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Corey Anco

Curator, Draper Natural
History Museum

Entering 2026, the Bighorn Basin Pinyon Jay Study had completed two field seasons and refined the trapping methods that make this work possible. But a strong limber pine cone crop in fall 2025 changed field conditions. With abundant natural food available, jays visited feeders less often, likely relying on cached seeds through the nesting season.

Our team responded by expanding nest-searching efforts—and the results were remarkable. At known colony sites, technicians Amber and Moira located nests and collected detailed measurements of nest sites and surrounding vegetation. At a newly identified site, signs of recent fledging led to a more intensive search. There, they documented more than 40 old and new nests, nearly doubling our inventory of known nest locations in one summer.

This issue also highlights our growing partnership with the Wyoming Game and Fish Department. Nongame Wildlife Biologist Frank Stetler joined the team at sites near Meeteetse and Thermopolis, linking our Bighorn Basin work to statewide research on Pinyon Jay movements and habitat. Along with Statewide Nongame Bird Biologist Zach Wallace, this collaboration is advancing understanding of the species' ecology and conservation needs in Wyoming.

Readers will also meet the first two Pinyon Jay round skins added to the Draper Natural History Museum collection and follow the remarkable two-year movements of one particularly fortunate bird.

As the team seeks support for a fourth year of fieldwork, every observation contributes to the larger Pinyon Jay Species Status Assessment: a statewide evaluation of the conditions shaping the species' future.



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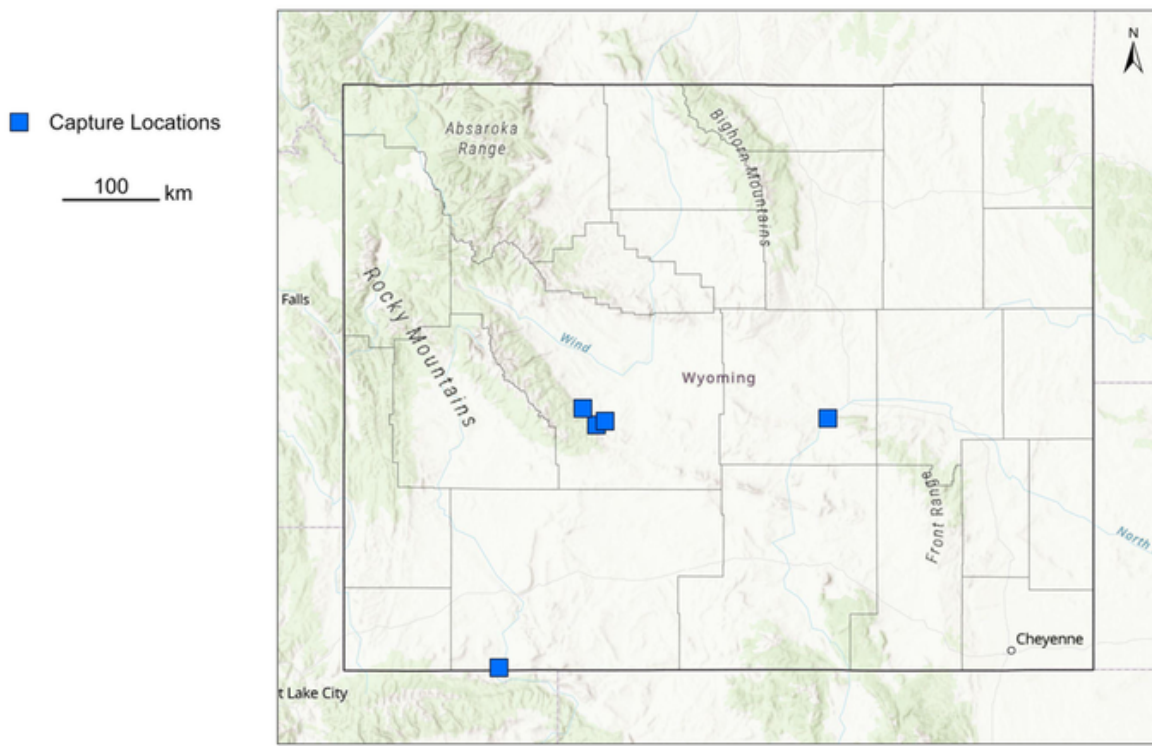
136
Banded Birds

5,276
GPS Points
Collected

67
Birds with
GPS Tags

808
Datasheets





Wyoming Game and Fish Department capture locations throughout the state.

