

WILD SHEEP FOUNDATION

CONSERVATION



IMPACT

FY 2024 - 2025

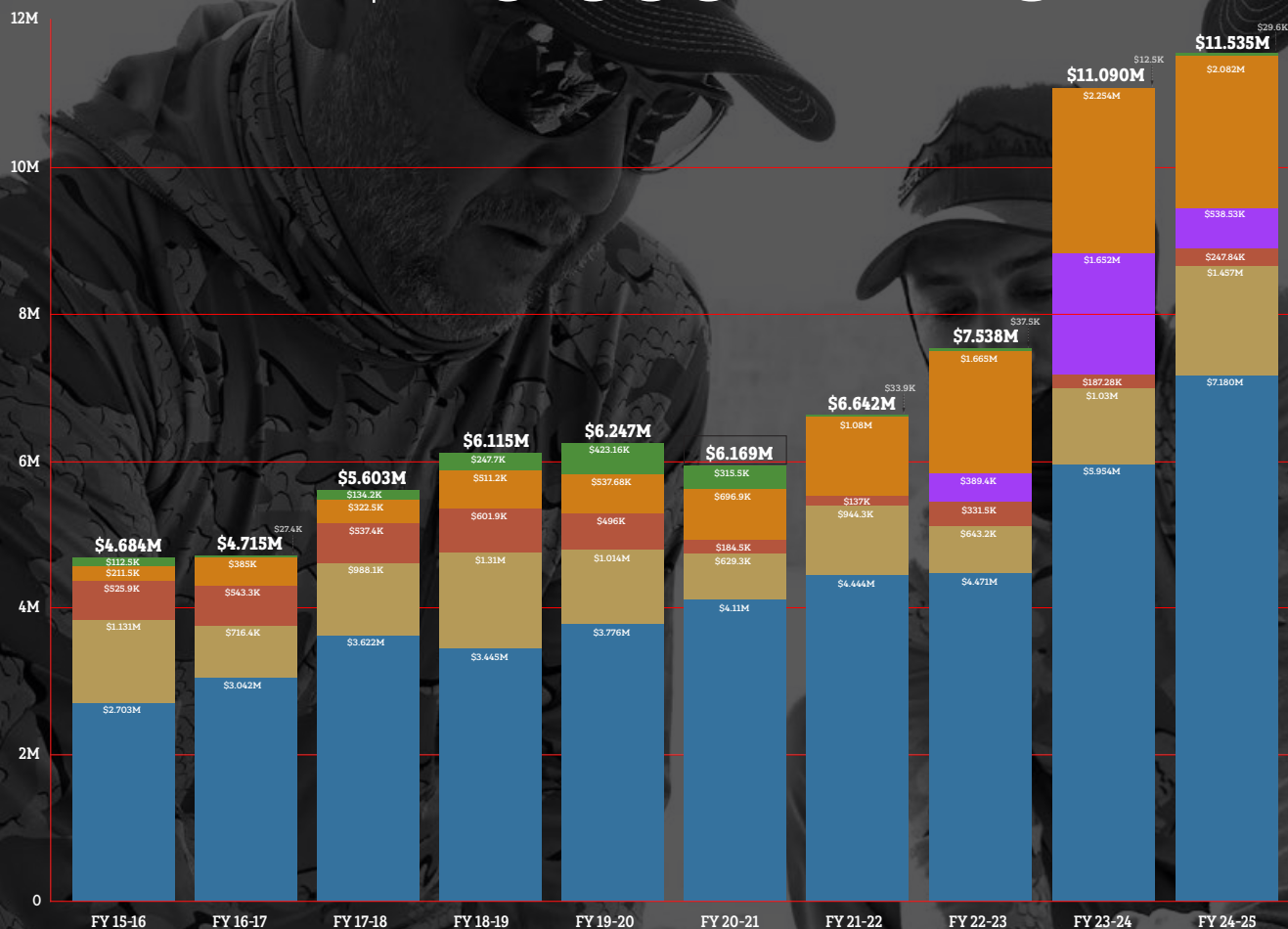




FISCAL YEAR 2015-2016 THROUGH FISCAL YEAR 2024-2025

10-YEAR MISSION PROGRAM FUNDING

\$70.338 MILLION



- International Conservation
- Habitat, Restoration, Separation, Transplants, Management Plans & Research
- Dedicated Auctions for Conservation Grant-in-Aid Funding
- Industry Support
- Education, Advocacy & Other
- State, Provincial & Tribal Agency Conservation Funding

COVER IMAGE COURTESY
NEBRASKALAND MAGAZINE/NEBRASKA GAME AND PARKS
COMMISSION - SEE PAGE 36

ON THIS PAGE
SPATIAL ECOLOGY AND HABITAT SELECTION TO MAXIMIZE
TRANSLOCATION SUCCESS - SEE PAGE 42

PROJECT ARTICLES, UPDATES, AND SUMMARIES
CHESTER MOORE

MESSAGE

From the CEO

Three years ago, we produced our first *Conservation Impact Summary*. The purpose was to “tell our story” beyond just the dollars directed to wild sheep conservation and other mission programs, but more importantly, to demonstrate and share the impact those dollars have.

While the dollars directed are impressive, more than \$11.5 million directed to Mission Program Funding this fiscal year alone, and the second consecutive \$11+ million year of doing so, the impact of those dollars are how we should judge our organizational mission effectiveness.

Despite our and our chapter and affiliates noble and substantive efforts, wild sheep continue to face enormous challenges.

- Habitat Degradation
- Disease
- Climate
- Predation
- Competition with Exotics
- Federal Grazing and Land Use Policy
- Supply and Demand

Some of these challenges we can address, yet some are beyond our control. In these pages of our fiscal year 2024-2025 *Conservation Impact Summary*, we highlight some of the twenty-three Grant-In-Aid projects funded as requested by and through our Chapters and Affiliates to help address these challenges. Our Chapters and Affiliates serve as our eyes and ears and boots on the ground to benefit wild sheep and the habitat they depend on. They are WSF’s tip of the spear.

These twenty-three projects make up \$1.65 million of a total of \$3.7 million in Grant In Aid, and a total of \$4.66 million in fiscal year Mission Program Funding **not** including the \$6.8 million we directed to state, provincial and tribal agency partners through the auction and raffle sales of conservation permits.

WSF is a family, a family made up of our members, chapters, affiliates, giving societies and major donors, exhibitors, auction donors and buyers. All play a part. The work WSF accomplished this past year and the \$11.5 million we directed to the wild sheep resource, and to our education and outreach efforts is the legacy of these family members.

In closing and reflecting on the past year I’m reminded of the words of President Harry S. Truman:

“It is amazing what you can accomplish if you do not care who gets the credit.”

We hope you enjoy this third Wild Sheep Foundation *Conservation Impact Summary*.

Yours in wild sheep and wildlife conservation,



Gray N. Thornton
President & CEO

FY 2024-2025 MAP PROJECTS & FUNDING

Project Description (Sorted Geographically)	Funding Approved
YOA Ungulate Enhancement – Yukon Territory	\$50,000
Yukon Movi Sampling/Testing – Yukon Territory	\$5,000
Spatsizi Provincial Park Stone's Sheep Project – British Columbia	\$47,344
Prescribed Burning for Stone's Sheep – British Columbia	\$100,000
Fraser River Landscape Level Disease Mitigation for California Bighorn Sheep – British Columbia	\$110,000
Feasibility Study - Translocation of Stone's Sheep in Takla First Nation Territory – British Columbia	\$49,950
Sheep Shape: Investigating Influence of Seasonal Nutrition on Stone's Sheep Body Conditioning – British Columbia	\$51,815
Grotto Mountain Logging/Mechanical Treatments – Alberta	\$50,000
Collaborative Management of Bighorn Sheep Pneumonia TriState – Idaho, Oregon, Washington	\$215,000
ION California Bighorn Population Test and Remove Surveillance – Idaho, Oregon, Nevada	\$157,000
East Cliffs Addition to Blue-Eyed Nellie WMA – Montana	\$45,000
Ranchbot Technology to Remotely Monitor Water Levels – Nevada	\$38,134
Chronic Carriers and Population Density in Bighorn Sheep: Implementation and Evaluation of Management Tools – Wyoming	\$40,000
NGPC Bighorn Sheep Capture, Translocation, Comparative Disease Evaluation – Nebraska	\$25,000
Strain Typing to Investigate Epidemiology of Bighorn Respiratory Disease – Colorado	\$50,000
Rinehart-Newlon Water Catchment – Arizona	\$40,394
Assessing Seasonal Movements/Risk of Disease Transmission Desert Sheep Navajo Nation – Arizona	\$94,000
BLM - Socorro Field Office Desert Bighorn Sheep Landscape-Scale Habitat and Water – New Mexico	\$130,000
Spatial Ecology and Habitat Selection to Maximize Translocation Success to Sierra El Alamo – Mexico	\$39,440
Expanded Water Distribution System Sierra El Alamo – Mexico	\$30,000
Implementing Animal-side Testing for Movi Detection During Capture WD4C – Westside	\$56,535
Advancing Sarcoptic Mange Monitoring and Management of Wild Ungulates - Kyrgyzstan	\$35,272
Other projects*	\$177,000
TOTAL:	\$1,697,159

Included in the record FY 2024-25 funding is \$4.35 million from operational activities including \$2.08 million to 28 Grant-In-Aid programs requested through our Chapters and Affiliates and \$2.27 Million in advocacy, research, education, and industry support GIA and program funding. In addition, WSF directed a record \$7.18+ Million to our state, provincial, and tribal/First Nation partners through 2025 conservation permit sales.

* Texas Bighorn Society Symposium, DBC 2025 Meeting, Omar's Run for Nevada Guzzler, California WSF G.A.L.A.D., and Conservation Visions.

CONSERVATION PARTNERS

During FY2024-25, the Wild Sheep Foundation was privileged to receive Grant-in-Aid funding from the following conservation partners, plus Take One, Put One Back donors at the 2025 Sheep Show®.



TAKE ONE, PUT ONE BACK DONORS RECEIVE A TAG FOR EACH \$5,000 CONTRIBUTION.



Additional support was provided by the following Wild Sheep Foundation Chapters & Affiliates.

Arizona Desert Bighorn Sheep Society | Elko Bighorns Unlimited | Fraternity of the Desert Bighorn | Idaho Wild Sheep Foundation | Iowa Foundation for North American Wild Sheep | Montana Wild Sheep Foundation | Navajo Nation Department of Fish and Wildlife | Nevada Bighorns Unlimited – Fallon | Nevada Bighorns Unlimited – Midas | Nevada Bighorns Unlimited – Reno | New Mexico Wild Sheep Foundation | Oregon Wild Sheep Foundation | Rocky Mountain Bighorn Society | Sonoran Wildlife Foundation | Texas Bighorn Society | Utah Wild Sheep Foundation | Washington Wild Sheep Foundation | Wild Sheep Foundation of Alberta | Wild Sheep Society of British Columbia | Wyoming Wild Sheep Foundation | Yukon Outfitters Association | Yukon Wild Sheep Foundation

HOW CAN YOU HELP?

Whether we start by obtaining the required funding or determining significant projects to finance, our fundamental objective is to enable activities that conserve wild sheep. There is no other organization solely dedicated to wild sheep, and nobody does it better. This leaves us with just two questions: If not WSF, who? If not now, when? Will you help us?



The Wild Sheep Foundation is a non-profit, tax exempt organization under Section 501(c)3 of the United States IRS Code. Donations are tax deductible to the full extent allowed by law. To make a credit card donation to the WSF Conservation Impact Projects or the Take One, Put One Back program, simply scan the QR code at left.

If you're interested in donating to the Wild Sheep Foundation by other means or to our other projects not listed on our donation web page, please contact Paige Culver, WSF Development Program Manager at (406) 404-8750.

CONSERVATION PERMITS

Making IMPACT Possible

The pursuit of a mature ram, whether a bighorn or thinhorn in North America or argali in central Asia, is the absolute pinnacle of mountain game hunting. Few undertakings are as physically demanding or spiritually rewarding. To climb high into unforgiving country, test your endurance, and lock eyes with a full-curl ram is to encounter the wild in its purest form.

Even more challenging is the effort to put and keep those wild sheep on the mountain.

For a ram to stand on that windswept ridge, years of unseen effort have gone into restoring habitat, monitoring disease, organizing translocations, and managing predators. Helicopters, collars, guzzlers, prescribed burns, and endless hours of biologists' fieldwork all have to be paid for. That effort is costly, far beyond what the revenue from ordinary hunting licenses can cover.

Recognizing this gap, in 1980, Wyoming Governor Ed Herschler took a bold step. Partnering with the Wild Sheep Foundation (WSF) (then known as the Foundation for North American Wild Sheep (FNAWS)), the state auctioned a single bighorn sheep permit to the highest bidder, with every bit of the \$23,000 generated dedicated to wild sheep conservation in Wyoming.

Other states quickly took notice. Over the next few decades, the auction tag model expanded beyond Wyoming, becoming an essential funding strategy

referred to as "Governor's, Heritage or Auction Tags" are a cornerstone of funding for wild sheep as well as other species like moose and pronghorn.

The results proved transformative. Montana's auction permits alone have generated more than \$8.2 million for bighorn sheep conservation. Wyoming's tags have generated substantial annual sums, totaling \$305,000 in 2022 and \$215,000 in 2025, all dedicated to on-the-ground work. And at the 2025 Sheep Show®, a New Mexico bighorn permit sold for \$1.3 million, the highest price ever paid for a big-game tag in North America.

But that good news for New Mexico wild sheep was not without controversy. Over the years, some in and out of the hunting world have bemoaned the auctioning of permits as a way for rich individuals to buy their way into sheep hunting, or as taking tags and opportunities away from the average hunter.

Arizona Game and Fish Commission's decision that conservation permits could no longer be sold via auction beginning in 2026 sent ripples through the hunting and conservation community. Critics there argued that auction tags did not offer equitable access to those who bought special tags awarded outside the regular draw.

The situation—though not rooted in rule or statute could be reversed by the commission—has served as a reminder that not everyone agrees with the concept, but for many, it is because they do not truly understand it, or care to.

Kevin Hurley: Earmark It and Sheep Win

Kevin Hurley, Vice President of Conservation – Emeritus at WSF, has lived with the idea of conservation permits from its infancy. A biologist turned

"There's a misconception. If auctions are commercialization, then the entire system of hunting licenses is commercialization. In 2021 alone, 15 million hunters bought 37 million licenses, generating nearly a billion dollars. That is not commercialization. It is conservation funding."

Shane Mahoney
Conservation Visions

for wildlife agencies across North America.

Today, conservation permits, sometimes still

\$6,804,750 Directed to Wildlife Agencies by Wild Sheep Foundation During FY 2024-2025

NOT INCLUDED ON MAP

MONGOLIA - \$102,000

KYRGYZSTAN - \$20,000

ALASKA
\$288,250

BRITISH COLUMBIA
\$233,750

ALBERTA
\$360,000

WASHINGTON
\$211,500

CONF. TRIBES OF
WARM SPRINGS
\$252,000

OREGON
\$461,250

IDAHO
\$285,000

MONTANA
\$337,500

WYOMING
\$391,500

NEVADA
\$225,000

NEBRASKA
\$357,000

CALIF.
\$256,500

COLORADO
\$283,500

ARIZONA
\$715,000

NEW MEXICO
\$1,635,000

NAVAJO NATION F&W
\$162,000

TAOS PUEBLO
G&F DEPT.
\$225,000

conservation leader, he knows both the pitfalls and the potential of such permit systems.

