Figure 1. Targeted grazing reduces fine fuels (cheatgrass, Japanese brome and bulbous bluegrass) in southern Idaho.

# Progress Report: Targeted Livestock Grazing to Strategically Reduce Fine Fuels

***The Bureau of Land Management***
***Division of Forest, Rangeland, Riparian, and Plant Conservation (WO-220)***

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## Introduction

Wildfires are increasing in size and frequency. The impacts to private and public resources in the Great Basin are due in large part to the dominance of invasive annual grasses, especially cheatgrass. Large mega-fires (>250,000 acres) are having a disproportionate effect on public lands and the ability of managers to implement an effective fire suppression program (Figure 2).

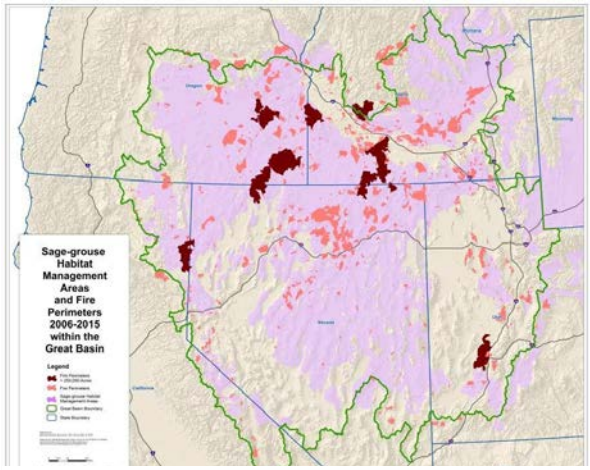


FIGURE 2. EIGHT GREAT BASIN MEGA-FIRES (>250,000 ACRES) ACCOUNTED FOR 27% (3.7 MILLION ACRES) OF THE 13.8 MILLION ACRES OF RANGELAND BURNED FROM 2006-2015.

In 2015, the Bureau of Land Management (BLM) implemented a call to action with the release of the Integrated Rangeland Fire Management Strategy (IRFMS). The intent of the IRFMS is to improve the efficiency and efficacy of actions to address rangeland fire, to better prevent and suppress rangeland fires, and improve efforts to restore fire-impacted landscapes.

It was recognized that using livestock to reduce fine fuels composed of invasive annual grasses (cheatgrass, medusahead wildrye, field brome, Ventenata, etc.) is a potential tool to reduce these fuel loads and thus reduce adverse wildfire impacts. The IRFMS specifically addresses the need to explore targeted livestock grazing as a strategic fuels management option in three interrelated actions (http://integratedrangelandfiremanagementstrategy.org/). These actions involve working with permittees and private landowners to implement targeted grazing programs and vegetation treatments to protect, conserve, and restore sagebrush-steppe habitats across all ownerships and jurisdictions.

The three IRFMS action items that specifically relate to this approach include:

1. Exploring opportunities that integrate fuels (targeted grazing, greenstrips, fuel breaks, etc.) and vegetation treatments to protect, conserve, and restore sagebrush-steppe habitats. This includes developing and implementing pilot projects and demonstration areas that incorporate a strategic approach of putting appropriately sized fuel treatments in the right places to maintain important sagebrush steppe ecosystems. Technical assistance will be provided and financial resources will be identified to assist livestock grazing permittees (includes BLM and FS permittees as well as state land leaseholders) and private landowners to implement this strategy. The BLM, the U.S. Forest Service (USFS), state agencies and Natural Resources Conservation Service (NRCS) will collaboratively identify priority landscapes where funds can be targeted to complement federal or state fuel treatments projects.

2. Identifying financial or other forms of incentives, including permit modifications such as changes in seasons of use and/or livestock numbers to implement targeted grazing fuels and

vegetation treatments (includes habitat maintenance or restoration treatments). To develop integrated treatments linking federal, state and private lands to protect high priority sagebrush habitats it is highly recommended to use incentives to livestock producers/permittees.

3. Develop scalable and adaptive grazing management plans for reducing the abundance of invasive annual grass and other fine fuels through targeted livestock grazing to diminish fire risk in priority sagebrush steppe habitats.

