Ucross High Plains Stewardship

2023 ANNUAL REPORT

Yale SCHOOL OF THE ENVIRONMENT

IMPACT SUMMARY

33 Partners engaged

27 Stewardship and conservation deliverables completed

26 Students involved

IMPACT AREA

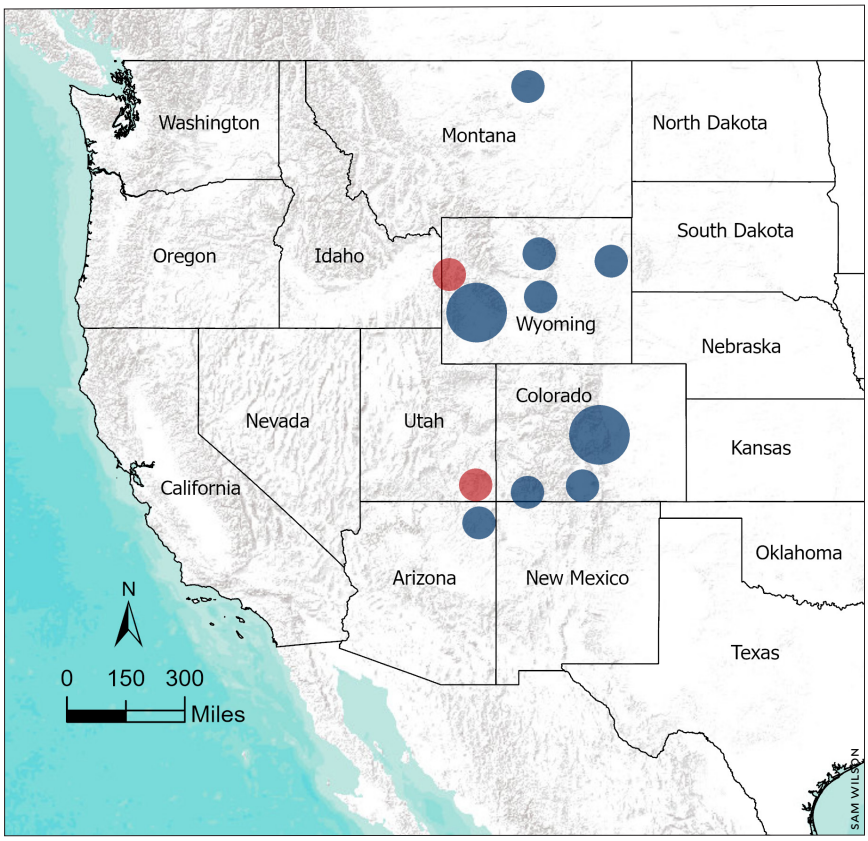
We provide students opportunities to develop the skills needed to be leaders in land stewardship and conservation by supporting hands-on field courses, student research, and collaborative conservation projects in the American West. This map illustrates where our work has impacted conservation during 2023.

Project Type

- Field Practicum
- Student Project

Number

- 1
- 2



OUR MISSION

Fostering land stewardship and conservation in the American West through teaching, research, outreach, and leadership.

In this report we are excited to share all the different ways students are applying their academic knowledge to real-world challenges. None of these achievements would have been feasible without your support. I extend my heartfelt gratitude to our alumni network spread throughout the West, and our on-the-ground collaborators who empower our students to step out of academic confines and immerse themselves in the intricate issues that western communities face. Today's times call for leaders who can bridge divides, engage in tough dialogues, and seek collaborative solutions for community-oriented land management. I invite you to delve into the projects featured in this report and find inspiration in the ingenuity and leadership skills of these emerging leaders. Their work fills me with hope for the future of land management in the Western United States.

Dr. Justin Farrell, Faculty Director

Field Trip to the Bears Ears National Monument

Students in the Tribal Resources and Sovereignty course, taught by YSE lecturer Pat Rogers, traveled to the historic Bears Ears National Monument to learn from this example of conservation in tandem with traditional-native knowledge and practice. For the first time in history, five tribes (Hopi-Zuni-Ute-Ute Mountain-Navajo) are formally designated as co-managers of a National Monument. The field trip brought student's attention to this vast landscape, including the multitude of cultural and sacred sites it contains, and emphasized what this landscape means from a tribal perspective. Students learned how the transfer of traditional knowledge that applies to a land-management plan is seamless and pragmatic, better preparing them for careers in conservation and land management.