He often points to South Dakota.

"I do like to use South Dakota as an example because I think way back when they were issuing two bighorn sheep licenses per year, to residents only. It was a lottery with maybe \$20,000 from application fees."

Then everything changed when the state authorized a permit that could be auctioned; this effort was led by the WSF Midwest Chapter, in particular, then-President Curt Babler.

"The first-year auction's purchase price was \$102,000, and it happened to be purchased by a resident of South Dakota," Hurley said. "Those funds helped South Dakota Game, Fish, and Parks launch

and expand a more robust, funding-guaranteed bighorn sheep management program", Hurley adds.

Over time, the program has expanded, providing significantly more bighorn sheep hunting opportunities for South Dakota residents.

For 2025, South Dakota Game, Fish, and Parks approved seven ram bighorn sheep licenses, one of which is an auction license.

Over the past decade, the auctioned bighorn sheep permit revenues have added up

to well over a million dollars for sheep conservation in South Dakota, and that money supports work like disease research, habitat maintenance, water development, and monitoring herd health.

Hurley insists that the impact reaches far beyond just that one auctioned tag, stating, "the critical point is that bighorn sheep permit auction revenue

"Conservation permits are a great investment because they sustain the herds that produce future opportunities for general draw hunters, lottery hunters, young hunters coming of age, as well as photography and watchable wildlife opportunities from more abundant bighorn sheep herds."

Kevin Hurley

VP of Conservation - Emeritus



Wyoming was the first state to offer a "Governor's Tag", conceived by Governor Ed Herschel. INSET: Two Wyoming technicians processing a newborn lamb, which is about to be placed in a bag to be weighed. BACKGROUND: Conducting behavioral observations on a group of sheep part of the West Side population on their summer range in Wyoming's Bridger Wilderness.

PHOTOS BY JACK GAVIN



must be dedicated and invested back into a bighorn sheep management program, and not be diverted to other uses”.

“Conservation permits are a great investment because they sustain the herds that produce future opportunities for general draw hunters, lottery hunters, young hunters coming of age, as well as photography and watchable wildlife opportunities from more abundant bighorn sheep herds,” Hurley said.

“The best analogy I can come up with sounds like a kid’s fairy tale: if you keep investing in the goose that lays the golden eggs, then you’re gonna have golden eggs down the road”, Hurley adds.

Corey Mason: Counting Costs, Counting Wins

Corey Mason, WSF’s Chief Operating Officer and Executive VP of Conservation, frames the issue in hard numbers.

“Managing wild sheep is expensive by definition. Helicopters, collars, disease surveillance, guzzler builds, and prescribed fire all come before a single lamb is counted,” he said.

He traces the lineage back to that original Wyoming permit and then to the present reality.

“Eighty-three percent of wild sheep funding now comes from auction and raffle permits. Without them, there would functionally be no wild sheep restoration programs,” he said.

For Mason, the choice is not theoretical.

The alternative to auction permits is not some as-yet-unrealized funding model; it is the absence of programs altogether. When weighed against the measurable outcomes of restored herds, improved lamb survival, and expanded hunting opportunities, the case speaks for itself.

That same scenario plays out differently across the border.

Bill Jex: Canada’s Model and the BC Example

Across the border, the picture is different. Canada lacks the Pittman-Robertson Federal Aid system that, in the U.S., multiplies state revenues through federal matching dollars. Without that safety net, auction permits are even more critical.

“For example, Alaskan investments can benefit from a 3:1 Pittman-Robertson dollar match, and this is incredibly important when undertaking work on Dall’s sheep in that state, but Canadian jurisdictions have no similar long-term supportive funding options. Northern Territories such as the Yukon and Northwest Territories have access to some Canadian Federal funding but don’t yet have dedicated agency

conservation auction permits,” Jex said.

British Columbia doesn’t have access to much in the way of Federal funding, but does have a conservation auction permit (Special Sheep Permit).

“So the monies offered through non-government sources, such as support from WSF auctioning of agency permits, WSF Chapter & Affiliates, and through Grant-In-Aid, play a critically important role for wild sheep managers across the north,” Jex said.

In British Columbia, the Premier’s Special Sheep Permit (known commonly as the BC sheep tag) was first offered in partnership with WSF’s Sheep Show and auction in January 2000; BC also initiated a BC Resident Special Mountain Sheep Limited Entry Hunting Authorization in that same year.

“The goal of these two tags was to increase funding for conservation efforts by generating dedicated dollars from non-government sources, with the revenue managed by the Habitat Conservation Trust Foundation

(HCTF) and invested into habitat improvements, population monitoring, and other initiatives to benefit wild sheep,” Jex said.

The program continues today and is responsible for leveraging the vast majority of investment into wild sheep resources in the province. To date, WSF and its family of Chapter & Affiliates have supported an investment of over 8 million

dollars US into the province to help fill the gap of no Pittman-Robertson-like options.

“Across the north, WSF has recently pledged significant investments into thimhorn sheep management. The WSF sheep family, WSF National, and the Chapters & Affiliates, stand ready to support wild sheep management efforts and further realization of opportunities in the two Territories to expand external funding, through the creation of conservation auction permits in their jurisdictions,” Jex said.

Shane Mahoney: Debunking the Myths

No voice has defended the philosophical integrity of conservation permits more forcefully than Shane Mahoney of Conservation Visions.

“...the monies offered through non-government sources, such as support from WSF auctioning of agency permits, WSF Chapter & Affiliates, and through Grant-In-Aid, play a critically important role for wild sheep managers across the north.”

Bill Jex, Thinhorn Sheep Program Lead

Critics sometimes argue that auctions permit the “commercialization” of wildlife and thereby violate the North American Model of Wildlife Conservation. Mahoney disagrees.

“There’s a misconception,” he said.

“If auctions are commercialization, then the entire system of hunting licenses is commercialization. In 2021 alone, 15 million hunters bought 37 million licenses, generating nearly a billion dollars. That is not commercialization. It is conservation funding.”

Mahoney points out that Dr. Valerius Geist, the scholar behind the Model, never intended it to forbid all expressions of wildlife’s economic value. Instead, the principle was meant to ensure that wildlife remains a public resource, managed by science, not private ownership.

Special permits represent a tiny fraction of the license system, yet they fund a disproportionate share of conservation.

“This is not commercialization,” Mahoney said. “It is community investment and a way for hunters to put extraordinary resources into ensuring wildlife persists.”

Gray Thornton: More Dollars, More Sheep

WSF President and CEO Gray Thornton puts it in plain terms.

“More dollars equal more sheep on the mountain. More sheep on the mountain equals more opportunity for all.”

He stresses two points that critics often miss. First, conservation permits are additive. They do not take away from the tags available through general draws or lotteries.

“There are thousands of hunting permits sold each year,” Thornton said. “Conservation permits are a mere fraction, and they add to opportunity, not subtract from it.”

Second, WSF absorbs the marketing and logistical costs of auctions, ensuring that every dollar raised goes straight to agencies. The percentage we retain as a seller’s fee from some agencies that allow for this, we plow back into our Mission funding, such as our Grant-in-Aid program, netting more dollars for the resource. At the 2025 Sheep Show, 30 permits generated \$6.7 million for state, provincial, tribal, and federal partners.

Thornton’s argument is simple: transparent, earmarked, science-driven. Funds are not siphoned into bureaucracy but multiplied through federal matches and directed to sheep conservation.

“Without them, wild sheep conservation as we know it would not exist,” he said.

And those dollars don’t stop at state and provincial borders. Conservation permits have also become lifelines for First Nations and international partners who manage wild sheep in some of the harshest habitats on Earth.

First Nation and International Help

Kevin Hurley also highlights the impact of conservation permits beyond state agencies, especially in partnership with US tribes and First Nations in Canada.

“FNAWS and Wild Sheep Foundation have had a long history of tribal and First Nation special permit sales,” he said.

The work is wide-reaching.

“We’ve worked with Taos Pueblo and the Navajo Nation for years; the past two years, WSF has significantly helped the Confederated Tribe of the Warm Springs in Oregon, all in an effort to enhance bighorn sheep herds and habitats”, Hurley said.

For Hurley, these efforts reflect the strength of shared commitment.

“When we team up with tribal and First Nation wild sheep managers, those conservation dollars go straight to the ground. They decide the priorities, and we’re proud to stand alongside them. It’s a partnership that ensures wild sheep are managed with local knowledge and resources, and the results have been powerful.”

And conservation permits are also making an impact in Central Asia.

At the 2025 Sheep Show, conservation permits from Central Asia underscored just how much these auctions have become about more than trophy hunts. Funds from the Marco Polo tag in Kyrgyzstan were pledged to build local science-based wildlife management capacity, pay for on-the-ground monitoring, and support rural communities whose livelihoods are intertwined with wild sheep.

“There is a great opportunity to make an impact on wild sheep and goat conservation in Central Asia through conservation permits, and we’re beginning to see a real interest there where there is no funding model like we have in the United States,” said Kurt Alt, WSF Conservation Director, Montana & International Sheep & Goat Programs.

A similar approach guided the Altai argali permit in Mongolia and the ibex offerings from Tajikistan and elsewhere. WSF emphasized that money from these tags would be directed into habitat work, population surveys, and the infrastructure needed to make Mongolia’s conservation program both credible and sustainable.

Taken together, these voices point to the



same conclusion: conservation permits are not just optional fundraising. For wild sheep and goats, they are essential.

Sheep Are Not Regular Game Animals

In the end, conservation permits are about scale and necessity. Whitetails thrive across two-thirds of North America. Trophy-class bucks are found in nearly every county in their range. Elk, once extirpated in the East, now bugle not only in Colorado and Montana but again in Kentucky, Pennsylvania, and Virginia. Their recovery is one of modern conservation's greatest triumphs.

Wild sheep are different. Their numbers are fragile and challenged by disease, habitat degradation, climate pressures, and predation. The mountainous ranges they favor are limited, and their management is extremely costly. They will never be a backyard species. Every ram standing on a ridge represents years of planning, funding, habitat work, and commitment.

Across North America and beyond, auctioned conservation permits have become the backbone of that effort.

In 2025, WSF partnered with the Arizona Game & Fish Department to run a raffle tag that generated \$357,900 for desert bighorn conservation, proof that multiple tools can play a role when designed with transparency and clear goals.

But WSF's experience over four decades points to a consistent conclusion: auctioned tags remain unmatched in impact, when compared to raffled tags.

Keith Balfourd, WSF's Director of Marketing & Communications of WSF emphasized the organization's policy on these permits.

"States, provinces, tribes, and First Nations need dependable ways to fund wildlife conservation. We respect their authority to choose the path that works best, but after decades of experience, we know auction tags remain the most effective, efficient, and durable funding mechanism for species-specific conservation. When those dollars are earmarked and transparent, wildlife wins, hunters win, and future generations win," he said.

The lesson is clear: this model works. It is not perfect, and not every dollar from every permit is guaranteed to go directly into wild sheep. States and provinces decide how those funds are used, which vary. But what has been proven time and again is that where accountability is strong, the results are undeniable.

Conservation permits have fueled some of the greatest triumphs in wildlife recovery history. From the beautiful desolation of the Yukon to the deserts of New Mexico and everywhere in between, they have helped fund the mechanism that keeps the rich and important tradition of sheep hunting very much alive.

Because in the end, conservation permits are not just a funding tool but a covenant between people and the wild, ensuring that wild sheep and those who pursue them will always have a place on the mountain.

"There are thousands of hunting permits sold each year. Conservation permits are a mere fraction, and they add to opportunity, not subtract from it."

Gray N. Thornton
Wild Sheep Foundation
President & CEO

RECONNECTING THE RANGE

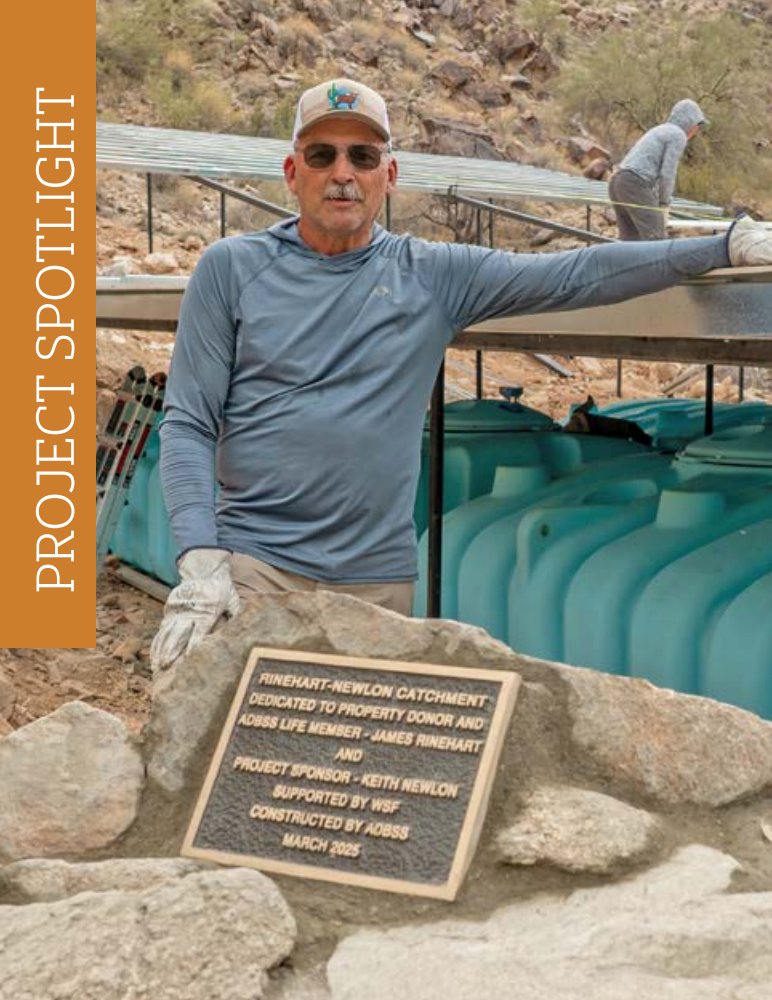
How the Rinehart-Newlon Catchment Revives Habitat for Desert Bighorn Sheep

C&A Partner: Arizona Desert Bighorn Sheep Society

In west-central Arizona, the Harcuvar Mountains rise steeply from the Sonoran Desert, stretching about 25 miles long and five miles wide. The range forms a landscape of ridges, canyons, and rocky slopes that make it a perfect habitat for desert bighorn sheep. The region, however, is no stranger to severe drought.







"This is the first project in our 50-year history and over 200 guzzlers that's been built on private land that we own. It's a huge step forward."

Charlie Kelly, Chair of WSF and longtime ADBSS member.

Rainfall is highly variable, and the lack of permanent water sources poses a significant challenge to wildlife survival, especially for wide-ranging species like desert bighorn sheep. In the Harcuvars, the availability of water is often the primary factor limiting wildlife movement and distribution.

That's why the Rinehart-Newlon Water

Catchment Project, installed in Spring 2025, with its nearly 17,000-gallon capacity, is such a valuable addition to this landscape. Its location was carefully selected to help existing populations of desert bighorn sheep and promote their use of the entire range.