The approach utilized in this project to accomplish these three tasks is to implement strategic fuels breaks (in strips or bands much as traditional fuel breaks are designed) at a landscape scale (across interconnected BLM management units) in conjunction with state, private and other federally managed lands. The objective is to meet specified fuels management targets before the start of the each fire season. The approach also includes implementation of demonstration areas that explore opportunities to reduce fuel loads in annual and introduced perennial grasslands. Although not specifically identified in the Secretarial Order, introduced wheatgrass seedlings are often interspersed with annual grasslands and offer similar targeted grazing opportunities. The BLM will provide fuels management objectives and the permittees/livestock operators will design grazing systems and implement practices to accomplish the objectives. An integrated approach will be used that incorporates federal, state, and private lands.

## Project Outreach and Collaboration

The first step to implement the above-mentioned action items of the IRFMS was to assemble a state and federal interagency team (see Appendix 1 for current members) in April 2015. The team developed an implementation plan that promoted an integrated and multiagency process to address fuels management and invasive annual grass control across the landscape. The team met regularly via conference calls and at an in person meeting in Boise in March 2016.

In April 2016, the BLM, NRCS and FS signed a Memorandum of Understanding (MOU) to accomplish common goals related to the conservation of the Greater Sage-Grouse and its habitat. Definitive to the targeted grazing tasks of the team, the MOU calls for practices to be implemented across land ownerships to reduce risks of fire and invasive species and for increased coordination among these agencies to achieve conservation outcomes. This MOU addresses the IFRMS task to provide support to livestock grazing permittees and private landowners to implement fuel treatment actions as part of strategic, landscape efforts to protect, conserve, and restore sagebrush-steppe habitats.

On October 6, 2016, a Targeted Grazing Stakeholder meeting with 80 participants was held in Reno, NV to obtain input from a wide variety of Great Basin users, agencies, academia, and non-governmental organizations (Figure 3a). The outcome from the participant focus groups (Figure 3b.) was an Outreach Plan (www.greatbasinfirescience.org) designed to incorporate feedback from the meeting to help guide the implementation of the three actions described above.

Ryan Zinke, former Secretary of the Interior, issued the Department of Interior (DOI) Secretarial Order 3353, Greater Sage-grouse Conservation and Cooperation with Western States in June 2017. Secretarial Order 3353 was issued to improve coordination between the DOI and western states and to support greater collaboration in implementing the IRFMS.

FIGURE 3A. GENERAL SESSION OF TARGETED GRAZING STAKEHOLDER MEETING IN RENO, NV.

Figure 3b. Workgroups developed recommendations for a Targeted Grazing Outreach Plan.

In 2018, the BLM showed Target Grazing sites to multiple tour groups and local media outlets while operators demonstrated the process of fuel breaks on both sides of the roadway. These demonstrations included the Idaho Section Society for Range Management Summer Field Tour (30 participants) and the NRCS's annual Sage Grouse Initiative workshop that included 135 conservation partners (Figure 4). Information on this field tour can be found at: https://www.sagegrouseinitiative.com/lessons-photos-from-sgis-8th-annual-workshop-combating-wildfire-weeds/.

FIGURE 4. NRCS SAGE GROUSE INITIATIVE WORKSHOP PARTICIPANTS LEARNING ABOUT THE SODA FIRE TARGETED GRAZING DEMONSTRATION AREA PRIOR TO VISITING THE LIVESTOCK USE AREA.

At the national level, personnel from the Washington Office provided the following on targeted grazing to reduce fine fuels project.

**February 2017** - Presentation and discussion at National Cattlemen's Beef Association Winter Meeting Targeted Grazing Workshop in Nashville, TN.

**July 2017** - Presentation and request for demonstration area proposals at a BLM workshop to members of the National Cattlemen's Beef Association at their summer meeting in Denver.

**September 2017** - Updates provided to Public Lands Council at their annual meeting in Flagstaff, AZ.

**September 2018** - Project updates and discussion on the new Lakeview District Beatty Butte demonstration area at the Public Lands Council annual meeting in Park City, UT.