Building Connections and Community for Impact

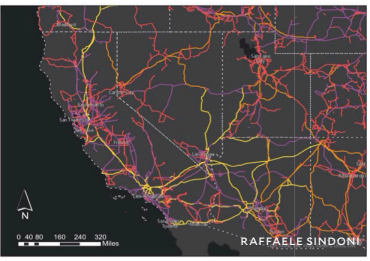
Western Connections and Community launched in 2022 and hosts a series of events to bring together students, faculty, and staff who research, work in, or care about the western United States. The 12 events hosted during the last year served 400 people, offering opportunities for student professional development, networking with conservation practitioners and Yale affiliates, and building community and collaborative partnerships. Building relationships among those with a diversity of backgrounds, experiences, and interests in the West, improves our ability to tackle the complex conservation challenges that we face.

Using Geospatial Tools to Monitor Mesic Restoration in Montana

Our student team created a monitoring protocol to improve our understanding of beaver dam analogs impacts to plants and water along streams in Montana. The protocol was created in collaboration with conservation groups who have installed these man-made structures that aim to mimic beaver dams, including The Nature Conservancy-Montana, Montana Conservation Corps, and the World Wildlife Fund. The protocol leverages geospatial technologies to remotely measure changes in metrics, such as vegetation greenness, area covered by moist soil, and surface water area, allowing scientists, land managers, and conservationists to observe trends on the landscape over time and to locate sites best suited for these structures.

Renewable Energy for Tribes

One of our research assistants, Raffaele Sindoni ('23 MEM, '28 PhD candidate), worked with Navajo Power, a majority Native-owned public benefit corporation (PBC), to analyze geospatial data and create maps that helped identify tribes located in areas suitable for renewable energy development and eligible for federal funding. These maps and the important information they portrayed, assisted Navajo Power to work with Native families and communities interested in transition away from fossil fuel use to renewable energy. The map to the left shows the location of current transmission lines in the Southwest.



Ranching in Colorado

Kathleen Voight ('24 MESc), a summer fellow, studied ranching viability in the 21st century in Colorado's San Luis Valley, a high-elevation basin that receives < 7 inches of rain annually. She interviewed over 30 livestock producers and water managers to understand how drought is impacting the area and strategies they use to adapt. Her findings describe how water conservation districts can support ranching operations as they are met with water scarcity issues that unfortunately are projected to worsen in future.

Assessing Restoration Outcomes for Oil and Gas

Extraction of oil and gas requires installation of sizeable drilling infrastructure, causing a large-scale disturbance to big sagebrush plant communities at a natural gas field in southwest Wyoming. After the well is in production, plants are seeded in these disturbed areas in an attempt to restore them to their pre-disturbance state. Damaris Chenoweth (PhD student) and Dr. Bill Lauenroth studied disturbed areas that have been restored to understand if past restoration methods have been effective. Damaris plans to investigate restoration trajectories under future climate scenarios using simulation modeling, to provide a deeper understanding of restoration of big sagebrush plant communities in disturbed areas.

"After graduating from YSE, I began working with the Natural Resources Conservation Service (NRCS) to help better understand the benefits of conservation practices on working lands. This work constantly draws upon the knowledge, skills, and background that I gained by working with UHPSI as a research assistant. I was able to gain an in-depth view into what restoring and conserving working lands truly entails from a scientific, economic, and sociological perspective. That experience, and the people I met through it, gave me the necessary foundation and support to carry out this work in my career."

ANNIE MILLER, '23 MEM

NATURAL RESOURCES SPECIALIST

USDA-NATURAL RESOURCES CONSERVATION SERVICE

ADDITIONAL PROJECTS

Read more about these projects at
highplainsstewardship.com

- A Systems Thinking Approach to Wood Processing and Forest Health in Wyoming
- Modeling Radiation Use Efficiency in Big Sagebrush Understory
- Changing Agriculture in a Changing Climate: Exploring Farmers Responses to Climate Change
- A Strategic Framework for Deploying Colorado Cattlemen's Agricultural Land Trust's New Agricultural Resiliency Fund to Conserve Working Lands
- Global Change Effects on Soil Greenhouse Gas Exchange and Carbon Storage Along a Temperature Gradient in North American Central Grasslands
- Building a Monitoring Plan for Beaver Populations and Hydrologic Impacts in Wyoming
- Local Payment for an Ecosystem-Service-Model for Working Lands Restoration in Colorado
- Western Lands and Communities Field Clinic: Research to Practice

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