

# Rangeland Center ANNUAL REPORT 2024



University of Idaho  
Rangeland Center



# Our Goals

The goals of the Rangeland Center originate with the 2012 Idaho legislative act that established the Center and charged it to:

1. Empower researchers and educators who strive to create insight and foster understanding for the stewardship and management of rangelands;
2. Work in union with external partners to focus research, education and outreach to produce solutions that are responsive and relevant to contemporary rangeland issues;
3. Engage partners and stakeholders to jointly provide leadership for discovery of new knowledge and create science-based solutions for rangeland management;
4. Provide objective and relevant rangeland information for individuals, organizations and communities;
5. Offer learning opportunities for land stewardship; and
6. Encourage and facilitate applied research to address specific issues and management challenges that arise on Idaho's diverse rangelands.



The Rangeland Center at the University of Idaho was established in 2012 by the Idaho State Legislature to address contemporary challenges facing Idaho rangelands and the communities that rely on them. The Center's interdisciplinary approach and emphasis on partnerships with agencies and organizations working on rangelands advances the study and management of rangelands in Idaho and the region. This annual Report summarizes activities conducted to address our mission, vision, and goals, following priorities laid out in our five-year strategic plan.



# Rangeland Center Staff



Jason Karl  
*Director*



Tim Prather  
*Senior Associate Director*



Eric Winford  
*Associate Director*



Patience Mateer  
*Center Administrative Support*



Jacqueline Snow  
*Communication Support*

## Partners Advisory Council 2024

### Chair

Anna Owsiak Regional Habitat Manager, Idaho Department of Fish and Game

### Vice Chair

Caroline Nash Principal, CK Blueshift

### Council Members

Mark Davidson Director, Blaine County Recreation District

Darcy Helmick Land Manager, Simplot Land & Livestock

Matt Lucia Executive Director, Sagebrush Steppe Land Trust

Ken Crane Rangeland Program Lead, Idaho BLM Twin Falls District

Jerald Raymond Rancher; Legislator, Idaho House of Representatives

Royce Schwenkfelder Rancher

Susan Buxton Director, Idaho Department of Parks & Recreation

James Hagenbarth Rancher

Tina Ruffing Rangeland Management Specialist, US Forest Service Intermountain Region

Daniel Bertram Upper Salmon Basin Watershed Program Manager, Office of Species Conservation

Cleve Davis Rancher/Ecologist, Chokecherry MicroFarm



## 2024 Center Activities

The Rangeland Center focuses research and outreach around the five topic areas outlined in our strategic plan, emerging topics identified in meetings, and emphasis areas suggested by our Partners Advisory Council (PAC).

**Rangeland Center Strategic Plan Update** - The Center's 5-year strategic plan was updated in 2024 after engaging over 80 rangeland stakeholders, including ranchers, land managers, nonprofits, consultants, and corporations. Input from these discussions shaped new research and outreach focus areas. Faculty and PAC members contributed insights at the Spring Retreat, and PAC members reviewed the plan at the Fall meeting. Their feedback was incorporated, and the final plan will be implemented in 2025.



**Idaho Rangeland Fall Forum** - The Center collaborated with the UI McClure Center for Public Policy and the US Geological Survey to host the 2024 Fall Forum, themed "Digging in...to Soil Health," on October 3–4 in Boise and Marsing. The event featured four panel sessions on soil health topics, including rangelands, producer case studies, collaboration at Three Creek, and practical tools and science. On October 4, participants visited three burned field sites near Marsing to examine fire impacts and restoration efforts on soil health indicators. The Forum engaged over 75 participants, fostering discussions on solutions, with the Center providing funding for food, planning, and outreach.

**Idaho Range Livestock Symposium** - The 2024 Symposium, co-organized by Center members Scott Jensen and Benton Glaze, took place in Homedale, Twin Falls, and Idaho Falls, with a virtual option at the Twin Falls location. This year's agenda covered topics such as heart failure and high-altitude sickness in cattle, noxious weed management, grazing practices for invasive annual grasses, the proposed BLM Conservation and Landscape Health Rule, and the UI Climate Smart Grant. Supported by the Center through funding for travel, food, and staff contributions to planning and outreach, the three-day event engaged over 190 participants.