Jays Across the State



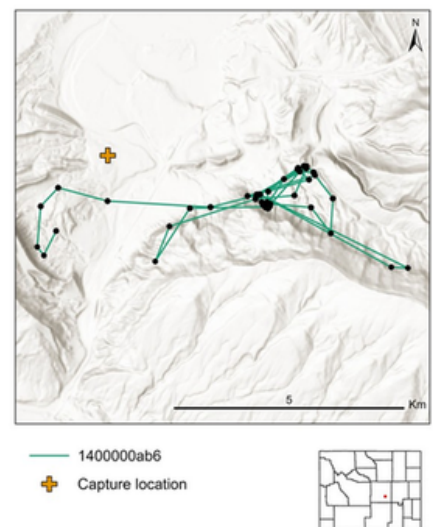
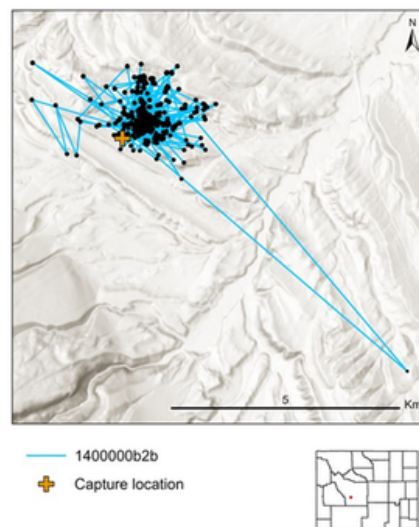
Frank Stetler

Nongame Project Biologist, Wyoming Game and Fish Department.

As many of you have learned from previous editions of this Journal, multiple wildlife researchers and managers are working to document Pinyon Jay behavior and habitat use in Wyoming for the first time, making this a very exciting time. The Wyoming Game and Fish Department (WGFD) and partners are using two key methods to boost our understanding and ability to manage and conserve Pinyon Jays: GPS tags and landscape-level surveys.

Similar to methods used in the Bighorn Basin, we have been attaching GPS transmitters to jays since 2024. While the first year's transmitters did not work as well as expected, one transmitter functioned for 290 days, or about 10 months, and showed us that during that time, the jay never strayed more than about 5.5 miles from the feeder where it was captured. In 2025, we switched to Druid Tech tags that collect data hourly, providing more insight into potential nest locations, roosting behaviors, and habitat associations.

Left: Use points (black dots) and trajectories (colored lines) of two Pinyon Jays tracked with GPS telemetry in Wyoming, 2025.





Pinyon Jays visiting a bait station near Flaming Gorge, courtesy of Frank Stetler.

This year, we deployed 14 transmitters, some of which were in a new location near Flaming Gorge. We are still processing movement data, and will turn to more habitat association and space use analyses as the months get cooler. Importantly, the hourly location data have allowed us to pinpoint 7 nests in 2026, all in juniper trees.

The movement data are incredibly useful for understanding habitat requirements for Pinyon Jays during the breeding season, but another knowledge gap in Wyoming is the distribution of breeding colonies. Thus, we partnered with the [Intermountain Bird Observatory](#) to conduct landscape level surveys across the state in areas that were predicted to be in the top 90% of suitable habitat according to 2 models. Surveyors follow the rangewide Pinyon Jay Working Group protocol in which 2 km by 2 km grids are searched for jays, and surveyors record any behavioral cues that indicate breeding.



Number and proportion of Pinyon Jay GPS telemetry locations within major vegetation classes at three Wyoming study sites, 2025.

Across both years, and with additional surveys conducted by WGFD and BLM biologists, we have visited 129 plots. Of those plots, Pinyon Jays have been sighted on 51, or 40%. We have found evidence of breeding (courtship behavior, breeding vocalizations, carrying nesting materials, birds at nests, presence of young, etc.) at 19, or 37% of these occupied sites.