Updates on the program were also presented at the 2017 and 2018 national Society for Range Management annual meetings in Reno, NV and Minneapolis, MN

## Project Accomplishments

### Demonstration Projects

To date, the BLM has implemented two landscape scale demonstration projects in spring 2018 to test the practicality of using targeted grazing to reduce fine fuels. Locations include the Owyhee Field Office in southwest Idaho (Soda Fire Fuel Breaks projects) and the Elko District in northeastern Nevada. A third demonstration area is planned in the Lakeview District in Oregon starting in the spring of 2019. Demonstration areas were selected based on criteria developed by the Interagency Targeted Grazing Team via a Washington Office Instruction Memorandum. The objective of implementing demonstration areas is to reduce fine fuel loads in a strategic, linear design across a wide variety of soils and topography. These demonstration areas and the studies associated with them will help inform future applications of this promising fuels treatment strategy. Demonstration areas are limited to rangelands dominated by invasive annual grasses and/or introduced species seedings.

### Soda Fire Targeted Grazing Demonstration Areas

The Boise District Owyhee and the Vale District Malheur Field Offices both implemented targeted grazing during the spring of 2018 as authorized by the Soda Fuel Breaks Environmental Assessment (EA) decision on March 8, 2017. The Soda Fuel Breaks EA authorized implementation of targeted grazing fuel break treatments annually from March 1 to June 30. The BLM Boise District BLM had five operators attempt targeted grazing across 11 pastures (Figure 5). The BLM Vale District also had two operators attempt targeted grazing across the two available pastures authorized on the Vale District. Grazing began as early as March 6 and lasted until June 5, 2015 in the 13 pastures (Figure 6a).

The objective of the Soda targeted grazing fuel breaks is to have a stubble height of 2 inches or less 200 feet each side of designated road (Figure 6b). Beyond this distance, a graduated use area was established with less restrictive grazed stubble heights so as not to affect key perennial species. The BLM Boise District is preparing a report on the management of cattle to meet stubble heights and fuel loads and lessons learned; the report will be posted on the Great Basin Fire Science Exchange website.

The Agricultural Research Service's Northwest Watershed Research Center is conducting scientific studies (fuel modification, vegetation composition, and soils) on the grazed fuel breaks. Results of these studies are being compiled and analyzed and will be posted on the Great Basin Fire Science Exchange website when finished.

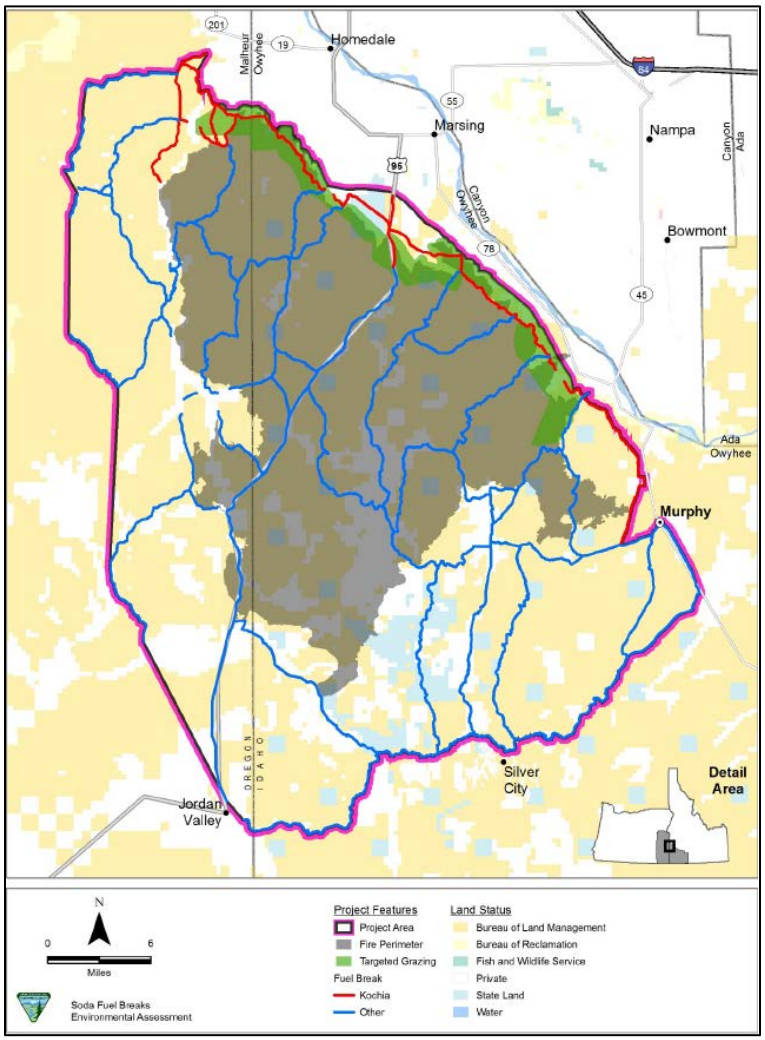


Figure 5. Soda Fire targeted grazing fuel breaks (light green color) that extends for 35 miles across the base of the Owyhee mountains.