A New Model for Conservation

Spearheaded by the Arizona Desert Bighorn Sheep Society (ADBSS) and helped by a \$40,394 Grant-In-Aid from the Wild Sheep Foundation (WSF), the project is a tangible example of what private landowners, nonprofit organizations, and volunteers can achieve when they align their resources and passions.

At the heart of the initiative is James Rinehart, a ranch realtor and longtime Wyoming Wild Sheep Foundation member. In a move that showed a true heart for conservation, Rinehart donated a 40-acre mining claim to the ADBSS. OPPOSITE: You can still see remnants of the old mining site that now houses the new water guzzler.

Located about 10 miles between the Western Harcuvars and the Granite Mountain catchment, the site lies in a critical corridor for desert bighorn movement, an area where, until now, water had been the limiting factor for population expansion.

"This is the first project in our 50-year history and over 200 guzzlers that's been built on private land that we own," said Charlie Kelly, Chair of WSF and longtime ADBSS member. "It's a huge step forward."

Indeed, it is a project born of firsts: the first privately owned catchment by ADBSS, the first major donor-driven collaboration of its kind in the region, and the first to explicitly test how private and wildlife nonprofit cooperation can shorten timelines and bypass typical red tape.

Rugged and strikingly beautiful, the Harcuvar Mountains stretch across western Arizona as part of the Basin and Range Province. The Harcuvars rise to over 6,300 feet at Smith Peak, offering stunning desert scenery and supporting a surprisingly diverse ecosystem despite the region's intense climate.

A Gift of Land

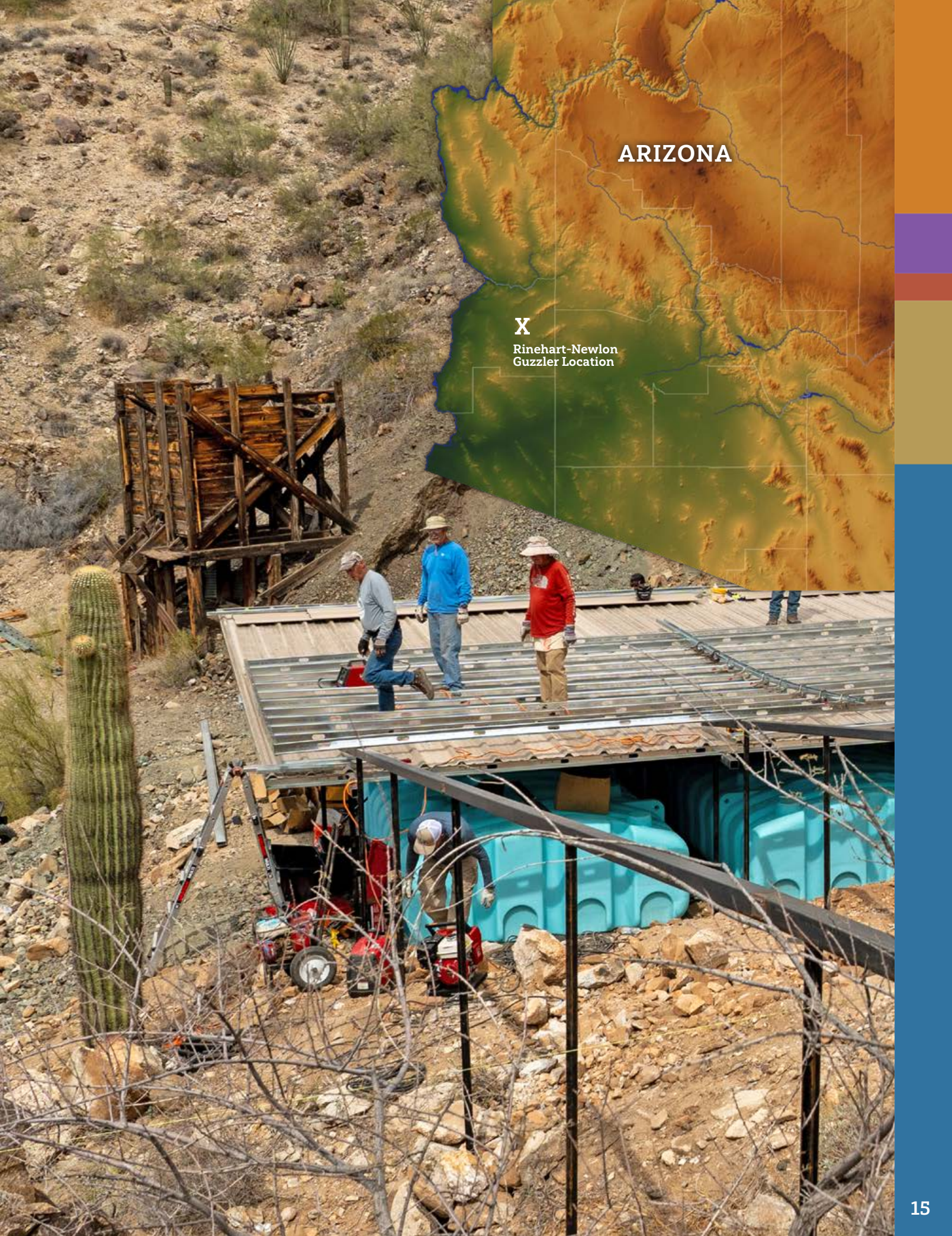
At the heart of this conservation milestone is James Rinehart, a ranch realtor and lifelong sportsman from Wyoming. A dedicated member and former Board member of the Wyoming Wild Sheep Foundation, Rinehart had long admired Arizona's untamed beauty.

Years ago, while exploring the state's vast desert ranges with his wife (whose family had ties to the region), he came across a dormant 40-acre mining claim nestled in a remote canyon of the Harcuvar Mountains.

"We thought, well, this is kind of a neat place to have, a pretty little place to be," Rinehart reflected. "It's up in a bowl, kind of protected. It just seemed like a really neat place."

But Rinehart saw more than just serenity in the land. He saw an opportunity.

Its location, terrain, and natural isolation made it an ideal habitat for wildlife, but it lacked one critical element: water. After conversations with friends at Arizona Game and Fish, including regional wildlife biologist John Hervert and agency veteran Brian



ARIZONA

X

Rinehart-Newlon
Guzzler Location

Jansen, the idea came together.

Donate the land to ADBSS and create a permanent water source that would transform the range.

"It wasn't just about the tax deduction," Rinehart emphasized. "It was about proving that public-private partnerships can work, that we can build projects that truly benefit wildlife, and do it faster and more efficiently."

Rinehart's only condition? That the land would never be used to reopen the mine, only to nourish wildlife and foster conservation for generations to come. Transforming that vision into reality was anything but easy.

The site, once an old mining zone active before World War II, had never been considered for such an ambitious project. The terrain was steep and accessible only by four-wheel-drive vehicles, and in some cases not even then.

Helicopters had to be called in to airlift some materials when the roads became impassable. Every piece of equipment, every load of steel, and every water storage unit had to be meticulously planned and delivered with care into this site.

Volunteers carved out a location from the adjacent steep slope for a 72 X 36-foot apron designed to collect more than 1,600 gallons of water per inch of rainfall. Working by hand, they leveled the rocky site, hauled concrete and tank components across challenging slopes, and endured intense desert heat, dust storms, and unexpected weather delays.

Despite all obstacles, the project was completed in just one year, far outpacing the typical four- to five-year timeline for similar efforts that sometimes involve multiple agencies.

"This just doesn't happen in one year," said TJ Baehre, past president of ADBSS. "But because it

was private land and the right people were involved, it did."

Among those "right people" was Keith Newlon, who not only donated his company's title services through Pioneer Title at no cost, but also

demonstrated person-

al commitment by placing the winning \$30,000 bid at a fundraiser auction for naming rights. His name now proudly stands beside Rinehart's in creating a lasting legacy for wild sheep and other wildlife.

"This project happened because people believed in it. It was built with passion, sweat, and a whole lot of commitment."

TJ Baehre
ADBSS Past President

Bridging the Gaps (Literally)

In wildlife conservation, "connectivity" is more than a buzzword. It's a guiding principle that acknowledges how animals rely on contiguous corridors to migrate, breed, and thrive. In fragmented habitats like the desert Southwest, water sources can make or break these connections, especially in arid mountain terrain.

"This guzzler provides a stepping stone between two herds," said Dave McCasland, a veteran volunteer with over 100 catchment projects to his name. "We're expanding the population by creating connectivity."

In 2022 the Arizona Game and Fish Department translocated sheep into the Harcuvars to help bolster the population.

Currently, the area sees occasional bighorn activity, but with water now reliably present, conservationists anticipate a gradual migration as herds from the Granite Wash Mountains to the west and

Harcuvar populations to the east begin to utilize the newly enhanced habitat.

This added access isn't just about numbers but also genetics.

In some wild sheep populations, isolation has led to reduced genetic diversity, which can leave animals more vulnerable to disease and environmental stress.

Carefully planned connectivity helps ensure that herds remain genetically healthy over time.

Connectivity is such a priority in the wild-life world today that entire wildlife overpasses are being constructed over interstate highways from Utah to British Columbia to allow safe passage for bighorn sheep and other wildlife across fragmented landscapes.

"Build it and they will come," said Charlie Kelly with a smile. "And they will."

It's not just bighorns that will benefit. The catchment will support desert tortoises, foxes, quail, deer, and even pollinators.

"This project is about bringing life back to a landscape that had the terrain and forage, but lacked water," Gray Thornton, WSF President & CEO.

While desert bighorn sheep are the primary beneficiaries of the Rinehart-Newlon Water Catchment, the ripple effect of this project reaches far beyond a single species.

Mule deer and javelina, both of which are common in the region, will benefit directly from the new water source, especially during prolonged droughts. Small mammals such as foxes, bobcats, and ringtails will also be drawn to the site, relying on the water to survive harsh summer conditions. Ground-nesting birds like quail and doves, as well as predatory raptors including hawks and owls, will find the area better for nesting and hunting due to increased small animal activity around the guzzler.

Even reptiles, amphibians, and countless insect species will thrive in the microhabitat created around the catchment. Pollinators such as bees and butterflies will be drawn to the moisture, aiding in

Numerous volunteers from the Arizona Desert Bighorn Sheep Society were on hand to build the guzzler. Some of the key players are pictured here.



TJ Baehre



Chad Jones



Ray Zoratti



James Rinehart



Bill Davis



Charlie Kelly



Louis Cool

local plant reproduction.

These pollinators play a vital role in maintaining the health of native flora, including desert wildflowers, shrubs, and cacti that form the foundation of the food chain. The presence of reliable water also encourages flowering at greater densities, which in turn supports a broader diversity of insect life.

This benefits everything from seed-eating birds to small mammals and the predators that rely on them. In short, the Rinehart-Newlon has wide-ranging benefits proving that one well-placed guzzler can breathe life into miles of wilderness.

A Blueprint for the Future

Beyond its ecological benefits, the Rinehart-Newlon project is a prototype for a new way of doing conservation. It shows what happens when you cut through bureaucracy, leverage private assets, and lean into the power of volunteerism.

"This project happened because people believed in it," Baehre said. "It was built with passion, sweat, and a whole lot of commitment."

The project also invites a reimagining of how private lands can serve the public good. In an era where habitat loss, drought, and climate pressure increasingly threaten wild species, forging creative alliances with landowners could be a key to keeping landscapes intact and desert wildlife thriving.

On-the-ground conservation doesn't always require major funding or large-scale initiatives but can start with willing landowners, a small crew, and a clear purpose.

The success of this catchment demonstrates how private citizens can effectively bridge gaps and accomplish work where it's needed most. With minimal footprint and targeted impact, these kinds of efforts not only support wildlife but also strengthen ties between people and the land they care for.

"This guzzler provides a stepping stone between two herds," said Dave McCasland, a veteran volunteer with over 100 catchment projects to his name. "We're expanding the population by creating connectivity."

"There are a lot of landowners out there who care. We just have to show them it's possible to be part of the solution. And that's an exciting part of what we've done with this project. We've created an example of how to make faster, positive strides for wildlife," Rinehart said.

By demonstrating that privately owned land can be a cornerstone for habitat enhancement, the Rinehart-Newlon project breaks down old assumptions and opens the door to countless similar efforts. It highlights the value of localized action backed by national support, proving that even a relatively obscure and small patch of desert can become a positive influence across an entire region.

"This part of the Harcuvars may not hold many sheep now, but when they pass through, and find reliable water, they'll stay longer," Rinehart said.

He noted that nearby Granite Wash holds strong herds and has issued tags, even producing legendary rams like "Curly," known to

Arizona hunters.

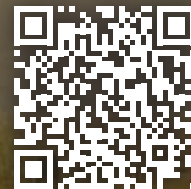
"This spot links two populations of desert bighorn sheep. It's got the habitat and now the water. Give it time, and the big rams will come. And one day, maybe even a hunter's tag will come with them."

It's a vision rooted in tradition, opportunity, and the belief that thoughtful stewardship can bring landscapes back to life.

From a mining relic to a magnet for wildlife, the Rinehart-Newlon Catchment shows that conservation can begin with a simple idea and a strong commitment. With the right piece of land, a clear purpose, and the will to act, anyone can help shape a future where wildlife thrives.

"This isn't just a water tank in the desert. It's a commitment to the land, to the wildlife, and to future generations," said Gray Thornton.

Because in places like the Harcuvar Mountains in the beautiful but harsh desert of Arizona, real impact is measured in hoof prints at the water's edge.



Watch the full
video about
the Rinehart-
Newlon Guzzler
project.

STONE'S SHEEP

Researching Habitat, Nutrition, and the Future of a Northern Icon

C&A Partner: Wild Sheep Society of British Columbia

In the remote mountains of northern British Columbia, the landscape is expansive and difficult to access. The Finlay-Russell, Tatlatui, and Swannell Ranges stretch across this high country, forming a patchwork of rugged peaks and alpine valleys.

In this region lives what many hunters regard as the pinnacle of mountain game: the Stone's sheep.

These animals are deeply tied to this land, thriving in open, wind-swept ridgelines, steep slopes, and high basins that offer both forage and escape terrain. Their striking coats, ranging from slate gray to near black, often with contrasting white rumps and faces, blend seamlessly with the alpine rock and shadow, a visual reflection of the terrain they depend on.

And the health of this habitat is directly linked to the strength of Stone's sheep populations.

Today, a quiet but important effort is underway to understand that relationship better and to ensure the future of this iconic species.

The Finlay-Russell Wild Sheep Project, led by Landon Birch of the University of British Columbia (Okanagan Campus), and supported by the Wild Sheep Society of British Columbia (WSSBC) and Provincial Wildlife Staff, is a focused and field-intensive effort to understand Stone's sheep populations better.

Backed by a \$51,815 Grant-in-Aid from the Wild Sheep Foundation (WSF), the project combines aerial surveys, ground-based monitoring, and habitat assessment to get a clearer picture of what's happening on the landscape.

"This is a wild and remote area, and the Grant-In-Aid from WSF and support of WSSBC have been a tremendous help in our efforts," Birch said.



MYSTERIES

Researchers assess the body condition a captured ewe. Sheep primarily store fat reserves on their rump. We determine how fat they are by measuring the thickness of the fat layer using ultrasound, and by palpating their tail vertebrae. To determine the implications of seasonal nutrition on body condition, a comparison is made with the bi-annual fat reserve measurements to range quality assessments.