The high detection rates confirmed to us that the landscape protocol works in Wyoming's habitats, and the number of breeding detections across the state are incredibly valuable pieces of information as we work through the Species Status Assessment process. We look forward to analyzing data, continuing to learn from partners, and applying the newly ascertained knowledge of Pinyon Jay ecology to our management and conservation in Wyoming. 🌿

Meet The Pinyon Jay Technicians

What they're up to

This summer, we are working as field technicians with the Draper Natural History Museum to support its collaborative Pinyon Jay research with UC Davis, Northwest College, the Bureau of Land Management, and the U.S. Fish & Wildlife Service. Beginning in May and continuing through late summer, we are surveying limber pine-juniper woodlands across the Bighorn Basin to locate both known and newly discovered Pinyon Jay nesting and foraging sites. At these locations, we record information on nest structure, nesting-tree characteristics, and the surrounding landscape. By collecting these data, we are excited to help project scientists better understand how Pinyon Jays use these woodlands and what conditions are most important for sustaining healthy populations of jays for years to come.



Amber Rogers

My name is Amber Rogers. I am a recent graduate of Northwest College and have found myself deeply involved with fields like ornithology and ecology. I was raised in Wyoming's arid landscape and have been curious about its ecology, even though I did not have a word for it, ever since I was a little girl. I loved spending time outside as a child, observing the quiet life around me hidden within vast open drylands. Despite this innate interest, I felt the idea of becoming a scientist beyond me; a field obtained only through many years of arduous work and one that has historically been dominated by men. This intimidated me greatly. My experiences and interactions with the scientific world as a Powell, Wyoming, resident, however, have taught me resilience, and quickly had me recognizing my potential as a student of STEM. Through this, I have discovered a world of opportunity and am proud to partake in this research project.

Moira Arthaud

While originally from coastal North Carolina, Cody has been my home for the past decade. Upon completing my B.S in Ecology, I am motivated to understand how climate change impacts the ecological processes and structures that support at-risk bird species. I'm also interested in how these patterns unfold across landscapes and the social-ecological processes that drive them. I am committed to being part of a scientific community working to reduce barriers in this field. I believe in a research culture where diverse knowledge systems enhance collaborative science and guide sustainable decision-making. Since my youth, the Draper has played a meaningful role in shaping my curiosity for this region, and I consider it a privilege to contribute to the understanding and conservation of Pinyon Jays and their habitat. Working alongside scientists and community members who care fiercely for these landscapes is a true gift.



Season Highlights



Moira Arthaud
Pinyon Jay Technician

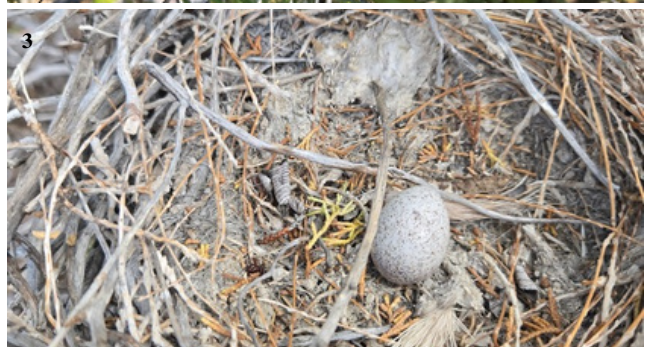
With the warmest days hopefully behind us, the summer is slowly rolling to an end, but the Pinyon Jay field season remains in full swing. At the start of the summer, the team had documented 44 Pinyon Jay nest locations throughout the Bighorn Basin. Since June, we've been revisiting each site to collect standardized measurements to help project scientists better understand the species' habitat requirements within pine-juniper woodlands. With nest-site selection patterns in focus, the team can begin to identify how key habitat characteristics may shift with environmental change and how Pinyon Jay populations may respond across the landscape.

Since June, we've been revisiting each site to collect standardized measurements to help project scientists better understand the species' habitat requirements within pine-juniper woodlands.

In the field, daily nest-site characterization surveys involve navigating to known nest locations using GPS coordinates and collecting a suite of standardized measurements describing the nest, the nest tree, and four paired random trees situated in the cardinal quadrants around the central nest tree. Nest-level data include measurements of nest dimensions, placement, and estimated age. Tree measurements capture morphological and structural attributes (e.g., height, canopy density, disease indicators) as well as landscape-level variables that describe the broader habitat setting.

While traversing the field to visit known colony locations, it is not uncommon to stumble upon new nests. For example, in late June, we unexpectedly located five additional nests embedded within a known colony location. One nest contained a failed-to-hatch egg, which the Draper Museum successfully collected for its archives.