Figure 6a (top photo) shows livestock being herded to graze cheatgrass along a fence on Highway 78 in early spring.

Figure 6b (bottom photo) is a grazed cheatgrass utilization monitoring plot in early spring.

**Elko District Targeted Grazing Demonstration Areas.**
This demonstration area consists of four allotments (Figure 7) where a total of 8,800 acres (2.5 percent of total acreage in the four allotments) have been identified for grazing to meet fuels management objectives. Approximately 40 miles of grazed fuel break pastures (ranging from 300 ft. to one half mile in width) were identified for the demonstration project. Three of the four projects include fencing on at least one side to manage grazing. The T Lazy S grazed fuel break follows an existing road that is already fenced on one side. The other side of the fuel break has a new fence to create a fenced fuel break pasture that is about 25 miles long.

Both the T Lazy S and Blue Basin allotments were grazed the spring of 2018. The Carlin Field allotment will be grazed next spring. The spring of 2018 was abnormal in terms of cheatgrass growth with a cold and dry early spring and quick curing of cheatgrass. This resulted in difficulty meeting the fuels management objectives of an average stubble height of 2-3 inches on cheatgrass. The objective was partially met along portions of the water haul road in the T Lazy S allotment. Dormant season grazing (late fall/early winter) was implemented in 2018 to reduce cheatgrass litter and standing dead plants to promote better use of live cheatgrass plants by cattle this spring. The treatment appeared to work well and improved the likelihood that the fuel management objectives in the T Lazy S allotment will be met this spring.

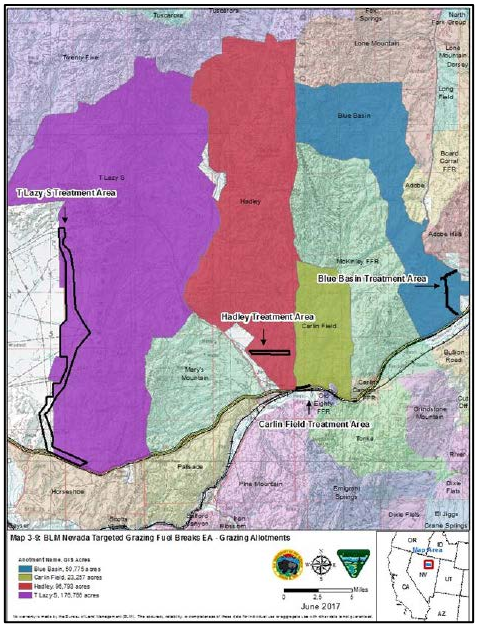


**FIGURE 7. FIVE ALLOTMENTS AND TARGETED GRAZING DEMONSTRATION AREAS IN BLM'S ELKO DISTRICT**

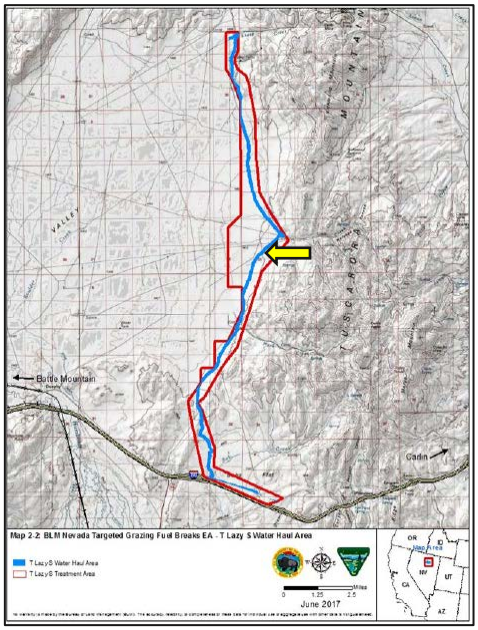


**FIGURE 8. T LAZY S FUEL BREAK PASTURE. BLUE LINE DEPICTS THE WATER HAUL ROAD AND THE YELLOW ARROW SHOWS THE GENERAL AREA WHERE THE BOULDER CREEK WILDFIRE CONTACTED THE GRAZED AREA ALONG THE WATER**

**Boulder Creek Wildfire/Demonstration Area Contact**
On July 16, 2018 a wildfire (Boulder Creek Fire-L0L4) started by lightning burned into an approximately 1 mile segment of the T Lazy S targeted grazing fuel break (Figure 8). The Ranch General Manager, Hanes Holman, for the T Lazy S allotment (Elko Land and Livestock) assisted the fire suppression crews with local information. Mr. Holman is responsible for the targeted grazing project, thus he had a good understanding of the livestock use in the fuel break.