For a species found almost entirely within British Columbia and representing a distinct lineage of thinhorn sheep, the findings could have wide-reaching implications for conservation.

A Mysterious Decline

The story begins in 2020 when a long-overdue aerial survey of Stone's sheep in the Finlay-Russel region shocked researchers. The count revealed only 142 sheep in areas where, historically, over 300 had once been recorded. In just over two decades, the population appeared to have been halved.

This decline sparked immediate concern among biologists, wildlife managers, and First Nations knowledge holders.

"This research aims to provide insights for conservation efforts and habitat management, ultimately supporting the long-term survival of Stone's sheep in a dynamic area," said Morgan Anderson, Senior Biologist with the British Columbia Ministry of Water, Land, and Resource Stewardship.

The study's primary objective is to monitor the health, survival, and habitat use of Stone's sheep. This involves tracking herd dynamics, assessing overall well-being, and identifying the environmental pressures influencing their future.

"We hadn't checked in on these sheep for over 25 years," Birch said. "When we saw how far their numbers had dropped, we knew something serious was going on."

That discovery prompted the launch of the project, driven by a central question: What's behind

the decline in these sheep? Could it be related to changes in forage, displacement from key habitat, disease, or predation?

Or is it a more complex mix of subtle shifts in the ecosystem that, over time, have begun to impact this remote population?

Tracking the Herd

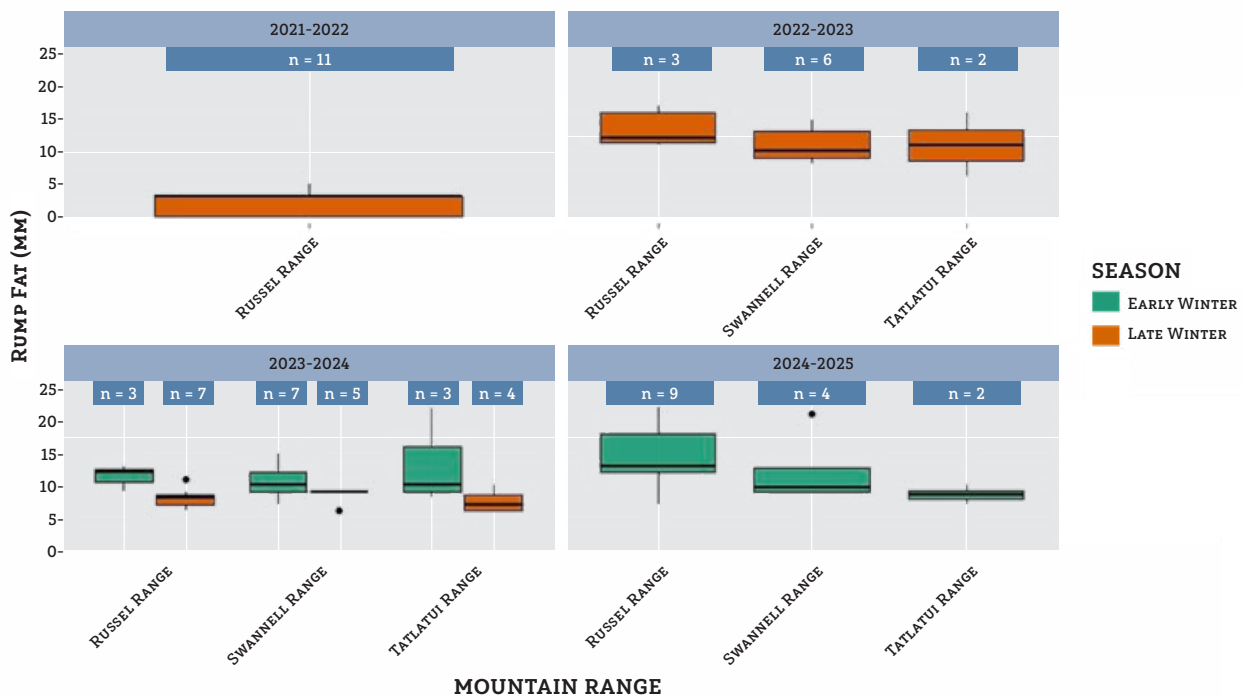
The first step was to find the sheep. In such remote, mountainous terrain far from roads, deep in the heart of British Columbia's wilderness, this wasn't as simple as hiking in with binoculars. It required helicopters, precision, and nerves of steel.

A team of experts armed with nets and guided by years of aerial experience began collaring adult ewes using helicopter net-gunning. They successfully deployed 22 GPS collars. Ewes were prioritized deliberately.

"Ewes are the population drivers," Birch said. "They're the ones raising lambs and keeping the population stable. If we can understand what's happening with them, such as their movement, health, and survival, we get the clearest picture of what's affecting the herd."

Once collared, the GPS data began pouring in streams of precise location points. Most sheep were highly sedentary, exhibiting strong site fidelity. They

Morgan Anderson using a portable ultrasound device to measure rump fat depth. The chart below shows the rump fat in mm by mountain range, biological year, and season for sheep captured between February 2022 through December 2024.





A new ewe getting her collar during the December 2024 capture event.



remained on familiar ranges, barely moving between seasons. But one ewe stood out.

"She was a total outlier," Birch said. "Since the day we collared her, she's never stayed in the same range twice. Every year, she moves north, then further north, and now she's in a totally new area again. We don't know why yet, but it could be related to competition, food availability, or even learned behavior."

Fat, Forage, and Survival

The cornerstone of the Finlay-Russel project is its groundbreaking focus on nutrition as a potential limiting factor. Body fat measurements taken from collared ewes during winter and summer revealed sharp contrasts in health from year to year. In 2022, a particularly harsh winter, for example, saw sheep averaging just 2mm of rump fat, which is effectively running on empty. The winter of 2023 was milder, and average fat thickness rebounded to 11mm.

Use of ultrasound to monitor fat reserves allows researchers to track these changes precisely. Data on lamb-at-heel status, pregnancy, and age are cross-referenced with nutritional status to understand how fat impacts survival and reproduction.

Could it be that focusing solely on winter range improvements may not be the answer?

Historically, habitat restoration has emphasized prescribed burns on winter ranges, to increase access to forage when snow is deep, and food is scarce.

But newer research, particularly from Alaska, Wyoming and Oregon, suggests that enhancing summer range might be more effective. If sheep enter winter with adequate fat reserves built during summer and fall, they are far more likely to survive harsh conditions. This idea of nutritional carry-over has become a guiding principle of the project.

In BC's interior snowbelt, where this population of Stone's sheep lives, intense climate conditions are further complicating the situation. A record-low snowpack one year may seem beneficial, but early snowmelt can reduce soil moisture and stunt the growth of crucial summer forage.

Simultaneously, tree lines are creeping upward into some alpine habitats, diminishing the wide-open sightlines sheep rely on to spot predators like wolves. This habitat encroachment, combined with changing weather patterns, poses a subtle but concerning long-term threat.

"Ewes are the population drivers. They're the ones raising lambs and keeping the population stable. If we can understand what's happening with them, such as their movement, health, and survival, we get the clearest picture of what's affecting the herd."

Landon Birch,
University of British
Columbia

The December 2024 Stone's sheep captures provided a great opportunity for the project team to reexamine ewes seen last year that had contracted orf (a contagious skin disease). Ewe 21-1985, captured in March 2024 and exhibiting lesions around her lips (below left), no longer showed any visible signs of an orf infection as of December 2024 (below right). No other ewes captured showed any visible signs of the disease during their health checks.



To combat these pressures, the project team is preparing a science-driven burn plan for 2026, developed collaboratively with local First Nations, including the Kwadacha and Tsay Keh Dene. The plan seeks to identify the most impactful areas to burn (summer, winter, or transitional ranges) based on years of collected body condition and movement data.

The plan isn't about fire for fire's sake. It's about optimizing habitat in the right places at the correct times to boost energy intake and give the sheep a fighting chance.

Predation

No look at sheep populations can overlook predation. And in this case, predation was the leading cause of death among collared sheep. Wolves were the most frequent killers, but it was the behavior of one particular predator that truly stunned the team.

"We had three separate ewes die within a one-kilometer radius, all from what we believe were wolverine attacks," Birch said.

"And all three happened in different years, but in the exact same feature on the landscape, an alpine shelf with cliffs and deep snow below."

According to Birch, each kill followed a similar pattern. "The wolverine chased them off the ledge, ran them into deep snow where they couldn't escape, and then killed them. It's not random but calculated. That predator figured it out and keeps coming back."

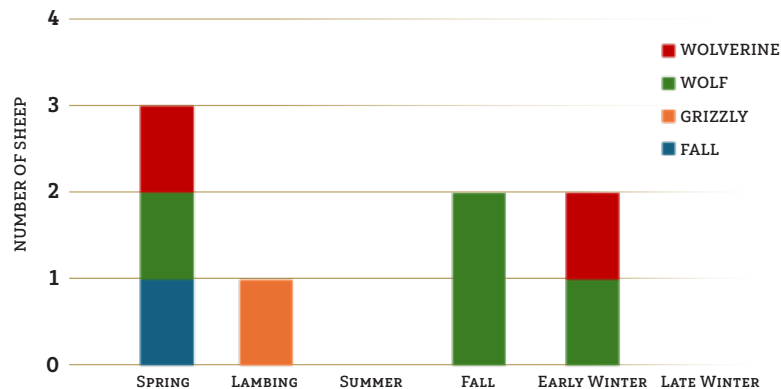
Wolverines are notoriously tricky and tenacious predators but taking down an adult sheep is no small feat.

"Pound for pound, they're the most formidable animal in the region," Birch said. "We've actually seen wolverines take down full-grown caribou, too. They use deep snow as a weapon, slowing prey down, wearing them out. They're incredibly smart and methodical."

The team suspects it may be the same individual wolverine returning year after year. Precision of the kills and repeated use of the same terrain suggest learned behavior.

"It's like that spot has become a trap," Birch said. "And the sheep, unfortunately, haven't figured it out."

The combination of GPS data, survival metrics, and predator behavior is now offering the research team a high-resolution understanding of how these sheep live and die in their environment. It also raises



Seasonal timing and cause of collared Stone's sheep mortalities from 2022-2024.

larger questions about how landscape features, changing snow conditions, and predator-prey dynamics intersect in a warming climate.

"This is the kind of thing you only catch if you're tracking individual animals over time," Birch said.

In a region where nature still rules and surprises abound, each collar, each data point, and each death adds a critical piece to the conservation puzzle.

Reproduction Red Flags

Even as body condition improved in some years, another mystery emerged this year: a dramatic drop in pregnancy rates. Only 41 percent of ewes were pregnant in spring 2025, down from a typical 85–90 percent in past years. This was not linked to poor fat reserves, harsh weather, or a lack of mature rams, all of which were within acceptable ranges.

"It caught us completely off guard," Birch said. "We found good fat levels, had a mild winter, and observed actually higher than average mature ram ratios. Everything pointed to a healthy reproductive year, but the numbers told a different story."

The leading hypothesis?

Ewes may be prioritizing the survival of existing lambs over investing in new pregnancies, a survival tactic observed in other ungulate populations under nutritional stress.

"Some of these ewes may be choosing to skip a year to give themselves and their lambs a better shot long-term," Birch said. "It's nature's way of hedging bets when resources, predation pressure, or climate signals are even slightly off."

This reproductive suppression is an alarming biological signal and highlights the delicate balance these animals are trying to maintain in a rapidly shifting landscape. The team is now modeling variables like ewe age, body condition, and past reproductive history to see what's driving this decline.



Just a few weeks after the March 2025 captures wrapped up, one ewe's collar alerted to a potential mortality event. A crew was dispatched to the kill site shown above and confirmed that the ewe had been killed by a wolverine. Other ewes in this area have also succumbed to wolverine attacks. However, no other wolverine predation has been recorded in the range.

First Nation Collaboration

Beyond science, the Finlay-Russell project stands as a model for respectful and effective collaboration.

Involvement of First Nations partners has been instrumental, not only in granting access to traditional lands but also in shaping stewardship goals that reflect the deep cultural significance of these sheep. The Kwadacha Nation and the Tsay Keh Dene Nation, whose territories overlap much of the study area, have been closely engaged in the project's development and direction from the start.

The Tsay Keh Dene, known as the "People of the Mountain," have identified Stone's sheep as a priority species under their Environmental Stewardship Initiative.

The research team also communicates with neighboring nations, such as the Takla Nation, to ensure transparency and respect across all territories. When burns are eventually carried out, it will be with local knowledge and consent, honoring both ecological and cultural values through joint decision-making and shared conservation goals.

A Future Worth Fighting For

By the end of 2025, the project aims to continue data collection, schedule targeted burns for 2026, and possibly put new collars on the sheep to monitor post-burn. This is all part of a deeper commitment to Stone's sheep WSF pledged in 2024.



"Since the 1960s, when Dr. Valerius Geist did his groundbreaking research on Stone's sheep, not that much has been done since," said WSF President & CEO Gray Thornton

"Too much of our conservation efforts are reactionary; WSF aims to stay ahead of the game for this iconic species. To be clear, WSF's aim, with our provincial partners, is to put more Stone's sheep on the mountain!"

Stone's sheep were first described to the scientific world in 1897 by American naturalist J.A. Allen. However, the species owes its name to Andrew J. Stone, an explorer and hunter who documented their distinct appearance during expeditions into the northern Rockies and provided specimens. Stone recognized not only their unique black, white, and gray coloration, but also their remarkable ability to thrive in some of the harshest alpine environments on the continent. Although Stone's sheep range was explored by Daniel Harmon, Simon Fraser, Alexander Mackenzie, and J.A. Allen, it was not until Samuel Black recorded his observations in 1824 that thin-horn sheep in the Finlay River became known to Europeans. These sheep, however, were well known to First Nation people who inhabited Stone's sheep country many centuries prior to any European scientist's early visits. Stone recognized not only their unique black, white, and gray coloration, but also their remarkable ability to thrive in some of the harshest alpine environments on the continent.

At first glance, the landscape today may appear unchanged from Stone's time, but the ongoing study is revealing subtle shifts: in forage quality, weather patterns, and predator-prey dynamics. These quiet changes may hold the key to understanding what the future looks like for the sheep that bear his name.

NEW LIFE IN THE HIGH

Restoring Desert Bighorns in the Franklin Mountains

C&A Partner: Texas Bighorn Society

Funding Partners: Bass Pro Shops and Cabela's Outdoor Fund, Water for Wildlife Foundation, Campfire Club of America Conservation Fund, WSF Midwest, Eastern Chapter WSF, Houston Safari Club Foundation

Under the shadow of the jagged peaks in Franklin Mountains State Park, sunlight reflected off the backs of a small group of desert bighorn ewes. Close by, a pair of lambs bounded awkwardly over a rocky outcrop. To the untrained eye, it may have seemed like a quiet spring morning. But for the dozens of partners, biologists, volunteers, and conservationists, the fact that scenes like this are playing out is historic.