So far, after a few hundred miles of hiking and thousands of feet of elevation gain, we have measured 53 known nests and 212 randomly paired trees, for a total of 5,936 recorded data points. Although this represents a major accomplishment, our work is far from finished. With large expanses of viable Pinyon Jay habitat across the region, our focus now shifts toward surveying new areas for signs of colony nesting. 🌲





New Horizons



Amber Rogers

Pinyon Jay Technician



While combing through limber-juniper uplands in hopes of discovering new nests in the middle of sweltering July, we were not expecting to find ourselves at the heart of an undiscovered colony! Within the next three weeks of our beginning efforts, we have managed to uncover forty-three new nesting sites, which is a 97% increase in our data pool. This wonderful addition to our work season will nearly double the data to be collected and analyzed, improving the accuracy and power of results. The significance of this is incredible since unfortunately so little is known about Wyoming's populations.

There are several aspects that we analyze and consider. With many potential nesting sites, it is important to ask the question: why this tree? Putting ourselves in the minds of these curious corvids, we have perhaps, though scantily, begun to understand what traits are preferable to a pair of breeding jays.

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We hypothesize that certain trees offer better coverage and stability for nesting platforms than others; for example, if one has too little foliage or too many small branches, a Pinyon Jay is likely to avoid it. Otherwise, most prefer south-facing sloped ridges and cozy junipers. Though there are many factors unknown, and our observations remain uncertain, we have improved our ability to identify nests and are excited to refine these skills as we continue summer-seeking efforts.



Contributing to these research efforts and collaborating with a unique team will have a positive impact on these incredible corvids but also on my future and character. I have loved working alongside these devoted people and am so appreciative for how this experience has encouraged my ever-expanding interest in wildlife. I have grown in bravery, strength, and continuously find myself inspired by the quiet and subtle deserts of Wyoming. I have made delightful memories that will last a lifetime out on the strenuous field with Moira. Thank you to the Pinyon Jay team for looking out for these wonderful and lively habitats. 🌲

Top to bottom: Juniper nest tree; The technicians encountered approximately 15 rattlesnakes, including snakes in the trees!; A young limber pine; Looking up through a juniper. All photographs courtesy Amber Rogers.



Making of a Museum Study Skin



Andrew Engilis Jr.

Curator, Museum of Wildlife & Fish Biology

University of California, Davis

Working in a vertebrate museum provides many challenges but few are as exciting as those faced in the lab. As a preparator of specimens, one needs to be prepared to preserve any kind of specimen in any kind of condition. With vertebrates, this means birds, mammals, reptiles, amphibians and fish. Preparing, storing, and using specimens is the role of modern museums and the job of museum scientists. Unfortunately, the museum preparator is a dying breed of scientists with the training and knowledge to preserve animals for research and education. It has been said that a museum preparator should be able to prepare a mouse to a moose with nothing but a jackknife!

Top: Andrew Engilis Jr. instructs Draper lab volunteers on creating a body with excelsior, a technique used on larger-bodied birds and mammals. Bottom (left to right): Photos illustrate the process of creating a roundskin from 1) skinning, 2) filling the brain and body cavities with cotton, and 3) as Irene Engilis (left) and Susan Bishop (right) demonstrate, pinning the specimen to dry.





In my 45 years as a museum scientist, I have prepared almost 8,000 specimens and every so often one receives a specimen that seems beyond the ability to be preserved. The phrase “destroyed beyond all recognition” is typically used when describing these mangled carcasses. I faced this dilemma when helping to teach specimen preparation at the Draper Natural History Museum in May of this year. While going through the freezers at Draper, we found many special specimens in excellent condition, a beautiful Ferruginous Hawk, a Northern Shrike, and the museum’s first well-documented Pinyon Jay. Those were quickly skinned and prepared as round skin specimens, as they were in beautiful condition. I noticed on a lab ledger that there was another Pinyon Jay in the freezer. I asked about that, and Draper Curator Corey Anco said, “Oh that one. That was a bird we found squashed on the highway. We kept it for tissue samples only.” Which means, collect some muscle, record the data associated with the specimen like date found, location, reproductive information, and then discard the specimen. Since there were so few Pinyon Jays in the Draper collection, I asked, “Can it be made into a study skin?” The answer was, “It was squashed by cars multiple times into a flat pancake so probably not.” Of course, I took that as a challenge to inspect the specimen and evaluate the damage.