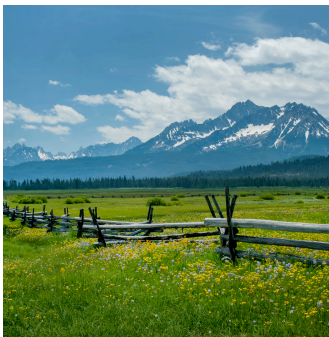


## 2024 Center Activities

**Rangeland Research Support and Coordination** – The Rangeland Center facilitates applied research to address management challenges on Idaho's diverse rangelands, as established by the Idaho State Legislature. In 2024, we launched a new rangeland project tracking system, providing bi-annual updates to our PAC and stakeholders. We also connect researchers, funders, and stakeholders, including hosting USDA Western SARE Director Dr. Clayton Marlow for a discussion on leveraging research funding. Additionally, the Center represented member projects to key groups such as the Society for Range Management, state and federal agencies, the Idaho Rangeland Resources Commission, and the Idaho Cattle Association.

**Expanding Membership for the Rangeland Center** – Since its creation, the Rangeland Center has included UI faculty and staff engaged in rangeland research, outreach, and management. In 2024, we expanded our membership to fulfill our legislative directive to include researchers from other Idaho institutions. We welcomed Dr. Kelly Hopping and Dr. Jared Talley from Boise State University, along with Bill Ebener and Dan Lauritzen from the College of Southern Idaho. This growth strengthens our interdisciplinary approach, broadens our reach, and enhances our ability to track research and deliver rangeland solutions to stakeholders.

**Range Interns** - This year, the Rangeland Center interns have made significant contributions across a variety of projects. They processed plant data from Rinker Rock Creek Ranch for Karen's research, collected data for Jason's JournalMap AI project, updated the Rangeland Center's project board, and annotated the National Range and Pasture Handbook on Rangedocs. They also assisted Rangeland Center members by preparing materials for classes and presentations, showcasing their dedication to advancing the Center's mission.



**National Society for Range Management Annual Meeting** – In 2024, the SRM hosted its annual meeting in Sparks, Nevada, bringing over 1,500 land managers, producers, scientists, and other rangeland stakeholders together in one place. Center staff, members, and affiliated students participated in organizing several sessions, and presented research. Presentations included investigations into fuel break effectiveness, methods for controlling annual invasive grasses, approaches for evaluating stream restoration, and many more.



# Rangeland Research, Extension, and Outreach

This section highlights a few of the research, Extension, and outreach projects supported (through investment of staff time or financial resources) and/or promoted by the Rangeland Center in 2024. Other research and outreach activities pursued by Center members are presented below.



**Virtual Fence Technologies** – Advancing technologies for rangeland management is also a Rangeland Center focus with Center members participating in several projects. Karen Launchbaugh and Jason Karl worked with an interdisciplinary team of faculty and students to design and test elements for a virtual fencing system. In 2024, with funding from USDA-NIFA, the David Little Livestock Range Management Endowment and other sources, this team developed and field-tested a prototype. Center member Melinda Ellison is also leading a virtual fence project evaluating the ability of the technology to manage livestock grazing in burned areas and is in part funded through the David Little Endowment.



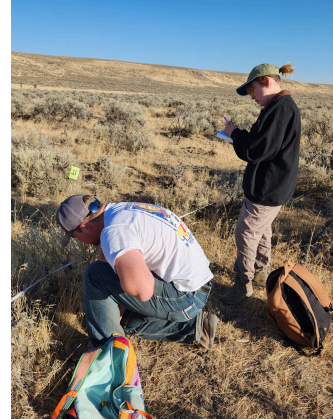
**Rinker Rock Creek Fire and Response** - In September, a lightning-ignited wildfire burned over 7,500 acres, including 4,600 acres on Rinker Rock Creek Ranch, a UI research station and cattle ranch. Center members and partners like The Nature Conservancy evaluated opportunities for research on fire severity and post-fire recovery on rangelands, submitting two grant applications in Fall 2024. Restoration began immediately, with partners like the Wood River Land Trust, US Fish and Wildlife Service, and Idaho Fish and Game installing erosion-control structures and assisting with seeding.