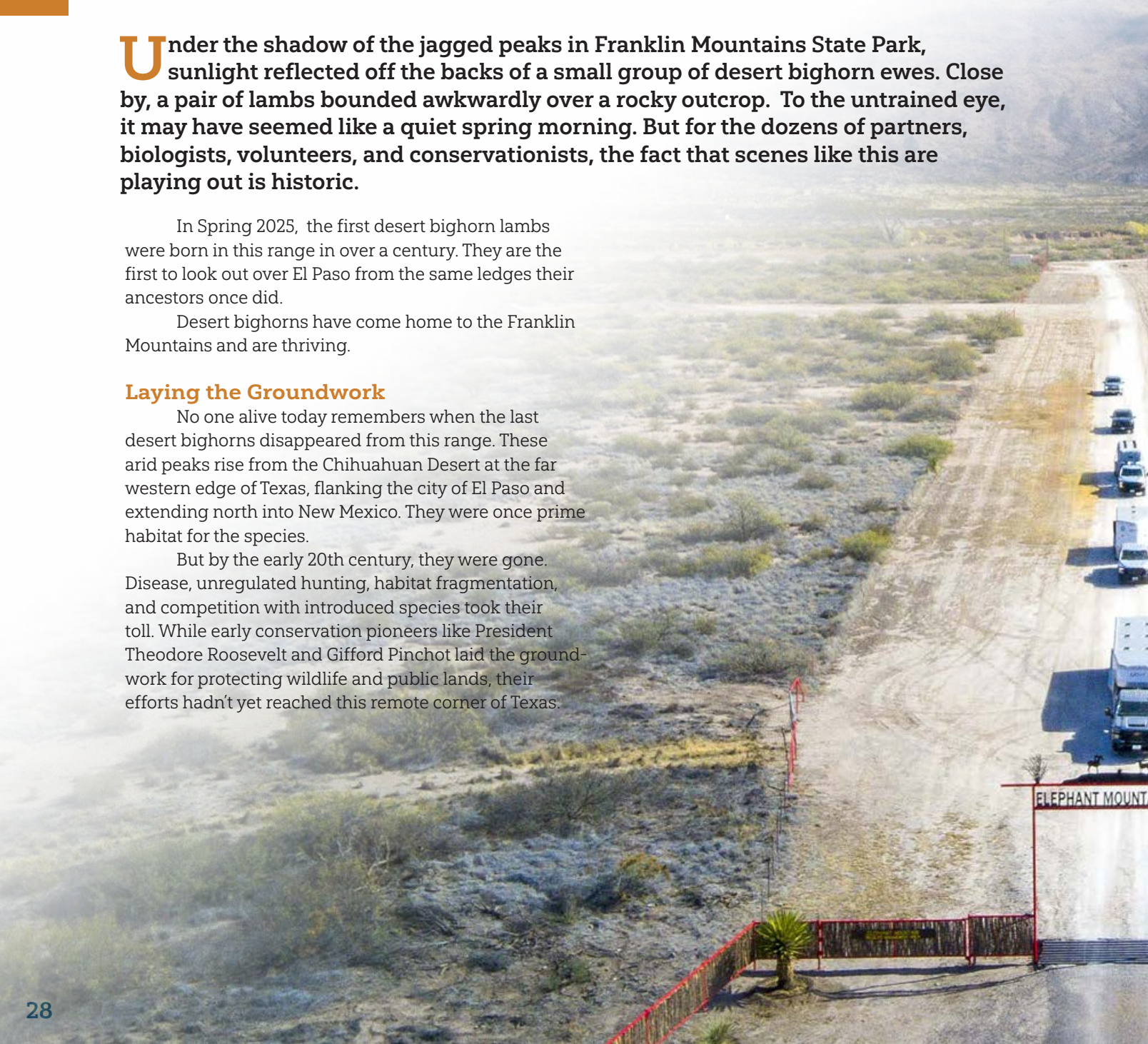
In Spring 2025, the first desert bighorn lambs were born in this range in over a century. They are the first to look out over El Paso from the same ledges their ancestors once did.

Desert bighorns have come home to the Franklin Mountains and are thriving.

Laying the Groundwork

No one alive today remembers when the last desert bighorns disappeared from this range. These arid peaks rise from the Chihuahuan Desert at the far western edge of Texas, flanking the city of El Paso and extending north into New Mexico. They were once prime habitat for the species.

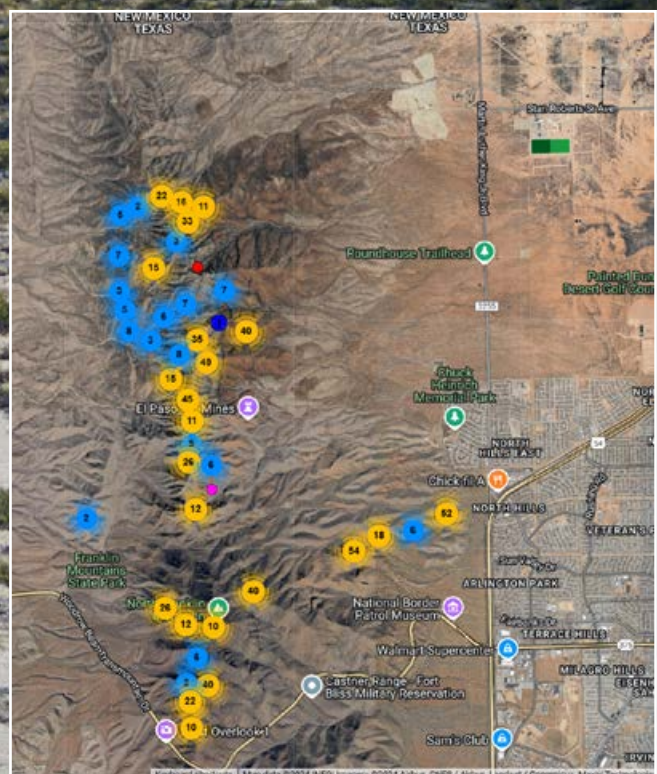
But by the early 20th century, they were gone. Disease, unregulated hunting, habitat fragmentation, and competition with introduced species took their toll. While early conservation pioneers like President Theodore Roosevelt and Gifford Pinchot laid the groundwork for protecting wildlife and public lands, their efforts hadn't yet reached this remote corner of Texas.



DESERT



Watch *Resilience in the Rocks*, a full-length video about this project.



GPS tracking the sheep days after they were released into Franklin Mountains State Park.

On December 6, 2024, the long-awaited day arrived. A crowd of more than 600 people gathered under a brilliant Texas sky to witness what few thought possible: the return of 77 desert bighorn sheep (40 ewes and 37 rams) into the Franklin Mountains.

That long delay makes what's happening today even more remarkable. The return of desert bighorns to the Franklin Mountains isn't just a conservation milestone but a testament to decades of persistence, collaboration, and vision.

The Wild Sheep Foundation (WSF) and Texas Bighorn Society (TBS) partnered with the Texas

Parks & Wildlife Department (TPWD) on a groundbreaking restoration effort.

The goal: to return desert bighorn sheep to Franklin Mountains State Park (FMSP), a 24,247-acre urban park within the El Paso city limits and one of the largest of its kind in the country.

WSF saw it not just as a restoration, but as a strategic investment in the future of the species.

"As we began focusing on broader, landscape-scale conservation projects through our Grant-In-Aid program, the Franklin Mountains opportunity stood out and we knew right away it was something we needed to support in a major way," said Gray Thornton, President and CEO of WSF.

WSF committed \$302,800 to the project, which helped support the capture of bighorns at Elephant Mountain Wildlife Management Area (WMA) near Alpine. The funding also covered biological testing, predator management, two helicopter surveys annually, and critical infrastructure like water development.

Other key contributors included TBS, Bass Pro Shops and Cabela's Outdoor Fund, WSF Midwest Chapter, WSF Eastern Chapter, the Camp-Fire Conservation Fund, Houston Safari Club Foundation, and the Water for Wildlife Foundation.

"Our partners are key for making projects like this become a reality. This one had a real sense of urgency and I think that's reflected in the coalition that came together for the sake of desert bighorn sheep in far west Texas," Thornton said.

A Call To Action

This project gained urgency due to a large die-off of desert bighorns caused by the deadly respiratory pathogen *Mycoplasma ovipneumoniae* (Movi).

In 2019, Texas had as many as 1,500 desert bighorns. But within a year, populations in places like Black Gap WMA and Sierra Diablo WMA began to crash, dropping the number of desert bighorns to around 400 animals.

The suspected culprit? Aoudad (aka Barbary sheep). These hardy North African imports were





introduced into Texas by TPWD in the 1950s for hunting and have since exploded in number, outcompeting native wildlife for food and habitat. Research has now confirmed they carry Movi and were the species that transmitted it to Texas desert bighorn herds.

"Aoudad present truly significant challenges for our desert bighorn populations here in Texas," said Dr. Sam Cunningham, President of TBS and a WSF board member. "Their role in disease transmission underscores just how vital projects like this one are to the future of the species."

Aoudad also thrive in drought-stressed conditions where native species like mule deer and bighorns struggle.

In fact, recent studies show aoudad can have annual survival rates as high as 94 percent, and their wide-ranging behavior, roaming the landscape up to six times more than desert mule deer, allows aoudad to dominate forage and water sources across entire mountain ranges and outcompete species even beyond bighorns.

Scenes from the December capture, test, collar, and release activities. All tests for Movi came back negative. The new herd starts with a clean slate free of aoudad. Hundreds of area residents and media were on hand for the release into the Franklin Mountains State Park.

The aoudad and Movi factor is what makes the Franklin Mountains so unique.

The Franklins offered a clean slate. With no domestic sheep or goats and, most importantly, no presence of aoudad, this range provides an ideal environment for reestablishing a healthy, isolated herd.

El Paso itself provides a buffer from aoudad populations on the Texas side, and there is a fairly wide gap between the Franklins and the closest aoudad in New Mexico.

Urbanization is usually a negative for wildlife but in this case it is being used to help give space for this fledgling herd to grow and expand away from non-indigenous wildlife threats.

Making History in the Franklin Mountains

On December 6, 2024, the long-awaited day arrived. A crowd of more than 600 people gathered under a brilliant Texas sky to witness what few thought possible: the return of 77 desert bighorn sheep (40 ewes and 37 rams) into the Franklin Mountains.

The desert bighorns came that day from Elephant Mountain WMA, carefully selected and tested to ensure they were disease-free. Each was fitted with a GPS collar for post-release monitoring. The first ram to leap from the trailer with ear tag Number 14 paused briefly at the threshold before bound-

ing into the high country.

It was a symbolic moment, the culmination of years of vision, planning, and sweat.

"The vision and years of work by TPWD with support

"The guzzlers have already proven to be a critical resource for the new herd."

*Dr. Sam Cunningham
Past president of TBS
WSF board member*

from TBS became a reality with this capture and release project. It's an important project that came at a crucial time for the Texas desert bighorn sheep herd," said WSF COO and Executive Vice President of Conservation Corey Mason. "We are proud and privileged to be a part of the effort."

The sheep immediately began to spread out across the northern section of the Franklin Mountains. Biologists tracked the sheep closely after the release using GPS collars and confirmed that the herd adapted quickly to their new home.

"Initial movement patterns showed healthy behavior and full use of the range," said Froylan Hernandez, TPWD's Desert Bighorn Sheep Program Leader.

Guzzlers: Lifelines in the Desert

Water is life in the desert. To support the new herd, two wildlife water catchment systems (guzzlers) were pro-actively installed in March 2024 with the help of volunteers and TBS sponsorship. These guzzlers collect and store rainfall, providing critical hydration points for wildlife in this harsh environment.

By summer 2025, both guzzlers were not only holding water but were being actively used by the sheep. This was confirmed through trail cameras placed at the watering stations, yet another example of modern conservation tools helping drive success.

"The guzzlers have already proven to be a critical resource for the new herd," said Dr. Cunningham.

"Seeing the dedication of TBS members, WSF volunteers, and other partners out there on the mountain, putting in the hard work to make this happen is a powerful reminder of what grassroots conservation can accomplish."

Each guzzler was strategically placed based on habitat analysis and expected sheep movement. Their success so far shows that proper planning and field execution from hauling in materials to installing infrastructure in rugged terrain can make an immediate difference.

As temperatures climb and rainfall becomes unpredictable, these water sources will play a key role in sustaining the herd long-term, along with a diversity of other wildlife.

A Promising Start

As of the latest monitoring, the herd is thriving. Though four mortalities have been recorded, including one road kill, the population has largely stabilized according to TPWD. The lamb crop in spring 2025 was recorded at an impressive 45 percent, with lambs now growing well and widely visible on trail camera footage.

"Recruitment is looking strong," Hernandez said. "If we continue to see this kind of growth, we could exceed 100 animals by next spring."

In fact, recent assessments show lambs are not only surviving but reaching healthy body sizes, which is an early indicator of good forage availability and minimal stress.

Telemetry data also reveals promising range utilization patterns: rams tend to roam farther north, while ewes cluster toward the southern end of the northern mountain range (the only area the sheep were released into). The sheep are making full use of the available habitat.

This kind of success so early in a project is encouraging.

Texas-Sized Conservation Symbol

The Franklin Mountains are more than a restoration site. They are a symbol.

A symbol of what's possible when the conservation community rallies behind a bold vision. A symbol of native species reclaiming historic ground. And a model for future efforts across Texas and beyond.

With no aoudad, no domestic sheep, and abundant public interest, this park could serve as a nursery herd for future translocations. Just as Utah and Montana have used strong source herds to fuel multiple bighorn releases, Texas could one day follow suit with the Franklin Mountains leading the charge.

This success also helps raise awareness about the species. Many Texans, especially in the eastern half of the state don't even know desert bighorns exist in their state. By placing a herd in such a visible, accessible location, WSF and partners are helping educate the public and inspire the next generation of wildlife stewards.

Challenge Accepted

Texans don't back down from a challenge and this one was no different.

When the future of desert bighorn sheep hung in the balance, WSF, TBS and TPWD came together with the kind of grit the state is known for. They've made it clear: desert bighorns belong on these mountains. And they won't stand by while a piece of Texas heritage disappears. Not while there are still peaks to roam, monsoon waters to drink, and lambs taking their first steps.

"This is about more than sheep," Thornton said. "It's about legacy. It's about showing what conservation can be when we all work together."

The translocated herd is thriving. Below, one of the newborn lambs is seen surrounded by ewes and young rams from the December translocation. At right, the new residents of Franklin Mountain State Park drink from one of the guzzlers installed the previous spring.

COURTESY MATTHEW MONTOYA TPWD

The Franklin Mountains herd may be small today but it is large in symbolism. It stands for resilience, rebirth, and the belief that even after 100 years, it's never too late to come home.

This is the only desert bighorn herd in Texas that's readily accessible to the public. Franklin Mountains State Park gives everyday people from hikers and school groups to photographers and wildlife watchers a rare opportunity to witness bighorns in their natural habitat. That visibility has sparked a wave of public interest and generated more positive media coverage about bighorn restoration in Texas than any effort before it.

In a world where wild places are shrinking, this is a story of reversal.

It's a story of defying the odds and creating hope for the future.

TPWD will conduct fall surveys on the population at about the time this document sees distribution. Hernandez said things are looking good but they will get a better idea on the long-term status of the herd this fall.

"All lambs that have survived by then, will likely make it into adulthood," he said.

As those lambs move across the same rugged slopes their ancestors once roamed, we're reminded that some will one day grow into rams that inspire hunters and other wildlife enthusiasts.

Their presence will be a powerful testament to how strong conservation partnerships can bring wild sheep back to the landscapes they once called home.



A lone ram walks away from researchers after being collared and tested. INSET: A young Stone's sheep is prepped for its collar.