Top: Fifty roundskins were prepared by Draper staff and volunteers during the 7-day workshop in May 2026. Bottom: Prepared by Irene Engilis, this adult Pinyon Jay (DRA.304.855) was the first well-documented specimen not sent off for taxidermy.





Left to right: Three stages in the preparation of the Pinyon Jay by Engilis—from the freshly thawed specimen (left), to the washed specimen (middle), to the finished prepared specimen (right).

Indeed, it was squashed like a pancake, not a single bone intact, eyeballs poking out (*top left photograph*). Recognizing the value of the specimen (dead Pinyon Jays are rarely found) I said, “No problem, it will take time, but I think I can prep it as a traditional round skin.” A bird in good condition would take about one hour to complete start to finish, but I knew this one would take a lot more time. I assessed the bird on a tray and wondered where to start. There were gaping holes where dried innards squished outwards, and the protruding eyeballs kept looking at me. So, I just started to isolate the skin from the mush and after about 90 minutes, I skinned the bird as best I could. It had stones and road grime embedded in its feathers and skin, so it needed to be carefully washed with soap and water, another 30 minutes. This was the make-or-break moment. Was the bird spoiled, will all the feathers fall out? It was impossible to know until I washed it. I proceeded to wash the delicate skin, and low-and-behold it stayed together (*top middle photograph*). Despite being run over by cars, it was actually a fairly fresh specimen; lucky for me. I knew now that all that was needed was to carefully dry the bird with a blow dryer and then sew skin flaps back together, recreate the skull, and then proceed to stuff the bird. It took me about two hours to complete the stuffing of the specimen. And it worked out! It was an immature Pinyon Jay and was the first of this age class for the Draper’s research collection (*top right photograph*). Some ask, when do you know when to tackle a specimen like this one? When is the time it takes worth the effort? The answer is, every specimen has value, and it is our job to preserve the present for the future, save as much of the specimen as possible, and don’t stop until it is done. That is what museum preparators do. That is who we are.

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In Wyoming, today’s specimens will document what is present at this time in our history. Each is a unique time capsule, with no two specimens the same. Locked in each specimen are the building blocks of feathers, fur, scales or skin, the animal’s DNA, its exposure to environmental contaminants, and even what it ate. All preserved for future generations of scientists and conservation biologists to unlock. To me, that is what makes the effort rewarding. 🌿



Final roundskin of the squashed Pinyon Jay (DRA.304.857).

Lucky #4: Two Years Across the Greybull

One bird, two GPS deployments, and a rare look at how food and habitat shape Pinyon Jay movements



Dr. Jason Riggio
Assistant Project Scientist,
Museum of Wildlife & Fish Biology
University of California, Davis

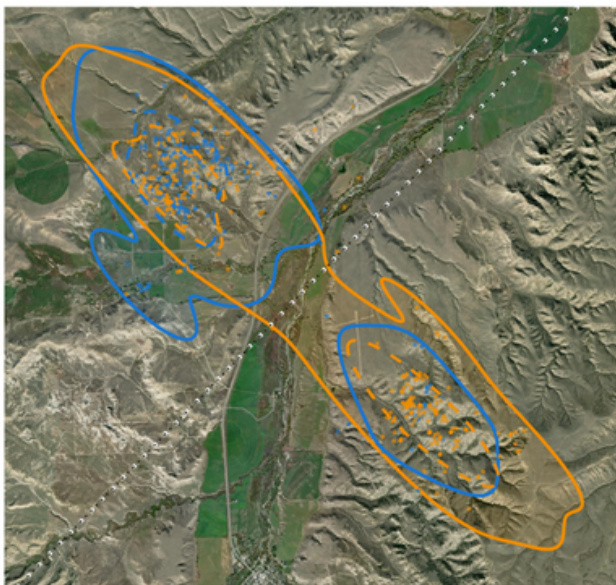
Some birds give us only a glimpse of their lives. Lucky #4 gave us a story. First captured and color-banded near Meeteetse in April 2024, this Pinyon Jay was recaptured often enough for us to recover two store-on-board GPS tags deployed in consecutive years. After careful quality screening, those tags provided 660 locations spanning nearly 22 months—an unusually detailed record from the same wild bird.

A familiar range, revisited and expanded

Lucky #4 returned to the same broad landscape in both tracking years. The GPS record revealed two repeatedly used pine–juniper areas on opposite sides of the Greybull River, connected by regular crossings through the river corridor. One area lies west of the river near a supplemental feeder; the other lies to the east in natural habitat.

