Ucross High Plains Stewardship

2021 ANNUAL REPORT

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IMPACT SUMMARY

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OUR MISSION

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

We are indebted to our broad network of alumni across the West, especially our professional partners who provide many opportunities for our students to put their classroom studies into real-world practice. These opportunities are a primary way students develop into leaders who can think across boundaries and divides, and to move from the bubble of the classroom to a collaborative - and community-based approach to land stewardship.







Students involved

Partners engaged

Stewardship and conservation deliverables completed

IMPACT AREA

We provide students opportunities to develop the skills needed to be leaders in land stewardship and conservation. Students who participate in our programs collaborate with western partners and our staff to complete applied research and management projects throughout the American West. This map illustrates where our student projects impacted conservation during 2021.







Despite the continued challenges this year, our students have eagerly returned to in-person learning and practice. The past two years have been tough, but they've also forced us to be more creative. Our students found new ways to learn, research, and communicate about land stewardship and conservation. They've come out stronger, and their perseverance and creativity were rewarded, as you will see below where we shared student experiences and a selection of projects.

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Justin Farrell, Faculty Director



Laura González Mantecón, '22 MEM candidate

"I love how our project, despite being fully remote, was so place-based and it allowed us to work with people on the ground. Learning from ranchers who are such devoted stewards of their land and have a strong connection to their environment was an incredible experience. This project shaped the way I think about my future career in the environmental space, especially when it comes to collaborative approaches and building unlikely partnerships."



Katherine Tucker, '22 MEM candidate

"My experience with UHPSI provided me an opportunity to apply my conservation skillset in a meaningful, real-world setting. I became a better facilitator, built strong connections, and most importantly, learned the nuances of western land and water conservation. Having worked in Colorado previously, I was nervous that coming East for graduate school would eliminate my connection to western environmental issues. But working as a UHPSI Research Assistant let me to keep one foot solidly grounded there. I am much more confident about embarking on my career in western conservation having worked with UHPSI over the past year."

Soil Gas Fluxes and Carbon Storage in the Upper Green River Basin

Soils both store carbon and emit greenhouse gases. Understanding how much carbon is stored in soils and how much greenhouse gas is emitted by soils in a region can help us identify carbon sinks and sources. Uthara Vengrai (22' MESc candidate) and her advisor Dr. Indy Burke studied carbon storage and emissions across a variety of landscape positions throughout the Upper Green River Basin in the Wyoming. The instrument pictured below was used to collect field data, allowing Uthara to identify potential emission hot spots and measure changes in emissions over time. She also took soil samples back to the laboratory to estimate the amount of carbon stored in soils in the region. These findings will increase our knowledge of the carbon cycle, inform carbon sequestration policy, and assist land managers with decisions locally.





Water Quality in Stillwater Valley of Montana

The demand on water resources in the Stillwater Valley of Montana has intensified in recent decades due to changes in agricultural practices and population growth in the region, which may have impacts on water quality. Our research assistant Katherine Tucker created a web-based application that mapped changes in land and water use, including the increase in points of diversions shown in these maps by century. Each dot on the map represents a point of diversion with orange, magenta, and teal dots being established in 1800s, 1900s, and 2000s, respectively. Katherine highlighted important changes using a communication piece she created in collaboration with the Stillwater Valley Watershed Council (SVWC). This grassroots, volunteer-based organization uses the piece to inform the public about the watershed status, encourage dialogue about water quality, and recruit volunteers to their monitoring efforts.

Mammal Movement Through Wildlife Underpasses in Montana

Luca Guadagno (summer fellow, 21' MESc) studied white-tailed deer and black bear movements through wildlife underpasses along US Highway 93 on the Flathead Reservation, Montana. The Confederated Salish and Kootenai Tribes pushed to include these underpasses during highway reconstruction. Working with the Western Transportation Institute, Luca used camera data to study the total number of successful crossings through the structures and instances that individuals approached but failed to cross for the first five years after construction. Even as the total number of crossings increased, the rate of 'acceptance' remained consistent. This suggests the increase in wildlife using the structures could come from animals learning about the structure's locations and making decisions to integrate the structures into their movement patterns.

County Payment Reforms to Incentivize Conservation

Shannon Bell, one of our summer fellows, worked with Oregon Wild and developed an alternative model for the Secure Rural

Schools (SRS) legislation. SRS initially was designed to provide payments temporarily to timberdependent counties to support them as timber harvests declined. Shannon's reimagined model proposed to allocate county payments based on conservation indices and actions counties took to

preserve the ecosystem services public forestlands provide, rather than to allocate payments based on historic timber revenues. This proposed model would provide counties more incentive to conserve forests and introduce another policy tool to conserve more land.

Perceptions of Water Export in Colorado's San Luis Valley

Our summer fellow Cloe Dickson studied the complex water issues occurring in the San Luis Valley of Colorado. Water is a critical ecological resource there while also having significant social and cultural value. Recently the Valley's aquifer has declined, and external parties have explored exporting the water to far away cities. Cloe carried out interviews with agricultural produces, academics, historians, conservation experts, recreation enthusiasts, and other citizens to understand the threats to water, precautions people are taking to safeguard water resources, and implications for resource management across the American West.

Resilience and Productivity of Working Lands

As a summer fellow, Darya Watnick (21' MEM) facilitated the Colorado Coalition to Enhance Working Lands (CO CEWL). This

group works to improve the resilience and productivity of Colorado farming and ranching lands through the creation of viable agricultural businesses and rural communities, protecting open space, and increasing the ecosystem service benefits. Darya wrote a two-year strategic plan and produced an annual

report for the group, creating a path forward for the blending of CO CEWL and the Colorado Collaborative for Healthy Soils.

ALUMNI CONNECTIONS

"Ucross was an incredible resource for connecting to western land management and conservation issues while at YSE. Through a research assistantship, a summer fellowship, and a land management field practicum, I stayed engaged in and broaden my knowledge of working lands conservation. Those experiences have been invaluable in my current work as we develop new conservation tools and opportunities for farmers and ranchers across Colorado."

BRENDAN BOEPPLE, '19 MEM

DIRECTOR OF ADDITIVE CONSERVATION COLORADO CATTLEMEN'S AGRICULTURE LAND TRUST

ADDITIONAL PROJECTS

Read more about these projects at **highplainsstewardship.com**

- Collaborative Rangeland Monitoring in Montana
- Storytelling around Private Land Conservation and Habitat Connectivity in the Northern Rockies
- Impact of Grazing and Climate Change on Big Sagebrush Plant Communities
- Green Infrastructure in Oregon
- Facilitating Forest Collaboratives in Beaverhead-Deerlodge and Idaho Panhandle National Forests
- Recreation and Conservation Planning for Fishers Peak State Park in Colorado
- Conifer Density Survey for the Elkhorn Mountains in Montana
- Non-Consumptive Water Rights as a Landscape Conservation Tool
- Rural Gentrification in the American West
- Community-led Water Resilience in Los Angeles River Watershed
- Large-scale Farming of Organic Grains and Pulses in the Northern Great Plains
- Exploring Inherding as a Grazing Practice for Conservation and Rangeland Health in West
- Creating a Funding Source for Restoration on Working Lands in Colorado
- Using Geospatial Analysis to Guide Rotational Grazing Strategy
- Water Conservation Efforts Through Land Trusts

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