"Those big Class IV rams don't bolt from mountain to mountain like we once thought. They find little hideouts and hunker down, conserving energy if there's good forage."

*Bill Jex, WSF Thinhorn
Program Lead*

STANDING FOR STONE'S SHEEP

A Remote Landscape, a Hidden Herd, and a New Era of Understanding

C&A Partner: Wild Sheep Society of British Columbia

Funding Partners: Spatsizi River Outfitters

On the high ridges of the Spatsizi Plateau, Stone's sheep live in a landscape of rock and sky. This is country without roads, where wild ground stretches far beyond easily accessible hiking trails. While admired by hunters and biologists alike, these beautiful creatures are the least studied of North America's wild sheep, but that is changing.

In 2023, Spatsizi River Outfitters owner Mike Gilson fully donated a Stone's sheep hunt to the Sheep Show auction, with WSF directing 100 percent of the proceeds to a dedicated research project.

This, along with a \$100,000 anonymous donor contribution, created a \$220,000 launch for the Spatsizi Stone's Sheep Study and funding continues through WSF Grant-In-Aid.

"The habitat they're in is still really remote," said Bill Jex, Wild Sheep Foundation Thinhorn Program Lead and former British Columbia Provincial wild sheep and mountain goat specialist. "People see sheep at Muncho Lake from the Alaska Highway and think it's easy, but the backcountry sheep — these Stone's sheep are in a different world entirely."

The last comprehensive survey here was conducted in 1967 by Dr. Valerius Geist, the founder of the North American Model of Wildlife Conservation, and until this project, the most recent population inventory occurred two decades prior in 2003.

Phase 1 of the project in 2023 was a summer habitat-use survey.

Phase 2, launched in early 2024, deployed 40 GPS collars (20 ewes and 20 rams) after a comprehensive health workup, which included hair, nasal, and throat swabs, blood and fecal samples, and ear biopsies.

Spring 2025 fieldwork injected fresh energy into the Spatsizi Sheep Project.

In March, researchers fitted collars on 10 more Stone's sheep, replacing those lost to harvest or natural causes and boosting the monitored population to 42 individuals.

The research analyses are being completed by University of Alberta M.Sc. student Julien Gullo, under the direction of his U. of A. advisers Dr. Mark Boyce and Dr. Colleen St. Clair, and supported by a

project team that includes provincial and Tahltan Nation staff, the Spatsizi River Outfitters crew, and WSF and WSSBC staff. By using advanced statistical models of movement and behavior on 2024 and 2025 hunting season data, they detected clear shifts in daily activity patterns, with both rams and ewes moving from mid-day peaks toward more nocturnal habits.

But the real surprise came from the behavior of the biggest rams.

"Those big Class IV rams don't bolt from mountain to mountain like we once thought. They find little hideouts and hunker down, conserving energy if there's good forage," Jex said.

The collars collect hourly GPS fixes, offering unprecedented insight into movement, habitat use, and behavior throughout all segments of the population.

"Ewes with newborn lambs will stay in one area for three to five days. About three to four weeks later, they'll make a trip to a mineral site. We can tell that right down to the dates," Jex said.

From his perspective, as someone who has spent a great deal of time studying British Columbia's wild sheep and goats, the importance of this work is clear.

"We're just starting to unpack a bunch of information we've never had before. We don't have a Pittman-Robertson funding model in Canada, so projects like this, with WSF and partners stepping up, really do make a difference."

WSF President & CEO Gray Thornton agrees. "Spatsizi's Stone's sheep are in a place we know relatively little about. This project is already opening understanding and will continue to do so. WSF is proud to be taking bold steps for Stone's sheep."



An important component of any habitat management program is monitoring of the effectiveness of the treatment at achieving objectives. Past research has shown that Stone's sheep use and select specifically for burned habitat and that post-burn vegetation has higher nutritional content. Wildlife use of burn sites was monitored before and after the burn using remote camera traps.

Stone's sheep health can be assessed by measuring stress hormone levels in freshly deposited sheep pellets. By measuring stress hormones before and after the burn and comparing hormone levels between populations that have access to and do not have access to burned habitat, we will have a better understanding of how the prescribed burns affect Stone's sheep.

FUELING THE MOUNTAINS

How Fire is Helping Stone's Sheep Survive and Thrive

C&A Partner: Wild Sheep Society of British Columbia

In the high, windswept ranges of northeastern British Columbia, researchers are uncovering the story of Stone's sheep health in an unlikely place: their droppings. Those samples carry stress hormones like cortisol, tiny markers of whether sheep are thriving or merely surviving. What drives those stress levels? Nutrition. And what shapes nutrition on the mountain slopes? Fire.

In the Muskwa-Kechika Management Area, prescribed burns are bringing old forage back to life, restoring open slopes, and producing the nutrient-rich plants these animals depend on.

Supported by the Wild Sheep Foundation (WSF), the Stone's Sheep Habitat Enhancement Prescribed Burn Program is proving that the path to stronger herds can begin with a single flame.

"WSF is one of our largest contributors, along with the Wild Sheep Society of British Columbia," said wildlife biologist Alicia Woods of Ridgeline Wildlife Enhancement Inc.

"This support has allowed us to treat over 1,200 hectares (3,000 acres) of prime Stone's sheep habitat."

Those blackened acres quickly turn green again. Vegetation studies show that plants in burned areas are more digestible and packed with minerals like sodium, magnesium, and calcium. That means ewes recover faster after winter, lambs grow stronger, and rams build the power and horn growth that symbolize the species.

"Usually, within a week of a burn, as soon as that new grass pokes through, sheep are there," Woods said. "I've even seen lambs standing in the black, eating the little green shoots."

"By burning, we're not only improving the forage, but we're also decreasing shrubs and tree cover. That allows sheep to detect predators sooner, move through the habitat better, and access escape terrain," Woods said.

Grizzlies, wolves, coyotes, golden eagles, and even wolverines all take their share. For lambs especially, survival often comes down to seconds, whether they can see danger coming and reach escape terrain in time. By opening up thick shrub cover, burns restore the wide sightlines sheep need

to detect predators early. Habitat becomes not only richer but safer.

The program's science is also expanding. Annual aerial surveys since 2021 are tracking lamb recruitment, while vegetation samples reveal that forage in burned sites is easier to digest and richer in minerals like potassium and calcium. A focus of the research is to help determine if these measures connect fire directly to reduced stress and improved sheep health.

"The intent is to run a prescribed burn program indefinitely," Woods said. "Stone's sheep really prefer habitat burned within five years. By the time we rotate through, it's time to start again."

Prescribed fire creates a positive chain reaction. Fire enhances habitat, better habitat reduces stress, and reduced stress means healthier sheep.

"Prescribed burns benefit so many different things at an ecosystem level, not just a single species," Woods said.

With WSF's support, every acre burned is more than habitat restored. It is proof that science, stewardship, and fire together can conserve one of the ultimate icons of big game hunting.

It helps ensure that the mountains will continue to hold the great, mature Stone's sheep rams that have long inspired the hunter-conservationist community.

"Usually, within a week of a burn, as soon as that new grass pokes through, sheep are there. I've even seen lambs standing in the black, eating the little green shoots."

Alicia Woods, Ridgeline Wildlife Enhancement Inc.



Dozens of volunteers were on hand for the February capture and test project in the Wildcat Hills.

COURTESY NEBRASKALAND MAGAZINE/NEBRASKA GAME AND PARKS COMMISSION

ON THE FRINGE

Nebraska's Continuing Battle for Rocky Mountain Bighorns

C&A Partners: Iowa FNAWS

Funding Partners: Bergara, Gilchrist Foundation

When most people think of bighorn country, their minds turn to the high country of Montana or the canyons of Colorado. Few picture the buttes of western Nebraska. Yet here, on the very eastern fringe of the Rocky Mountain bighorn's historic range, lives a small but determined population.

Bighorn sheep were extirpated from Nebraska in the early 1900s, but reintroduction efforts beginning in 1981 restored herds to the Pine Ridge and Wildcat Hills. Today, surveys estimate 279 bighorn sheep statewide, including lambs born in 2025.

The Pine Ridge herds, once numbering in the hundreds, are now on the brink, with fewer than 20 animals scattered among the Fort Robinson, Barrel Butte, and Sowbelly Canyon areas. Pneumonia linked to *Mycoplasma ovipneumoniae* (Movi) has devastated these groups.

By contrast, the Wildcat Hills in the southern Panhandle have become Nebraska's stronghold. Surveys in 2025 counted more than 260 animals here, with the Hubbard's Gap herd alone topping 220 and Cedar Canyon supporting around 40. Thanks to the Nebraska Game and Parks Commission (NGPC) and the support of the Wild Sheep Foundation's Grant-In-Aid program, a fight for their future continues.

That fight took a significant step forward in February 2025, when NGPC biologists captured and tested 36 bighorn sheep in the Wildcat Hills. Some were recaptured to track ongoing health status, while others were newly collared.

"We continued that surveillance to see if these sheep stay clean, and there are always some uncollared ones we want to get collared," said Todd Nordeen, NGPC's Big Game Research and Disease Program Manager. "Some of the blood work did show exposure, so Movi is still in the population, but those sheep have been able to overcome it this past year."

More captures are planned in fall 2025, and NGPC is already preparing for the next phase of work.

"Our plan right now is to capture all of the Pine Ridge sheep, which number less than 20 animals, so we can better understand their health status and options for the future," Nordeen said.

One idea beginning to take form is creation of

a specialized restoration facility in western Nebraska. The design would allow biologists to hold sheep for extended testing, separating animals carrying Movi from those that consistently test negative. Healthy animals could then be built into a clean-source herd for reintroduction.

Nebraska is also making strides on the issue of roadkill, which remains a lingering problem along Nebraska Highway 71 in the Wildcat Hills. The new GPS collars are helping identify where crossings occur most frequently, which informs a feasibility study on wildlife overpasses or under-

passes, supported by a WSF letter of endorsement.

This science-driven management extends beyond research. Thanks to decades of herd monitoring, habitat restoration, and strict disease oversight, Nebraska offers hunters a once-in-a-lifetime lottery bighorn sheep tag for residents and a conservation permit tag auctioned to raise funds for future projects.

"We're glad to stand with Nebraska in all of their efforts to restore their population of Rocky Mountain bighorn sheep and help ensure wild sheep thrive from the Pacific Coast to over in Nebraska at the edge of the Great Plains," said Gray N. Thornton, President & CEO of WSF.

Together, these efforts reflect Nebraska, WSF and its chapters and affiliates determination to give bighorn sheep every chance to thrive from collaring and health checks to innovative solutions that keep these herds on this landscape on the easternmost edge of their range.

"We continued that surveillance to see if these sheep stay clean, and there are always some uncollared ones we want to get collared."

***Todd Nordeen
NGPC's Big Game
Research and Disease
Program Manager***



Jamie Begay glassing the San Juan River Canyon during the capture, collar, and test operation held in March 2025. INSET: Two hobbled and blindfolded ewes getting sampled and collared.

COLLARS, DRONES, AND HOPE

Protecting Navajo Nation's Desert Bighorns

C&A Partners: Navajo Nation Department of Fish and Wildlife

Funding Partners: WSF Midwest

On the sweeping mesas and canyons of the Navajo Nation, desert bighorn sheep are a symbol of survival. Once reduced to just 34 animals along the San Juan River in the late 1990s, the herds rebounded to more than 600 by 2013. But the respiratory pathogen *Mycoplasma ovipneumoniae* (Movi) has since crashed two of those populations.

"There are many challenges for desert bighorn sheep in this region, and we're committed to working for their long-term survival through research and conservation principles," said Jessica Fort, wildlife biologist with the Navajo Nation Department of Fish and Wildlife.

That fight gained significant momentum in 2024 and 2025, thanks to the Wild Sheep Foundation's (WSF) Grant-In-Aid support.

The new funding allowed for a major capture effort in January 2025. Biologists captured 60 bighorn sheep, deploying 50 new GPS collars split evenly between rams and ewes, while re-testing 10 already collared animals.

Each capture also included swabs for Movi testing, with positive samples sent for strain-typing.

"With WSF's funding, we're collaring desert bighorn sheep right where they come closest to domestic flocks," Fort said. "That's giving us the clearest picture yet of where the risks are and where we can act."

Among those leading the field effort is Navajo Nation member and Colorado State University graduate student Jamie Begay, whose master's research focuses on bighorn sheep movements and disease risk. Her work analyzing collar data and identifying overlap with domestic sheep adds another crucial scientific perspective and deep local knowledge to the project.

Another aspect of the project is drone surveys along the San Juan River. Flying within a 10-mile buffer around known bighorn ranges, the surveys documented the presence and size of nearby domestic sheep bands.

Combined with GPS collar data from both wild and recently collared domestic animals, these surveys inform advanced risk models directly.

"Navajo Nation spans 17.5 million acres, which

is bigger than West Virginia," Fort said.

That vast scale means the project isn't just about collars and lab tests. It also relies on engaging tribal and neighboring communities across Arizona, Utah, and New Mexico. Outreach efforts include presentations and appearances at various events such as the Sportsman Expo in Window Rock to increase knowledge on the bighorns.

The 2025 captures, collars, and surveys are already delivering new data on how Navajo Nation bighorns move, where they intermingle with domestic sheep, and how disease risks can be mitigated.

"We're just starting to delve into a bunch of information we've never had before, which we believe will be a huge help moving forward," Fort said.

Kevin Hurley, Vice President of Conservation - Emeritus for WSF,

emphasized that supporting projects like the Navajo Nation's bighorn recovery efforts not only strengthens local stewardship but also ensures wild sheep remain on the landscape.

"Working together is the only way to put and keep wild sheep on the mountain."

From near disappearance to a new fight for survival, desert bighorns endure as part of the Navajo Nation. Thanks to WSF's investment in collars, drones, and disease management and Navajo Nation's conservation commitment, hope is once again rising through the canyons.

"With WSF's funding, we're collaring desert bighorn sheep right where they come closest to domestic flocks. That's giving us the clearest picture yet of where the risks are and where we can act."

Jessica Fort, Navajo Nation Department of Fish and Wildlife



	Level (inch)	Rain (inch)	Rain (inch)	Level (inch)	Tank Level (inch)	Capacity Estimate	Change in Tanks
	4/30/2025	May	YTD	5/29/2025	5/29/2025	5/29/2025	
nyon New # 4 (Cleo)	24.6	0.79	1.72	23.7	-0.9	80%	-3.66%
nyon New # 2	22.2	1.10	2.18	23.8	1.6	88%	7.21%
Bares #3)	21.5	0.29	0.29	21.1	-0.4	78%	-1.86%
	26.9	1.77	1.79	27.3	0.4	100%	1.49%
#3 (Matt Brown)	21.4	0.81	2.70	21.0	-0.4	75%	-1.87%
	25.2	1.02	1.50	25.6	0.4	95%	1.59%
	26.2	1.56	3.69	26.5	0.3	98%	1.15%
EP #1)	20.3	1.04	1.42	23.6	3.3	80%	16.26%
	20.4	0.45	0.62	20.2	-0.2	81%	-0.98%
Ford	15.5	0.16	0.67	15.5	0.0	55%	0.00%
Hanging Basin	33.3	0.81	1.42	38.1	4.8	98%	14.41%
Heave	18.8	1.30	1.30	26.0	7.2	100%	38.30%
High	26.0	0.58	0.58	26.0	0.0	100%	0.00%
Junip	25.9	0.34	0.34	25.3	-0.6	94%	-2.32%
K	20.4	1.44	2.22	24.7	4.3	91%	21.08%
	20.8	1.40	2.17	25.7	4.9	93%	23.54%
	20.03	0.03	0.03	N/A		83%	N/A
	20.72	0.72	0.72			88%	0.00%
	20.00	0.00	0.00			96%	-1.40%
	20.00	0.00	0.00			97%	8.70%

To date, nearly 40 Ranchbots have been deployed and are monitoring Nevada's guzzlers and more are planned

RANCHBOT

A Lifeline for Nevada's Desert Bighorns

C&A Partners: Fraternity of the Desert Bighorn

Funding Partners: WSF Midwest

He stood at the guzzler, ribs showing through his hide, hair rough and dull, every movement slow and shaky. The old desert bighorn ram looked as if he might collapse where he stood.