# Rangeland Research, Extension, and Outreach

## **Cross-University Rangeland Field Experience Class -**

The Rangeland Field Experience class, a 5-day field course at UI's Rinker Rock Creek Ranch, immerses students in the ecology and management of a working ranch through hands-on monitoring activities. Since 2021, UI-CNR has partnered with CSI to offer the course. In 2024, the program expanded to include 11 students and 2 faculty from Boise State University, alongside 18 students and 2 faculty from UI. This cross-institutional collaboration exemplifies the Rangeland Center's commitment to serving students across Idaho, with plans to continue and grow the partnership in 2025. Can you tell the UI students apart from the Boise State students? Neither can we!



## **Developing Methods to Monitor and Evaluate**

**Dormant-Season Grazing** - This project began in 2024 with funding from the USFS Caribou-Targhee National Forest. Graduate student Johanna Castro-Karney worked with Eric Winford and Jason Karl to conduct the first season of monitoring the Sheep Creek Allotment in the Curlew National Grassland. The USFS, along with the Buist Fields Cattle Association, wanted to evaluate the effects of switching the grazing period from the summer growing season to the dormant season, either early or late or both. The research team collected field-based and drone-based data to evaluate allotment-scale changes in annual grasses, perennial grasses, sagebrush, and juniper.



# Rangeland Research, Extension, and Outreach

## Effects of Beaver Dams on Brooding Greater Sage-grouse Hen



### Walker Field (MS Student, Advisor: Dr. Simona Picardi) -

The overarching question of Walker's research is how do beaver dams affect sage-grouse (*Centrocercus urophasianus*) space use and brood survival in a grazed landscape? The first component of field work involves capturing and deploying backpacks on greater sage-grouse hens in order to collect hourly GPS locations from them, and brood surveys after successful nest hatches to collect survival data on the chicks. The second field component involves censusing waterways on UI's Rinker Rock Creek Ranch property and surrounding public lands in order to quantify all of the beaver dams that exist within those bounds.



During the first field season in the spring and summer of 2024, 23 sage-grouse hens were captured and fitted with GPS-backpacks. Walker confirmed 20 nests from those hens, which had a 50% success rate: 10 of those nests hatched, and 10 failed. Of those 10 hatched nests, four broods successfully survived to an age of 50 days old, which is the final survey period for each hen. Thus, a 40% brood survival rate was documented from tracked hens in the 2024 season. Additionally, a total of 286 dams were surveyed on the Rock Creek property and surrounding public lands. Of those 286 dams, 217 are naturally built dams and the remaining 69 are BDAs (beaver dam analogues).

Mesic habitat restoration is a critical component of conservation of sage-grouse and, by extension, of many other species under the umbrella. Beaver dams and beaver dam analogues are powerful management tools in this context. However, despite this connection, the effects of beaver activity on sage-grouse space use during the brood-rearing season and brood survival has not been quantified yet. Walker's study of these biological processes provides an assessment of the potential interactions that exist between them.



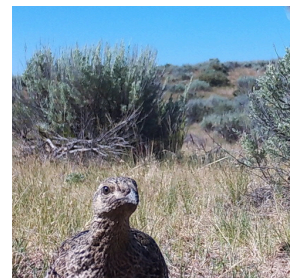


# Rangeland Research, Extension, and Outreach

## Effects of Indaziflam on sage-grouse habitat and small mammal populations

**Kirby Lau (MS Student, Advisors: Dr. Tracey Johnson, Dr. Tim Prather)** - Kirby Lau's research seeks to inform federal land managers how Rejuvra's (indaziflam) effects on nontarget vegetation may impact small mammals and sage grouse. Indaziflam could help federal land managers remove highly flammable annual grasses from fuel breaks on public lands. The herbicide could also provide a tool for restoring largely in-tact plant communities where annual invasive grasses are beginning to take hold. Kirby is evaluating treatment responses of forbs of importance to sage grouse, in addition to trapping small mammals to assess their response to indaziflam use. Small mammals are essential parts in the food web of rangelands and seeds from annual grasses may provide them an important food source.