A Familiar Range, Expanded in Year Two

Lucky #4 repeatedly used habitat on both sides of the Greybull River
Solid: annual range (95%) | Dashed: concentrated-use area (50%)
Dotted: analytical core-area divider



Tracking year 2024-2025 2025-2026

Tiles © Esri - Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, UPR-EGP, and the GIS User Community

Estimated ranges extend beyond the outermost GPS points because the analysis accounts for movement between fixes and the statistical uncertainty associated with estimating where the bird ranged.

HOME RANGE BY THE NUMBERS

10.1 km²

First-year annual range

13.1 km²

Second-year annual range

30% larger

Estimated annual range in year two

74% larger

Concentrated-use area in year two

The two annual ranges still overlapped strongly: about 83% of the first-year range was contained within the second-year estimate. Lucky #4 expanded its reach without abandoning familiar ground.

Seasonal range estimates told a similar story. During the first tracking year, Lucky #4's estimated seasonal range expanded from 9.0 km² in Summer 2024 to 17.7 km² in fall, then contracted to 2.5 km² in winter and 2.0 km² in Spring 2025. In the second year, its range again increased from 11.3 km² in summer to 18.2 km² in fall—the largest seasonal estimate—before remaining comparatively broad at 10.2 km² in Winter 2025–26. Its Spring 2026 range was estimated at 7.7 km², but that season was only partially sampled. The much larger second-year winter range coincided with abundant seed following the 2025 Limber Pine cone crop.

One bird, a wider question

Lucky #4 offers an unusually complete individual story—not a population-wide conclusion. Continued tracking will show whether other members of the Meeteetse Flock use the same core areas, respond similarly to cone crops, and favor the same habitat mosaic.

WHAT LUCKY #4 TAUGHT US

- **Familiarity and flexibility:** the bird returned to the same landscape but expanded its range in year two.
- **Natural foods matter:** use shifted east during and after an exceptional cone crop.
- **Heterogeneity matters:** intermediate woodland and open herbaceous cover were more important than maximum tree cover alone.

Food, movement, and a shifting routine

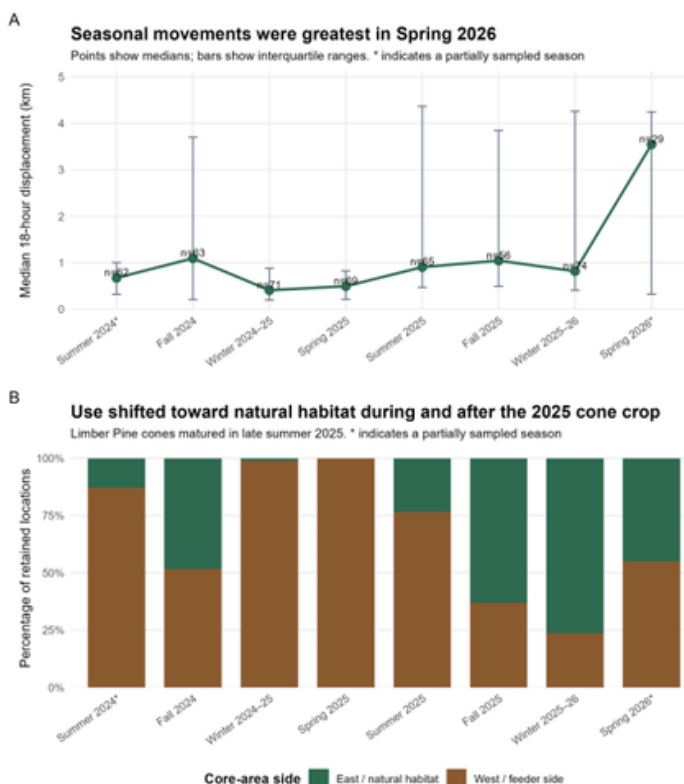
A productive Limber Pine year coincided with greater use of natural habitat east of the river

A shift after the 2025 cone crop

A large Limber Pine cone crop matured in late summer 2025, providing abundant seed through winter. During Winter 2024–25 and Spring 2025, nearly all of Lucky #4's locations were west of the Greybull River near the feeder. In the second tracking year, use of the eastern natural-habitat area increased from 23% of locations in Summer 2025 to 63% in Fall and 76% in Winter, indicating less reliance on the feeder-side area.