As previously mentioned the majority of this targeted grazing area did not reach the objective of 2-3 inch stubble height on cheatgrass and other fine fuels due to early poor and then accelerated growing conditions in the spring. The exception to this observation was along the water haul road where grazing and trailing significantly reduced fuel loads in the immediate vicinity of the road.

The predominant fuel type was cheatgrass with occasional, sparse shrub cover (primarily Wyoming big sagebrush and rabbitbrush). The fire burned to the T Lazy S fuel break where it stopped along a .75-mile stretch of the water haul road. There were no suppression actions taken along this road other than some retardant/water drops on the northern and southern border of the fire along the road.

Fire weather conditions (Beacon Light RAWS station) during the active fire period were:

- Temperature 92 degrees
- Wind speed ranged from 5 to 16 mph
- Relative humidity 20 percent

Figures 9 and 10 show the flame lengths as the fire burned towards the water haul road and the fire stopping along the water haul road where livestock use/trampling had reduced the fine fuels.

On July the 17 the fire was controlled after burning 1,017 acres. The targeted grazing along the water haul road assisted in the containment of the fire and helped to keep the fire from burning into sage-grouse habitat in the nearby mountains.

FIGURE 9. WILDFIRE BEFORE IT CONTACTED THE WATER HAUL ROAD. CHEATGRASS AND SHRUBS DOMINATED AREA VEGETATION.

FIGURE 10. CONTACT OF BOULDER CREEK WILDFIRE AND WATER HAUL ROAD. NO FIRE SUPPRESSION OCCURRED IN THIS AREA.

**Monitoring Program for the Demonstration Areas**

The USDA Agricultural Research Service (ARS), Northwest Watershed Research Center has designed and implemented a rigorous monitoring protocol on the Soda Fire and Elko District Targeted Grazing Demonstration Areas. The ARS collects data at the study locations for both pre and post-grazing. Replicated studies at each evaluation area includes:

- Photo plots
- Vegetation composition, height, and distance (gaps) between all plant canopies
- Annual production (e.g. fine fuel loads)
- Percent bare ground and ground and canopy cover
- Utilization (% herbage removal)
- Plant stubble height (height of grazed and ungrazed plants)
- Plant phenology (life stage status)
- Soil stability
- Soil compaction

Monitoring 2018 field data from the Soda Fire and Elko District Demonstration Areas studies have all been entered, compiled, and error-checked in the database for inventory, monitoring, and assessment (https://jornada.nmsu.edu/monit-assess/dima/download). Pretreatment imagery from an Unmanned Aerial Vehicle (UAV) was acquired for the Soda Fire, ID and Beatty Butte, Oregon Demonstration Areas have been compiled, archived, and await geo-referencing before analysis can occur. The Beatty Butte UAV imagery and ground-based nadir photography samples were acquired to assess pretreatment cover and composition in potential treatment and control sites. Analysis of the 2018 field data is ongoing. Some general conclusions and observations derived from the 2018 grazing use in the demonstration areas includes:

1. The targeted grazing programs at the two 2018 demonstration areas generally did not meet fuel height reduction (stubble heights) targets. The spring weather patterns described above contributed to this result. In several allotments, grazing was initiated just before hot/dry spring weather conditions set in greatly reducing the palatability of the cheatgrass. In addition, the large amounts of standing cheatgrass (residual) carried over from the 2017-growing season interfered with 2018 spring grazing of cheatgrass. Proactive attempts were made by some rancher cooperators in early 2018 (about March 1), at the Soda Fire Demonstration Area to graze this residual fuel load before active cheatgrass growth occurred. Challenging climatic factors (i.e., rapid changes from cold/dry, to warm/moist, and then to hot/dry) largely inhibited the success of these attempts.

