

Ucross High Plains Stewardship Initiative

January - March 2016 Report



John Brown of the 2 Lazy 2 Ranch in Shepherd, MT, looks at the soil with UHPSI partner Justin Freiberg

Executive Summary

- Russian Olive mapping with SCLT
- Cheatgrass mapping with UW
- Savory Instruction at F&ES
- Manuscript Preparation
- Art-Science Exhibit with UNM
- Collaboration with Michigan State University/Savory Institute
- Western Research Fellowship

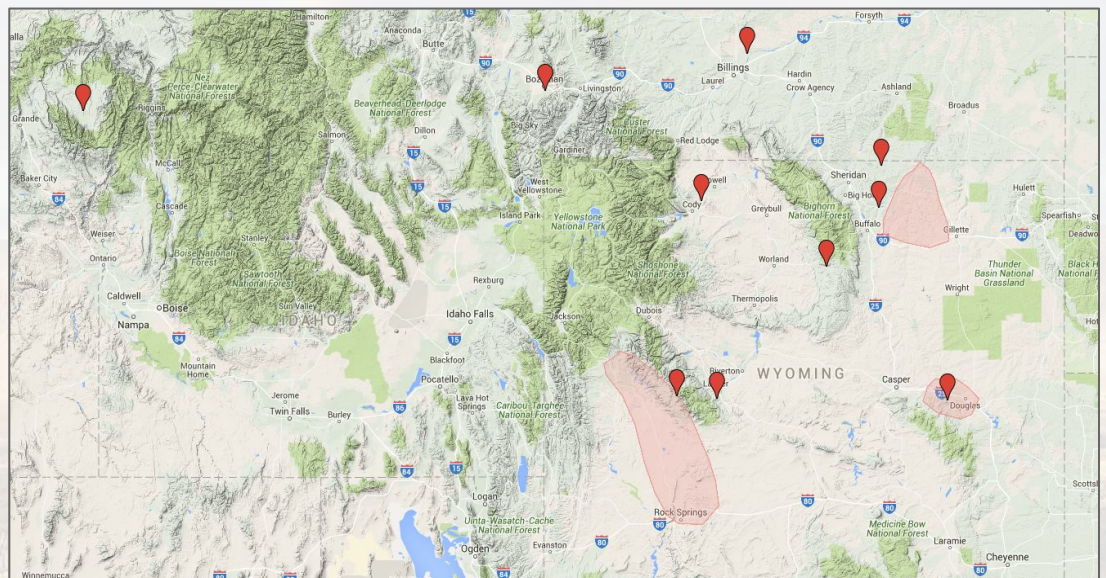


Charlie Bettigole and Dr. Brian Meador inspect the Sheridan College Greenhouse

Western Research Fellowships

In its inaugural year, the Western Research Fellowship funds student research projects that are working on the ground with western landowners to enhance the triple-bottom-line of sustainability - people, planet, profit. Applications were received during February and March, and we will have an exciting group of students working on ranches and farms across the High Plains this summer!

Proposed WRF Project Locations



Arts & Sciences at Yale

A chance meeting three years ago over dinner at the Ucross Foundation schoolhouse led to a unique collaboration between UHPSI and a group of faculty/alumni from the Land Arts of the American West Program at the University of New Mexico. Over the course of two summers, the collaborative team worked together in the field to design interactive pieces that bridged the worlds of art and science.



Following a successful show at the Ucross Foundation Art Gallery in the summer and fall of 2015, "Ucross: A Portrait in Place" came to Yale F&ES in a highly reviewed spring semester gallery showing in Kroon Hall.

Savory at Yale

Co-sponsored with Brad Gentry, Dean of Professional Practice at F&ES, we were pleased to host Byron Shelton, lead instructor for the Savory Institute, for a long weekend course on holistic management. Pairing field work with interactive classroom time, the short-course taught students about the complexities of managing ranching/farming operations. With an



increasing number of F&ES students and Yale College undergraduates heading West for summer research or post-graduation work, this course prepared participants for working and interacting with practitioners in the field. We had 35 students in attendance over a beautiful spring weekend — a huge testament to student interest in studying ranching and agriculture in the West.