Only when longtime hunter-conservationist Clint Bentley, board member of both the Wild Sheep Foundation and Nevada's Fraternity of the Desert Bighorn, stepped closer did the complete picture emerge. All around the basin, 85 desert bighorn sheep pawed the dirt in frustration.

The trough was clogged, leaving only a damp pocket of mud.

Moments like this are why technology matters. What Bentley stumbled upon when riding out to check on a guzzler in 2000 can now be anticipated, even prevented, thanks to RanchBot remote monitoring systems.

RanchBot is a solar-powered, satellite-linked sensor that tracks rainfall and water levels at remote desert guzzlers in real time.

"It's been a game changer," Bentley said. "Instead of finding dead sheep, we can get there before it becomes an emergency."

Supported in part by a Grant-in-Aid from the Wild Sheep Foundation, RanchBot units provide real-time data on water levels, rainfall, and storage drawdown at dozens of guzzlers scattered across Nevada's deserts. Where once sheep stood helpless at an empty trough, managers can now respond, before a crisis unfolds.

Nevada is the nation's driest state, where even a "good" year brings only four inches of rain and seldom evenly. One ridge may see inches while a nearby gulch records barely a tenth. For decades, maintaining more than 150 guzzlers in a functional state required costly helicopter flights or backbreaking hikes into rugged terrain.

A clogged pipe or cracked tank might go unnoticed for weeks, sometimes with fatal consequences.

RanchBot has changed the equation. Each unit links to satellites, sending water data directly to phones or computers. The insights are striking. In a single year, one guzzler may log less than 0.12 inches

of rain while another, in the same range, records over five inches.

In July 2025 alone, data showed some sites were nearly dry while others overflowed. Without RanchBot, those differences would remain invisible and potentially deadly.

Equally telling are drawdown rates. When usage suddenly spikes, managers recognize the telltale signs of sheep crowding one guzzler. They can act before water runs out.

There are currently 38 Ranchbots installed with plans for 40 more to get crucial real-time coverage of water catchments.

Looking back, Bentley remembers that day in 2000 vividly. After clearing the clogged line in the presence of the massive, thirsting herd of desert bighorns and the big, old ram, water finally filled the tanks again.

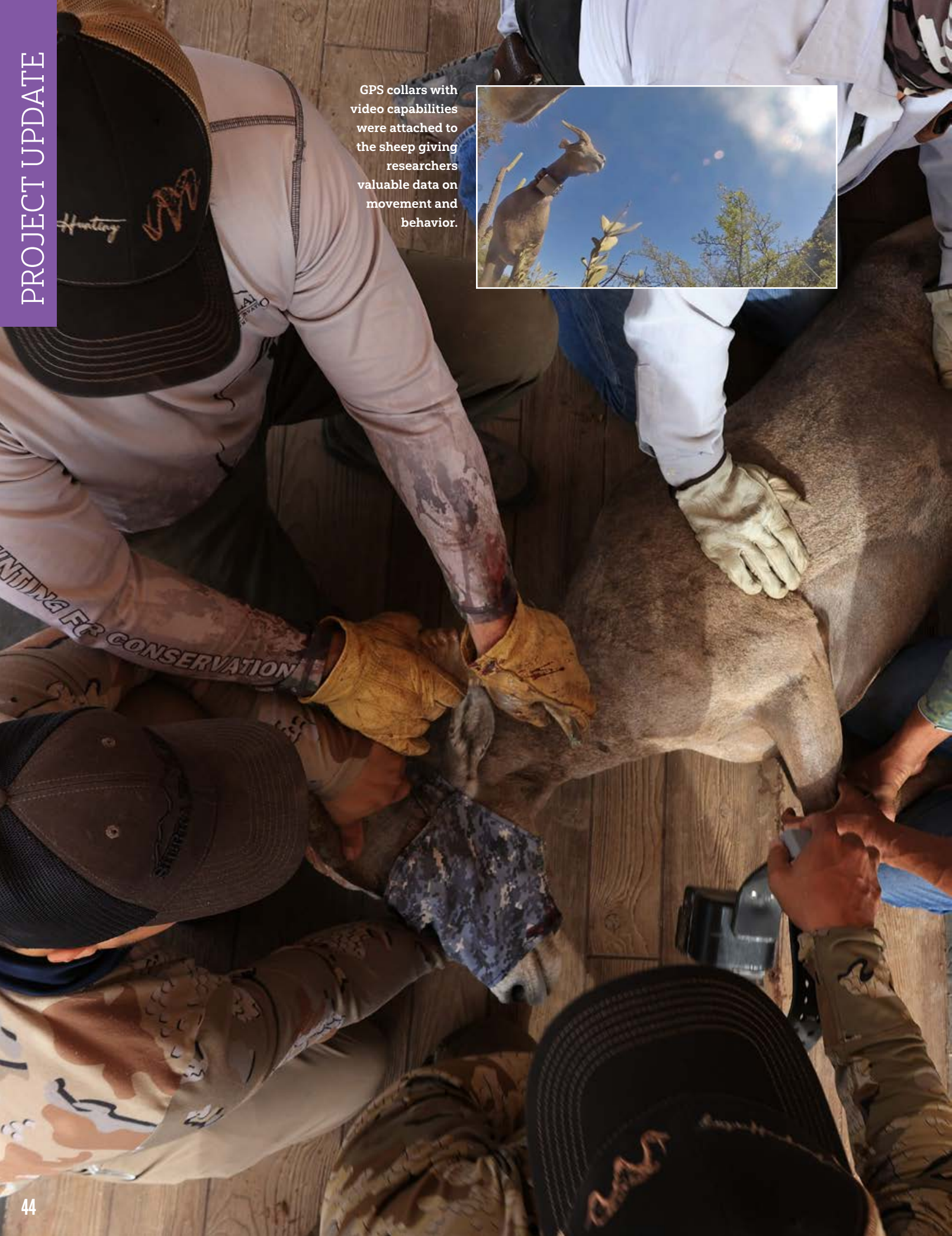
"He looked at me, and then he just put his head down, drank and drank and drank. He looked up for a moment and then back down and drank again," Bentley recalled. "When he finally turned to walk away, he looked like a million dollars. And that happened just by getting hydrated."

The rest of the herd did the same, consuming more than 280 gallons overnight.

Today, thanks to the watchful eyes of conservationists and the technology they've embraced, countless desert bighorns will have the chance to walk away from a guzzler stronger, hydrated, healthy, and ready to face life in one of America's harshest environments.

RanchBot is a solar-powered, satellite-linked sensor that tracks rainfall and water levels at remote desert guzzlers in real time. "It's been a game changer," Bentley said. "Instead of finding dead sheep, we can get there before it becomes an emergency."

GPS collars with video capabilities were attached to the sheep giving researchers valuable data on movement and behavior.



WATER, SPACE, AND SHADE

Tracking Bighorn Sheep in Sierra El Álamo

C&A Partners: Sonoran Wildlife Foundation

Deep in the shadows of a limestone cave in Sonora's Sierra El Álamo, a desert bighorn ewe waited out the midday heat. For researchers reviewing video collar footage, it was an intriguing insight into how sheep cope with the desert's extremes.

"One of the biggest surprises of our research is just how much the sheep used caves," said Dylan Stewart, a Texas A&M Ph.D. student whose dissertation focuses on Sierra El Álamo sheep ecology.

"We started noticing GPS data gaps at midday in summer, and when we paired that with video footage, we realized those missing fixes were happening when sheep were moving into caves. That's when it clicked that these weren't random losses, they were animals finding thermal refuges underground."

The discovery stemmed from a Wild Sheep Foundation (WSF) Grant-In-Aid project that supported refurbishing GPS collars and outfitting desert bighorns with video collars. These tools allowed researchers to follow movements in near real-time while capturing daily behaviors.

"We can now receive GPS locations twice a day and pair those with the video footage from an attached camera that films for 15 seconds three times daily," said Stephen Webb, research scientist with Texas A&M University, and Stewart's Ph.D. adviser.

"That combination tells us not just where the sheep are, but what they're doing and whether they're feeding, bedding, or seeking shade in caves."

The collars are helping answer questions central to desert bighorn recovery: how well translocated sheep adapt, what habitats they select, how and where they disperse, and how limited water can be best distributed.

Data shows that rather than wandering aimlessly after release, Sierra El Álamo sheep quickly integrate with resident herds, giving managers a clearer picture of group dynamics and habitat use.

Sierra El Álamo spans more than 27,000 hectares (around 67,000 acres) and has become one of Mexico's key desert bighorn restoration areas. Since 2017, the Artee family, local landowners, have overseen releases and invested heavily in catchments

and drinkers across their property. By the end of this fall, more than 300 sheep will have been released into free range, securing the range's role as a cornerstone of Sonoran restoration.

"These sheep are telling us where the best water catchments are, how far they'll travel, and what features matter most," Webb said. "That's information managers can apply everywhere from Nevada to Coahuila."

Water availability is central in management decisions. Placing catchments where sheep can access them efficiently helps conserve energy and avoid heat stress.

Still, managers must weigh trade-offs such as terrain, distance, and predator exposure. Understanding these dynamics will guide even better design and placement for desert bighorns.

"Every collar, every data point and every video snippet are pieces of a bigger puzzle," Stewart said.

In a region where poaching and habitat loss once drove desert bighorns to the brink, the image of a ewe stepping from a cave to drink at a catchment is a harbinger of a good future for her kind Southwest-wide.

The lessons from Sierra El Álamo may ripple far beyond Sonora, showing how science, landowners, and hunters together can map a future where desert bighorn sheep reclaim their rightful place on Mexico's mountains and beyond.

"These sheep are telling us where the best water catchments are, how far they'll travel, and what features matter most. That's information managers can apply everywhere from Nevada to Coahuila."

Stephen Webb, Texas A&M University

Collaboration among the Wild Sheep Foundation, Kyrgyz stakeholders and interested researchers has already led to the launch of a hunter-based disease surveillance scheme in Kyrgyzstan and an initial assessment of the sarcoptic mange threat.



HUNTERS AS SCIENTISTS

Tracking Disease in Kyrgyzstan's Ibex and Argali

C&A Partners: Ilbirs Foundation

Many hunters in Kyrgyzstan are now carrying more than rifles into the mountains. In their packs are slips of filter paper called “Nobuto strips” that may prove just as vital to conservation as any other harvest data collected.

Each strip of dried blood reveals whether a Siberian ibex or Tian-Shan argali has been exposed to sarcoptic mange, a parasitic disease that can cripple herds and threaten rural livelihoods.

This concept of turning hunters into citizen scientists grew from years of collaboration. Dr. Martin Gilbert of Cornell University initiated Kyrgyzstan's wildlife health surveillance system in 2017, with support from the Wild Sheep Foundation (WSF) and the Kyrgyz Ministry of Natural Resources.

When mange-related ibex deaths rose, Gilbert enlisted a European consortium with decades of experience in mountain ungulate health. Among them was Dr. Gregorio Mentaberre, Associate Professor at the University of Lleida in Spain. His team adapted diagnostic tools designed for livestock into something rugged enough for Kyrgyz peaks.

Together with Cornell, WSF Affiliate the Ilbirs Foundation, and Kyrgyz veterinary institutes, they refined a system where hunter-collected Nobuto strips could be tested for antibodies, enabling disease surveillance even in remote terrain.

For Kurt Alt, WSF's Conservation Director of Montana & International Sheep & Goat Programs, it's a powerful example of hunters as conservation partners.

“Every animal a hunter takes becomes a data point for science and management,” he said.

Sarcoptic mange, caused by the mite *Sarcoptes scabiei*, is small yet devastating. Infested animals, scratch themselves raw, lose body condition, and in cold winters, often die.

Dr. Peregrine Wolff, former WSF board chair and Executive Manager of the Wildlife Disease Association, has seen the toll firsthand.

“Yes, mange can be a big problem, and it can be fatal,” she said. “Animals spend so much energy scratching and rubbing that they lose body condition, and in harsh winters, they can no longer maintain a stable internal body temperature.”

Wolff said this is a multi-faceted issue. “This

isn't just a conservation issue,” she said. “It's a One Health issue. Mange moves between domestic herds and wild ungulates, so outbreaks affect biodiversity, rural livelihoods, and cultural traditions.”

In Kyrgyzstan, reports of sarcoptic mange have been increasing in the Naryn and Issyk Kul regions, highlighting the urgency of monitoring both wild and domestic herds.

Although eradication has never been achieved in wild populations, Wolff stresses that decreasing prevalence is possible.

“Our goal isn't to wipe mange off the map because that's unrealistic,” she said. “What matters is monitoring, understanding where

it's spreading, and keeping populations stable. With good data and local involvement, we can prevent devastating crashes and help herds coexist with the disease.”

Alt said this is a strong example of conservation awareness rising in Central Asia, benefiting wildlife, local people, and international hunters.

“There are some great things happening in Central Asia across several nations. This gives hunters a chance to see the connection between research and conservation firsthand.”

In Kyrgyzstan's mountains, every harvested animal now carries two legacies: memories for the hunter, and knowledge for the herds that remain.

Through the support of WSF's Grant-in-Aid program, these efforts are scaling up to secure the future of wild sheep and goats across Kyrgyzstan.

“There are some great things happening in Central Asia across several nations. This gives hunters a chance to see the connection between research and conservation firsthand.”

Kurt Alt, WSF Conservation Director of Montana and International Sheep & Goat Programs



Desert bighorns utilizing the Upper Blue Sheep water catchment.



FROM TANKS TO TRAILS

How Water Opens the Desert for Sheep

C&A Partners: New Mexico WSF

Funding Partners: Bass Pro Shops and Cabela's Outdoor Fund, WSF Midwest

Outside Socorro, New Mexico, the land has always tested what can survive there. For desert bighorn sheep and other wildlife in the Box Recreation Area, reliable water and healthy habitat can mean the difference between thriving herds and struggling ones.

Recently, the 2025 Desert Bighorn Sheep raffle tag winner, a bowhunter from Arizona, harvested a mature ram in the Chupadera Mountains in this area. That success marks the sixth ram taken there since the herd's expansion, a clear sign of how water projects and habitat improvements are paying off for both wildlife and hunters.

That's why the Bureau of Land Management's (BLM) Socorro Field Office, with Wildlife Biologist Carlos Madril, launched the La Caja Wildlife Habitat Restoration Project, supported in part by the Wild Sheep Foundation (WSF) and its New Mexico chapter.