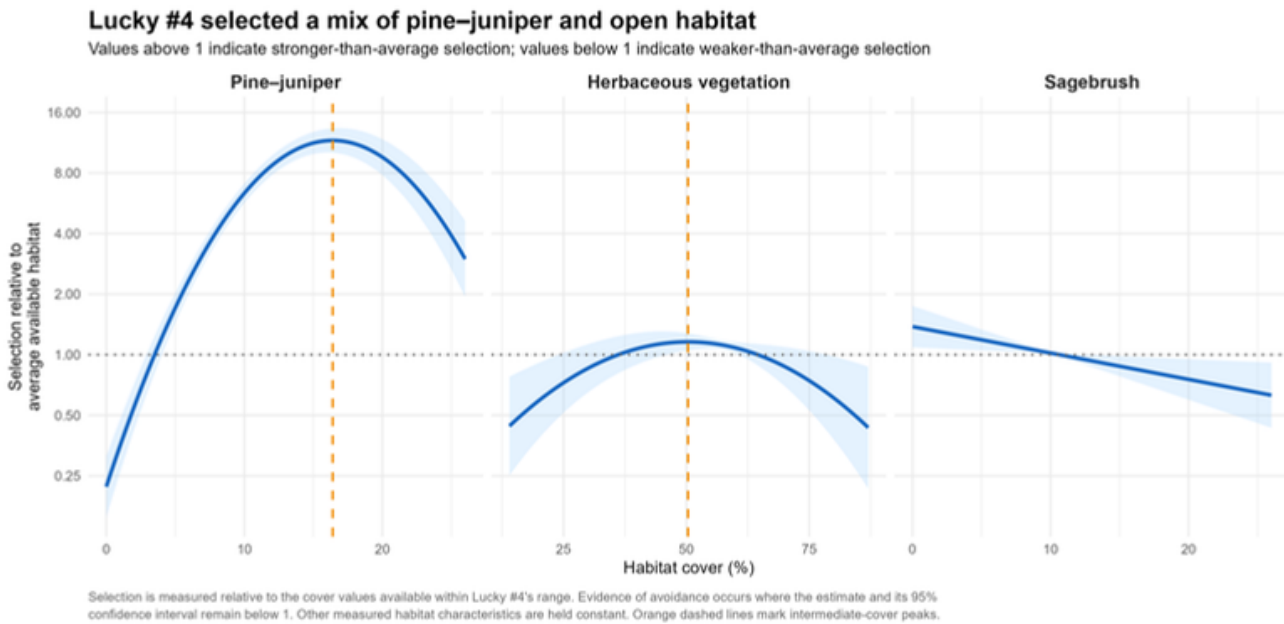
Movement patterns reflected this change. During Winter 2024–25 and Spring 2025, Lucky #4 typically moved only about 0.4–0.5 km between fixes, and the middle half of movements spanning approximately 0.2–0.9 km. In contrast, Summer 2025 through Winter 2025–26 included both short movements within each core area and longer movements consistent with travel between the western and eastern sides. Although median displacements were approximately 0.8–1.0 km, the middle half extended from roughly 0.4–0.5 km to 3.8–4.4 km. The wide interquartile bars reveal this variation between localized movements and longer trips across the landscape.

The timing is biologically suggestive: abundant cones may have allowed Lucky #4 to range more widely in natural habitat. But this is an observational record from one bird. We cannot separate the cone crop from weather, flock behavior, or other changes.



A landscape mosaic—not simply the densest woodland

Habitat selection compares where Lucky #4 was located with the habitat available within its tracked range. The clearest pattern was strong selection for intermediate pine–juniper cover, peaking near 17%. The bird also showed modest selection for intermediate herbaceous cover near 53%, consistent with use of openings mixed among woodland that may provide feeding or seed-caching opportunities. Selection declined as sagebrush cover increased: Lucky #4 generally favored areas with relatively little sagebrush, with evidence of avoidance above approximately 13% sagebrush cover. 🌿



Analysis based on 660 quality-screened GPS locations collected June 2024–April 2026. Range estimates account for autocorrelated movement; habitat selection compares used locations with available habitat within the tracked range.

Resources



[List of Banded Birds](#)



[Behaviors and Interactions](#)



[Datasheets](#)

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