2. The T Lazy S Elko District demonstration area applied dormant season grazing as a means of reducing the standing residue the winter or 2018-19. Implementation of this combination of dormant season and spring grazing will continue for all remaining study years as long as there is enough residue remaining in the fall to support the dormant season grazing. Plans are for the BLM and cooperating ranches at the Soda Fire and new Lakeview, OR projects to implement dormant and spring grazing treatment in 2019-2020 and future study years.

**Web Based Targeted Grazing Resource Center**
The JFSP program's Great Basin Fire Science Exchange website www.greatbasinfirescience.org) is the primary source for information on "Strategic Targeted Grazing" approach to reducing fine fuels. Currently the website contains relevant scientific publications on managing fine fuels with targeted grazing. The priority in 2019-2020 is to expand the scope of this website to become a "Resource Center" for all targeted grazing strategies and programs that address fine fuels (both a strategic landscape approach as well as dormant season grazing). Scientists and managers involved in studies relative to these strategies have been contacted and will be involved in contributing research and outreach on these applications.

This Targeted Grazing Resource Center (TGRC) will also include the following components:

1. Planning, technical and National Environmental Policy Act guidance to assist in meeting environmental, agency and other regulations and policies when implanting targeted grazing strategies.

2. User forum to facilitate sharing information and lessons learned in a peer-to-peer network (rancher-to-rancher, agency to agency, etc.)

3. Targeted grazing demonstration areas progress reports. Information on planning and implementation status, lessons learned and monitoring results. The USDA Research Service (Northwest Watershed Center) has implemented a rigorous data collection program to evaluate the effectiveness of strategic targeted grazing on soils, vegetation, and fuel loads. This information will be summarized and posted on the TGRC website as it is completed.

4. Dormant season grazing information including projects, status, results, and contacts.

5. Technical Assistance. Provide contact information for experts on various aspects of planning, implementing and evaluating projects focused on reducing fine fuels with targeted grazing.

6. Information on 2019-2020 Targeted Grazing Workshops.

## Summary

The threats posed by wildfires in the Great Basin require a landscape scale solution given the extent and frequency of wildfires in the Great Basin. Using livestock to strategically reduce fine fuels is a novel approach to fuels management in the Great Basin that is being evaluated by the BLM and its partners and livestock permittees. If successful, this strategy will provide another tool in the fuels management toolbox to address the wildfire threat across all land ownerships in the Great Basin. BLM is committed to fully exploring this opportunity and to widely share and promote this strategy across appropriate western landscapes.

## Appendix 1. Interagency Targeted Grazing Team Members

| Role | Name | Position |
|---|---|---|
| WO Lead | Joe Tague | BLM WO-220 Division Chief Vegetation Resources |
| Team Lead | Jeff Rose | BLM District Manager, Burns District |
| WO-220 Liaison | Maggie Marston | WO Rangeland Management Specialist |
| Contract Ecologist | Mike Pellant | Technical Specialist |
| Landscape/Fire Ecology | Don Major | BLM, Fire/Landscape Ecologist, Idaho State Office |
| Grazing Management | Nika Lepak | BLM, Rangeland Management Specialist, Idaho State Office |
| USGS Contributor | Dave Pyke | Research Ecologist, Forest and Rangeland Ecosystem Science Center, Corvallis, OR |
| NRCS Contributor | Jeremy Maestas | Sagebrush Ecosystem Specialist<br>NRCS West National Technology Support Center, Portland, OR |
| ARS Contributor | Pat Clark | Rangeland Scientist, Northwest Watershed Research Center, Boise, ID |
| Fuels Management | Angela Simpson | BLM, Fuels Management Specialist, NIFC |
| State of Nevada | Meghan Brown | Nevada Department of Agriculture, Reno, NV |
| Nevada Department of Agriculture | Ethan Mower | Conservation Specialist, Carson City, NV |
| Nevada State Office | Kathryn Dyer | BLM State Rangeland Program Lead<br>Reno, NV |
| Fish and Wildlife Service Contributor | Angela Sitz | Fish and Wildlife Biologist, Bend, OR |
| Great Basin Fire Science Exchange | Genie Montblanc | Coordinator/Web Based Resource Center Lead |
| Idaho State Department of Lands | Jenna Narducci | Good Neighbor Authority Rangeland Program Specialist |
| Utah Representative | In progress | |