"If you want sheep and other wildlife to use these landscapes, you've got to give them dependable water and quality habitat. This is about making sure the land can support these animals year after year," Madril said.

In 2025, crews and volunteers completed key improvements. New water tanks and a 1,000-square-foot catchment system were installed to ensure a steady supply of water.

Pipelines and drinkers spread that water across the landscape, connecting isolated areas. Native vegetation and pollinator plants were seeded to restore ground cover and improve forage. Erosion-control structures like rock gabions were built to stabilize soils. Abandoned mine openings were closed with bat-friendly gates to improve safety and protect habitat.

"This year we were able to get those tanks in, get the catchment built, seed the disturbed areas, and finish the erosion work," Madril said. "It was a big push, and it makes a huge difference for sheep and all the other wildlife out there."

For desert bighorn sheep here, the most significant limiting factor is water with adjacent healthy habitat. Without them, they are forced into marginal terrain or risky crossings in search of resources. By placing water systems in the right spots,

managers don't just provide a drink; they unlock entire landscapes.

With pipelines carrying water from northern tanks to the southern reaches of the Box Recreation Area, sheep now have access to more prime range. This expansion is helping herds move south of Highway 60 into the Chupadera Mountains and onward into Devil's Backbone, reconnecting fragmented populations and strengthening genetic diversity.

Noting the power of partnerships, Madril said BLM staff alone could not have completed the project at this scale.

"Healthy sheep herds, healthy landscapes, and opportunities for people to see and enjoy these animals. Every time you put in a water system like this, you're making an investment that pays back for decades," he said.

For Madril, this work is personal as well as professional. He has seen the difference such projects make with desert bighorn sheep using areas they hadn't touched before, lambs surviving brutal summers, and hunters and wildlife watchers alike benefiting from stronger herds.

"This is a prime example of the power of partnerships and bringing people, agencies and interests together for the cause of wildlife conservation," said Corey Mason WSF Executive Vice President of Conservation and COO.

The Socorro project stands as a reminder that real conservation leaves a lasting legacy on the land and in the lives it touches, both of humans and wildlife alike.

"If you want sheep and other wildlife to use these landscapes, you've got to give them dependable water and quality habitat. This is about making sure the land can support these animals year after year."

Carlos Madril, BLM Socorro Field Office, Wildlife Biologist

Field Technician Chris Procter performs testing on a captured ewe along the Fraser River in British Columbia.



MORE IMPACT

Additional projects funded by WSF Grant-in-Aid for Fiscal Year 2024-2025

Landscape Level Disease Mitigation – Fraser River (British Columbia)

Along the Fraser River, California bighorns persist on rugged breaks and grasslands where survival is never easy. Though disease and habitat pressures remain, years of steady monitoring, translocations, and collaboration are helping these herds hold their ground. Now in its seventh year, the project continues to track *Mycoplasma ovipneumoniae*, boost lamb survival, and strengthen resilience through partnerships with First Nations, agencies, and outfitters. The Fraser effort embodies a long-term commitment to wild sheep.

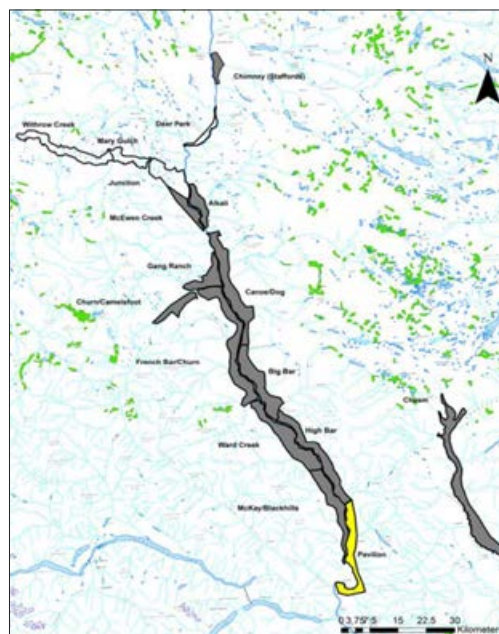
C&A Partner: Wild Sheep Society of British Columbia

Grotto Mountain Logging & Mechanical Treatment (Alberta)

Encroaching conifers are closing off critical winter range on Grotto Mountain, pushing Rocky Mountain bighorn sheep into unsafe and unsustainable habitat. Forage is sparse, predators edge closer, and sheep are forced toward dangerous highways. The Grotto Mountain Mechanical Habitat Enhancement project answers with decisive action by cutting and piling trees, salvaging timber, reseeding with native plants, and reducing wildfire fuels. Over several years, this effort will reopen critical bighorn winter range and provide safer, more secure habitat for the herd.

C&A Partner: WSF Alberta | **Funding Partners:**

Washington WSF, Idaho WSF, Oregon WSF, Rocky Mountain Bighorn Society, Wild Sheep Society of British Columbia, Utah WSF, Midwest WSF, Montana WSF, Texas Bighorn Society, Arizona Desert Bighorn Sheep Society, Iowa FNAWS, Eastern Chapter WSF, New Mexico WSF, Bryan Bartlett



Proposed and completed Fraser River treatment units. Shaded gray treatment units are where treatments have been completed as of April 2025. Yellow shaded is where treatment is planned for 2025/26.

Feasibility Study of Possible Stone's Sheep Transplant (Takla First Nation, British Columbia)

In the Takla First Nation's ancestral mountains, much of the historic range of Stone's sheep now lies empty. This feasibility study funded by a Wild Sheep Foundation Grant-In-Aid explored the potential for their return by mapping habitat, assessing candidate release sites, and identifying possible source populations. By combining traditional knowledge with Western science and working alongside governments and NGOs, the Takla First Nation is reclaiming stewardship, renewing cultural connections, and laying the groundwork for one day restoring Stone's sheep to their lands.

C&A Partner: Wild Sheep Society of British Columbia



Strain Typing in Colorado

Most bighorn sheep die-offs in Colorado bear the hidden mark of *Mycoplasma ovipneumoniae*, alongside other respiratory pathogens. Led by Dr. Karen Fox at Colorado State University, researchers are strain-typing more than 1,300 archived samples from herds statewide, uncovering how strains spread, when new ones emerge, and whether livestock connections play a role. By linking pathogen profiles with herd performance, Dr. Fox's work enhances manager's ability to anticipate outbreaks, shape interventions, and safeguard Colorado's iconic bighorn sheep.

C&A Partner: Rocky Mountain Bighorn Society | **Funding Partner:** WSF Midwest



Volunteers from across the country converged on the Salmon River in Idaho for the February 2025 lamb survey as part of the Tri-State Project.

PHOTO COURTESY SILVERLINE FILMS

Collaborative Effort: Tri-State (Washington–Oregon–Idaho)

On the vast ranges of Washington, Oregon, and Idaho, bighorn sheep survival depends on cross-border coordination. The Tri-State Project unites agencies and NGOs to expand test-and-remove programs, collar herds, and track disease dynamics. While several herds have faced setbacks from *Mycoplasma ovipneumoniae*, timely removals of carriers are helping reduce losses and protect lamb survival. Together, these efforts are moving populations from repeated crises toward recovery with consistent boots-on-the-ground work.

C&A Partners: Idaho WSF, Oregon WSF, Washington WSF

Funding Partners: Bass Pro Shops and Cabela's Outdoor Fund, SITKA Ecosystem Grant

East Cliffs Addition to Blue-Eyed Nellie WMA (Montana)

Above the Anaconda Valley, sheer cliffs rise where Rocky Mountain bighorn sheep cling to survival. Yet this critical 31-acre parcel (the last unprotected stretch of range) faced imminent development. The East Cliffs Addition secures it forever, linking to existing Montana Fish, Wildlife, and Parks adjacent Wildlife Management Area lands and preserving open space. By protecting lambing habitat and migration corridors while expanding public access for hunters and hikers, this project strengthens the foundation for a thriving local bighorn sheep population.

C&A Partner: Montana WSF

Funding Partners: Bass Pro Shops and Cabela's Outdoor Fund, Weeden Foundation

ION Partnership (Idaho–Oregon–Nevada)

In the remote canyonlands where three states converge, California bighorns face disease pressures and declining numbers. Launched in 2022, the ION Partnership unites WSF chapters, agencies, and affiliates in a coordinated tri-state effort. Through proven Test & Remove methods, disease surveillance, translocations, aerial and ground surveys, and predator monitoring, the project is tackling *Mycoplasma ovipneumoniae* head-on. By aligning tools and expertise across borders, this initiative is creating a model for restoring resilience to one of the West's most vulnerable wild sheep populations.

C&A Partners: Idaho WSF, Oregon WSF, Elko Bighorns Unlimited, Nevada Bighorns Unlimited - Reno, Nevada Bighorns Unlimited - Fallon, Nevada Bighorns Unlimited - Midas | **Funding Partners:** McElevy Family Foundation

Expanded Water Distribution: Sierra El Álamo (México)

At Sierra El Álamo (below), one of Sonora's most crucial bighorn restoration sites, WSF Grant-In-Aid funding helped expand a gravity-fed distribution system to provide reliable, year-round water. Building on years of translocations and catchment work, the project ensures hundreds of desert bighorn sheep have the resources to thrive. By securing critical habitat and reducing heat stress, the effort offers a model for desert bighorn recovery across northern Mexico's rugged mountains.

C&A Partners: Sonoran Wildlife Federation





Six-month old lamb being processed near the National Elk Refuge in Jackson, WY. This lamb was caught as newborn the previous spring.

PHOTO BY JACK GAVIN

sheep are dealing with many climate pressure challenges. Continued sampling ensures these globally unique herds remain healthy, while the Yukon WSF Chapter and partners carry forward the promise of sustainable management of wildlife in the region.

C&A Partner: Yukon WSF

Chronic Carriers Evaluation Tool (Wyoming)

Sometimes the gravest threat cannot be seen. *Mycoplasma ovipneumoniae* can persist silently in "chronic carriers," keeping herds trapped in cycles of disease. In Wyoming, an ongoing project is implementing a Chronic Carrier Evaluation Tool to help managers detect these hidden animals in the field. By pairing diagnostics with herd performance data, the tool guides science-based removals and strengthens long-term recovery. It's a breakthrough approach to protecting bighorn sheep health and future security.

C&A Partner: Wyoming WSF

Yukon Territory: 10 Years of Movi Sampling/Testing

For a decade, Yukon has led the charge in defending thinhorn sheep from disease. With support from the Wild Sheep Foundation matching funding from our Yukon WSF Chapter, nearly 900 sheep from mostly hunter-harvested samples have been tested for *Mycoplasma ovipneumoniae*. Every single result has come back negative. This clean record is a conservation triumph at a time when thinhorn

Texas Aoudad/Desert Mule Deer/Desert Bighorn Sheep Symposium

In the unforgiving canyons of West Texas, the fight for desert bighorn sheep has become urgent. At the 2025 Desert Bighorn Sheep Symposium in Alpine, TX, the Wild Sheep Foundation stood with biologists, landowners, and agencies to confront the rise of exotic aoudad, the shadow of *Mycoplasma ovipneumoniae*, and mounting habitat pressures. WSF's leadership and support helped unify voices around bold solutions. The gathering highlighted that the future of desert bighorns depends on science, collaboration, and determined stewardship across both private and public lands.

C&A Partner: Texas Bighorn Society

YOA Ungulate Enhancement (Yukon)

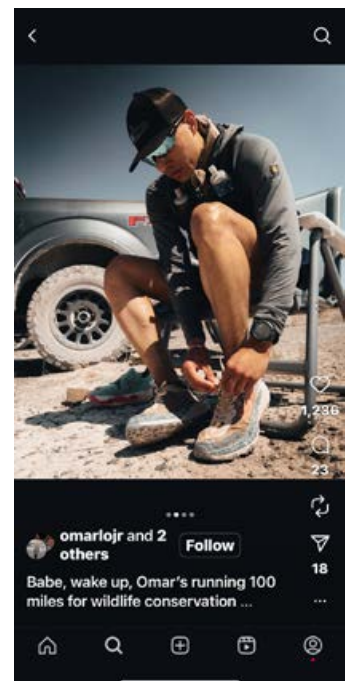
Across Yukon's wide-open ranges, Dall's sheep, moose and other mountain ungulates beckon hunters from around the world. The Yukon Outfitters Association, with support from the Wild Sheep Foundation's Grant-In-Aid, is investing in enhancement programs that balance predator management, habitat protection, and sustainable harvest. By funding on-the-ground efforts, from wolf management incentives to stewardship partnerships, this initiative strengthens Dall's sheep, moose, and caribou herds while honoring community ties to the land.

C&A Partner: Yukon Outfitters Association

Omar's Run: Guzzler Project with GoHunt (Nevada)

Under Nevada's relentless sun, water is life for desert wildlife. To meet this need, GoHunt's Omar Lopez (right) ran 100 miles in 2025 to raise funds for a new guzzler, a catchment system that will deliver critical water for bighorn sheep, deer, and countless species. Every dollar supports a 2026 guzzler build led by the Nevada Department of Wildlife to aid desert bighorn sheep and other wildlife in America's driest state.

C&A Partner: Fraternity of the Desert Bighorn



MULTI-YEAR PROJECTS

From Fiscal Year 2016-2017 through Fiscal Year 2024-2025

	FY 2016-2017	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021
PROVIDING HORN PLUGS TO STATE & PROVINCIAL GAME AGENCIES					
ROCKY CRATE CHAIR FOR WILD SHEEP DISEASE RESEARCH – WSU					
FRASER RIVER, BC, CALIFORNIA BIGHORN TEST & REMOVE					
BIGHORN SHEEP RESTORATION IN THE NEBRASKA PANHANDLE					
TRI-STATE MOVI TEST & REMOVE – ID, OR, WA					
CHRONIC CARRIERS AND BIGHORN POPULATION DENSITY/NUTRITION					
PRESCRIBED BURNS FOR STONE'S SHEEP IN NORTHEASTERN BC					
FIELD DETECTION CANINE DISEASE SURVEILLANCE – WD4C					
SIERRA EL ALAMO WATER DEVELOPMENT – SONORA, MEXICO					
CACI PATHOGEN SURVEILLANCE/ DISEASE SAMPLING – CENTRAL ASIA					
ION PARTNERSHIP – ID, OR, NV					
SIERRA EL ALAMO TRAP, TEST, TRANSPLANT – SONORA, MEXICO					

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Sorted by Number of Years and Total Funding

D-2021	FY 2021-2022	FY 2022-2023	FY 2023-2024	FY 2024-2025	TOTAL FUNDING (USD)
					\$90,920
					\$368,347
					\$390,000
					\$130,000
					\$686,000
					\$107,000
					\$307,087
					\$162,153
					\$115,000
					\$85,000
					\$519,450
					\$92,500
					\$3,496,313



TOTAL WSF CONSERVATION FUNDING DIRECTED 1983-2025

\$110,059,411*

Without the financial support from sportsmen and sportswomen, fish and wildlife agencies would have few to no conservation and management programs dedicated to wild sheep. There is no other durable funding model, let alone one that has contributed at this level.

Whether you are a sheep hunter, hope to be, or want to see this opportunity for your children, this map is your legacy.



**JOIN THE WILD SHEEP
FAMILY TODAY!**

***TOTAL INCLUDES:**

\$1,633,127 - International

\$3,108,213 - Multi-State Projects



WILD SHEEP FOUNDATION

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