, it is difficult to pinpoint whether runoff from these pads facilitated forb production nearby, extraction activity deterred pronghorn predators from these areas, or both; however, we found no evidence that oil and gas activities excluded pronghorn from preferred habitat or impeded their ability to track resources.

In all, we found that habitat conditions varied dramatically across the study area through time, but pronghorn, particularly translocated individuals, were able to successfully navigate these changes. Though extensive, oil and gas infrastructure did not hinder pronghorn's access to habitats and was even mildly attractive to does. This is good news for continued pronghorn restoration on the Rocker b, and the detailed understanding of habitat changes that we gained will guide continued management in the years to come.

CURRENT STUDENTS AND ONGOING PROJECTS

KEVIN LEGROW

Assessing and monitoring impacts of brush management on mule deer habitat quality

Much of big game management focuses on habitat restoration. However, managers have few options to measure the impact of restoration actions on habitat quality. Mule deer restoration efforts at Black Gap WMA led to a large GPS data set, and several thousand acres of herbicide treatments to improve mule deer habitat. By combining mule deer movement data with satellite imagery and on-the-ground habitat measurement, Kevin's research will provide a rigorous framework for assessing the impact of herbicide treatments on mule deer habitat quality, and for projecting where on the landscape a treatment would be of most benefit to mule deer.

Kevin grew up in Plano, Texas. He attended the University of Texas and graduated with a BA in Geography in 1997. After many years in the workforce, his lifelong love of the outdoors and hunting and fishing led to his decision to go back to school for a career change. He decided to pursue a career in conservation and went back to school at Texas State University, where he graduated in 2021 with a BS in Wildlife Biology. During his time at Texas State, he interned for Texas Parks & Wildlife Department at the Kerr and Black Gap wildlife management areas. Kevin is now a wildlife technician with TPWD at Black Gap WMA.

ELLE SUTHERLAND

Seasonality of resource use among desert bighorn sheep, aoudad, and mule deer

Desert bighorn sheep were extirpated in the Trans-Pecos, Texas, by the 1960s. However, restoration efforts succeeded in restoring the population to historic numbers. Management of desert bighorn sheep populations in the region became particularly complex with the rapid growth of aoudad populations. Previous research demonstrated the potential for aoudad and desert bighorn sheep to compete for resources, even at low aoudad density. Despite active aoudad management, aoudad and desert bighorn sheep niches overlapped almost completely. Elle is exploring variation in niche breadth, position, and configuration among desert bighorn sheep populations to determine whether desert bighorn sheep can compensate for competitive pressure from aoudad.

Elle grew up in northern Idaho, where her experiences hunting, fishing, and backpacking ignited her love of natural resources and led her to pursue a degree in Wildlife Management from the University of Idaho. While an undergraduate she worked as a technician on forestry, fisheries, range, and wildlife projects. Following graduation, she began seasonal work on a bighorn sheep project. She was hooked by the charismatic species, leading her to spend the next two years as a bighorn research technician in Montana and Wyoming. Elle is grateful for the opportunity to continue pursuing her passion for wildlife management as a graduate student at BRI.

HAILEY BARTON

Leveraging remote sensing and nutrition data to estimate carrying capacity of desert bighorn sheep and mule deer on Elephant Mountain WMA

While desert bighorn sheep restoration efforts have been successful in the Trans-Pecos, careful management of this species is critical. Elephant Mountain WMA is home to Texas' nursery herd for restoration efforts across the state. To guide management, this project seeks to evaluate the utility of satellite imagery to estimate carrying capacity of desert bighorn sheep at Elephant Mountain. The WMA is unique in the degree of overlap between desert bighorn sheep and mule deer, which must also be considered in our estimates. To do this, Hailey uses remote sensing, fecal sampling, vegetation surveys, and collar data from mule deer and desert bighorn sheep.

Hailey was born and raised in southern Idaho, riding horses, camping, hiking, and playing in the fields and foothills around her home. She earned her undergraduate degree at the University of Wyoming, double majoring in zoology and equine science. After graduation, Hailey worked as a wildlife technician. She studied a multitude of species including chipmunks, mule deer, Yellowstone cutthroat trout, golden eagles, elk, mountain lions, Mexican gray wolves, moose, desert bighorn sheep, and pronghorn. In her off time, Hailey can be found hunting, fly fishing, backpacking, hiking with her dog, Zip, or scheming up another adventure.

ANDREW DOTRAY

Behavioral response of aoudad to aerial removal and consequences for management efficacy

Aoudad populations in the Trans-Pecos grow rapidly and require active management to prevent over-utilization of forage and competition with native wildlife. While aerial gunning is a common practice to keep aoudad numbers in check, there is little information to help managers determine whether this approach achieves their goals cost-effectively. Aoudad's behavioral response to aerial gunning is entirely unknown, but it could dramatically impact the efficacy of gunning efforts. Aoudad may shift their ranges, putting pressure on resources instead of reducing it, or they could use cover to avoid detection, reducing management efficacy. This project seeks to quantify these responses and their impact on cost-effectiveness.

Born and raised in Lubbock, Texas, Andrew grew up in a family that was always outdoors. He found a love of nature camping with his family across both Minnesota and Texas. Raised a Red Raider, Andrew followed his passion in wildlife biology and received his bachelor's degree in Natural Resource Management from Texas Tech University. Following graduation, Andrew worked with endangered bird species on the Gulf Coast, and in the Panhandle with various big game species. He is excited and grateful to further his passion as a student and researcher at the Borderlands Research Institute.

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BRI staff editors include Julie Rumbelow, Bill Adams, and Lydia Saldaña.

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