In summer 2024, Kirby collected 122 sage-grouse pellet piles as indicators of habitat use, with about 56% of all pellet transects having detections. Sixty-two percent of those pellet piles were on transects treated with indaziflam. Forb cover sampling suggested mixed results for various aspects of the plant community, with annual plants typically being more negatively impacted by treatment than perennials. The 3 most common greater sage-grouse preferred forbs on treated transects in 2024 were *Phlox longifolia*, *Agoseris glauca*, and *Eriogonum heracleoides*, while *Phlox longifolia*, *Collinsia parviflora*, and *Agoseris glauca* were the most common on control transects. To formally analyze the effect of treatment on various aspects of the plant community in both 2023 and 2024, Kirby will utilize normal and log-normal mixed effects models. Using this same structure, we will also check for a significant treatment effect on grouse habitat use.



Kirby also completed another season of small mammal trapping from in 2024, processing 1,137 small mammal captures, comprised of 5 species. This translated to a 394% increase in captures from 2023 to 2024 due to a "boom year" for small mammal populations (particularly for vole species). In 2024, Kirby captured a greater number of western deer mice (*Peromyscus sonoriensis*) and Columbia Plateau pocket mice (*Perognathus parvus*) in sites treated with indaziflam, which differed slightly from 2023 capture results. Kirby will soon complete a similar vegetation community analysis as for sage grouse to determine the impacts of indaziflam on the habitat of small mammals, followed by an examination of impacts on small mammal survival, home range size, and density, if possible.



# Related Activities by Center Members

Rangeland Center members participate in a vast array of research, outreach, and Extension projects that support sustainable management of rangelands in Idaho. The Center works to support these projects either directly or indirectly and helps to increase awareness of the projects and disseminate their results to our stakeholders. For more information on these and other rangeland projects, visit [www.rangelandcenter.org](http://www.rangelandcenter.org). A partial list of notable projects from 2024 is below:

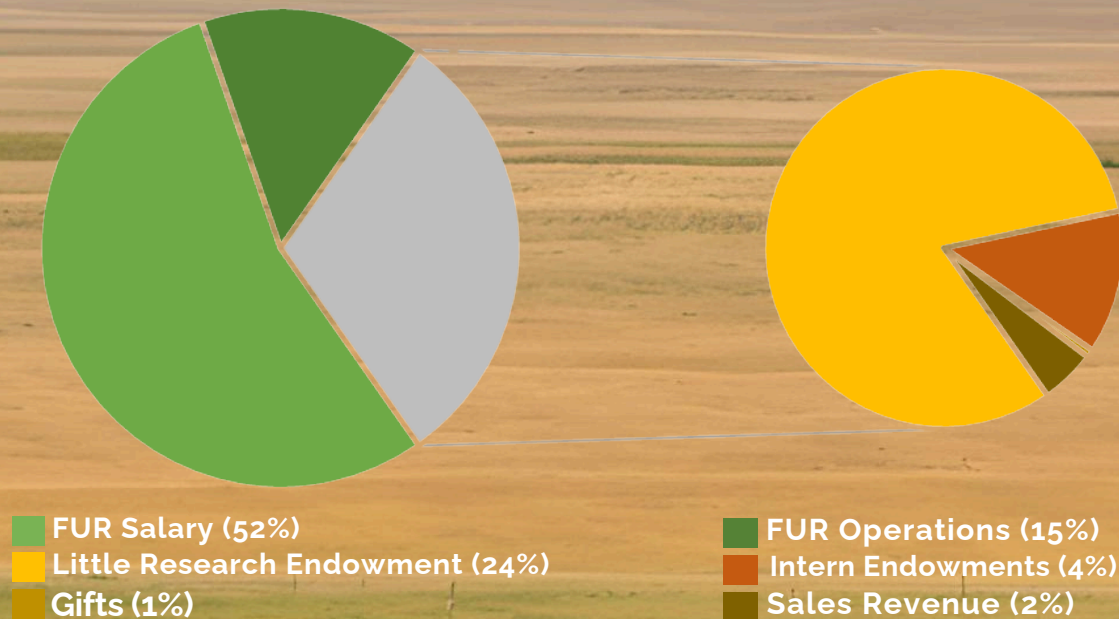
Project Name	Project Leads (*Indicates Center Member)
Sources of non-sampling error in BLM's AIM program	J. Karl*, L. Dreesman
Ecological succession as a guide for restoration and plant materials development	D. Tilley, J. Karl*, A. Hulet*, S. Bushman, S. Love, C. Goebel*
Using virtual fence to manage grazing in a post-fire rangeland landscape	J. Yelich*, M. Ellison*
Livestock grazing management and riparian ecosystem services: identifying trade-offs and potential synergies among ecological, economic, and social values	M. Ellison*, T. Johnson*, E. Winford*, JD Wulfhurst*, K. Lee*, J. Aycrigg
Comparison of range-based and irrigated cow-calf systems	J. Hall*, J. Sprinkle*, G. Chibisa*, B. Glaze*, M. Ellison*
Evaluating the impacts of beaver dam analogs on soil health and water quality	L. Lynch*, E. Incelli, E. Winford*
Fine fuels management to improve Wyoming Big Sagebrush plant communities using dormant season grazing	S. Arispe*, A. Hulet*, S. Jensen*, W. Price, D. Johnson
Sheep and goat monthly webinar and Facebook group	M. Ellison*, C. Wilmore*, W. Stewart, C. Page
Restoration Assessment and Documentation (RAD) of BLM restoration projects	E. Winford*, J. Karl*
Targeted grazing by sheep to control invasive species and reduce wildfire risk on western rangelands	K. Hopping*, A. Hulet*, M. de Graaff, R. Kehler, S. Arispe*, K. Byrne, R. Kowitz, M. Henslee
Livestock grazing and chukar habitat: synthesis of impacts and opportunities	T. Johnson*, C. Rowe
Synthesis paper: Grazing After Fire	E. Winford*, H. Wilmer, J. Sprinkle*, C. Schachtsneider, K. Launchbaugh*, E. Strand*
A systematic review of recreation ecology in rangeland settings	J. Snow, C. Zajchowski*, J. Karl*
Daily behavior and forage intake on rangeland cows differing in production efficiency	J. Sprinkle*, C. Willmore*, M. Ellison*, J. Hall*, R. Lewis, D. Tolleson, D. Jaramillo

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# Rangeland Center Funding

## Distribution of Rangeland Center 2024 Budget



The total 2024 budget for the Rangeland Center was \$195,951. The primary budget for the Rangeland Center is provided by state legislative funding to the College of Natural Resources' Forest Utilization and Research (FUR) program. FUR funding to the Rangeland Center totaled \$131,021 for the 2024 calendar year. This included \$102,591 to support the Center Director, Associate Director, and Communications Manager positions, and \$28,438 for operations and travel.

The Rangeland Center administers four endowments for research and student internships. The David Little Livestock Range Management Endowment, which provided \$46,867 to fund research, extension, and education into more efficient uses of Idaho's rangelands for livestock forage production. Endowments established by the Soulen, Little, and Brackett families provide funding for Rangeland Center interns. In 2024, these endowments yielded \$7,446 to support 4 students each semester working 10 hours per week to assist faculty and conduct projects that helped maintain the Center.

Donations to the Rangeland Center in 2024 provided \$408 in funding that was used to support student research, project or meeting travel for Center members, and other Center activities and needs that cannot easily be funded through the FUR budget.

The Center also receives revenue from tickets to events or the sale of books. Ticket revenue from the Fall Forum generated \$2,780 in 2024. Sale of books such as the Field Guide to Idaho Grass and Grass-like Plants and the Backpack Guide to Range Plants, earned \$61 in 2024. These funds are used to support outreach events.



The mission of the Rangeland Center  
is to create knowledge and foster  
understanding for the stewardship  
and management of rangelands.

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