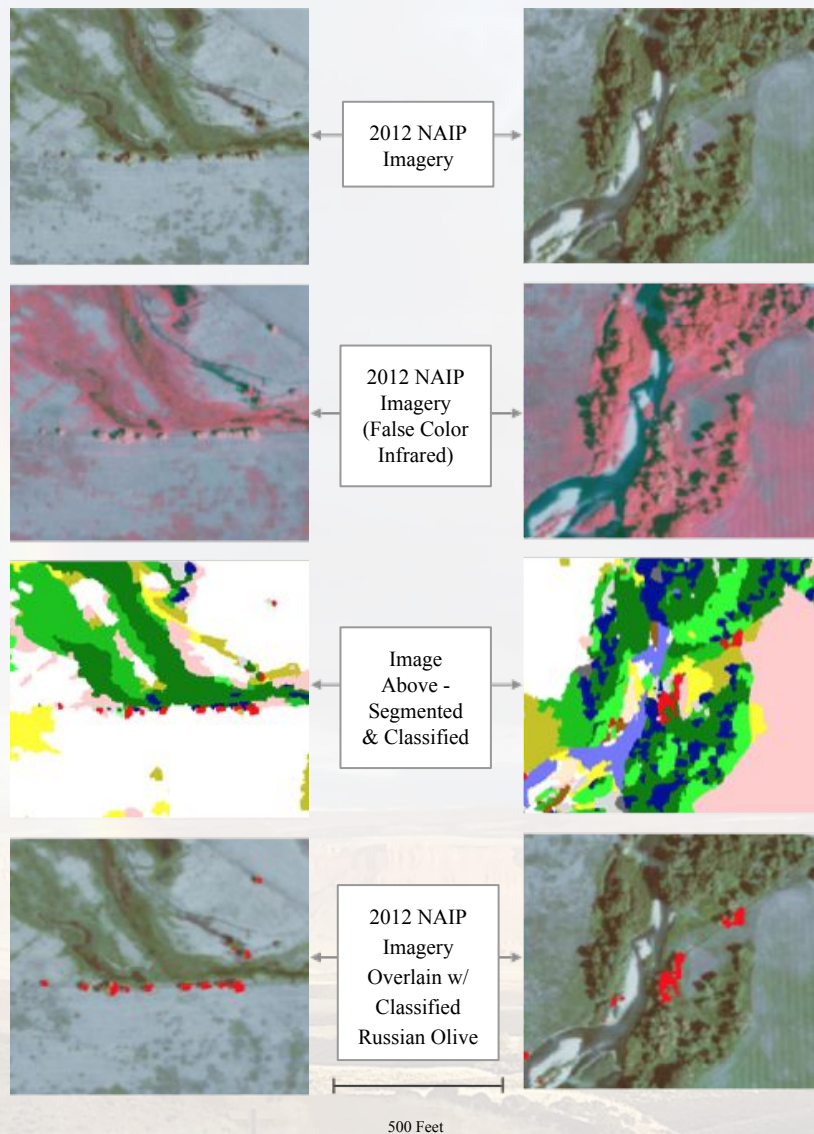
Russian Olive Identification in the Tongue River Watershed

As indicated in previous reports, UHPSI has signed on to assist with a USDA-NRCS RCPP grant for the Tongue River Initiative led by The Nature Conservancy, and in conjunction with Sheridan Community Land Trust, Sheridan County Conservation Commission, NRCS, Wyoming Game and Fish, Trout Unlimited, Sheridan County, and Wyoming DEQ. UHPSI's contribution will be the mapping of Russian Olive (*Elaeagnus angustifolia*) across the Tongue River and its tributaries. Russian Olive is a woody invasive, historically planted as wind-row and garden trees, which rapidly displaces native vegetation, particularly in riparian areas.

During February and March of 2016, we completed a baseline pilot study of our methodologies for evaluating the upper section of the Tongue River between Dayton and Ranchester. As can be seen in the imagery of above, we have demonstrated great success in our ability to map Russian Olive using object-based feature extraction analysis using image analysis software. These preliminary results indicate accurate detection of Russian Olive trees in riparian and residential settings, and we hope to refine our methods as we apply these techniques to the entire Tongue River watershed. In late February, we worked with SCLT to put in a grant to the Wyoming Wildlife and Natural Resources Trust, to translate the results of this mapping work into on-the-ground eradication and reclamation — improving riparian habitats and water quality for landowners and river-users.

Hedgerow Identification

Riparian Identification



Publication Updates

- Accuracy Assessment paper sent to review February 2016
- MTMF/Leafy Spurge paper prepared for submission by March 31st, 2016
- Scientific Data paper prepared for submission by March 31st, 2016
- 2015 Annual Report Published February, 2016

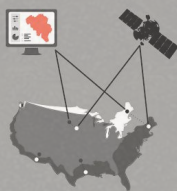
COMMON SOURCES OF ERROR

GPS TECHNOLOGY

GEOREGISTRATION & ORTHORECTIFICATION

OPERATOR

CO-REGISTRATION



Excerpt from Henry Glick's poster presented at the 2015 ESRI user conference

Developing Collaborations

- We continue to work on developing collaborative research projects with Brian Mealor, Director of the Sheridan Research and Extension Center. Primarily, we intend to lend our remote-sensing expertise to mapping the distribution of cheatgrass across the state of Wyoming, leveraging an enormous field-collected dataset put together by Dr. Mealor's team.
- We have begun discussions with faculty at Michigan State University about the possibility of creating a collaborative teaching and research program between MSU and Yale, which would bring undergraduate and graduate students from both programs to on-the-ground research projects in the American West and beyond.

UCROSS
HIGH
PLAINS
STEWARDSHIP
INITIATIVE

Yale SCHOOL OF FORESTRY
& ENVIRONMENTAL STUDIES