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SageSTEP

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# SageSTEP News

Sagebrush Steppe Treatment Evaluation Project

Issue 2, Fall/Winter 2006

## Land Management Treatments Successfully Implemented at Several Sites Throughout the Great Basin

Thanks to the hard work and cooperation of many people, alternative land management treatments were successfully implemented at several of the SageSTEP study sites this fall. As most land managers and researchers know, getting work done on the ground can present many challenges. In order for the SageSTEP treatments to take place, a number of factors had to come together, not the least of which was getting Mother Nature to cooperate!

Of the 17 SageSTEP study sites, 5 received treatment this fall and the remainder are scheduled to be treated in fall 2007 (see map on p. 2). Researchers also hope to add four new sites to the project in 2007. While researchers and managers were hoping to treat more sites this fall, many of the influencing factors were beyond their control, and treatments had to be postponed until next year. Additionally, in order to maintain statistical viability, all treatments within a site must be implemented in the same year. At sites where prescribed fire implementation was not possible this year, all treatments were postponed to 2007.

Due to the extreme wildfire season in many states, the national

(continued on page 2)



Prescribed fire lights up the sky at the Marking Corral site, managed by the BLM Ely Field Office. (Photo by Robin Tausch.)

### In this issue:

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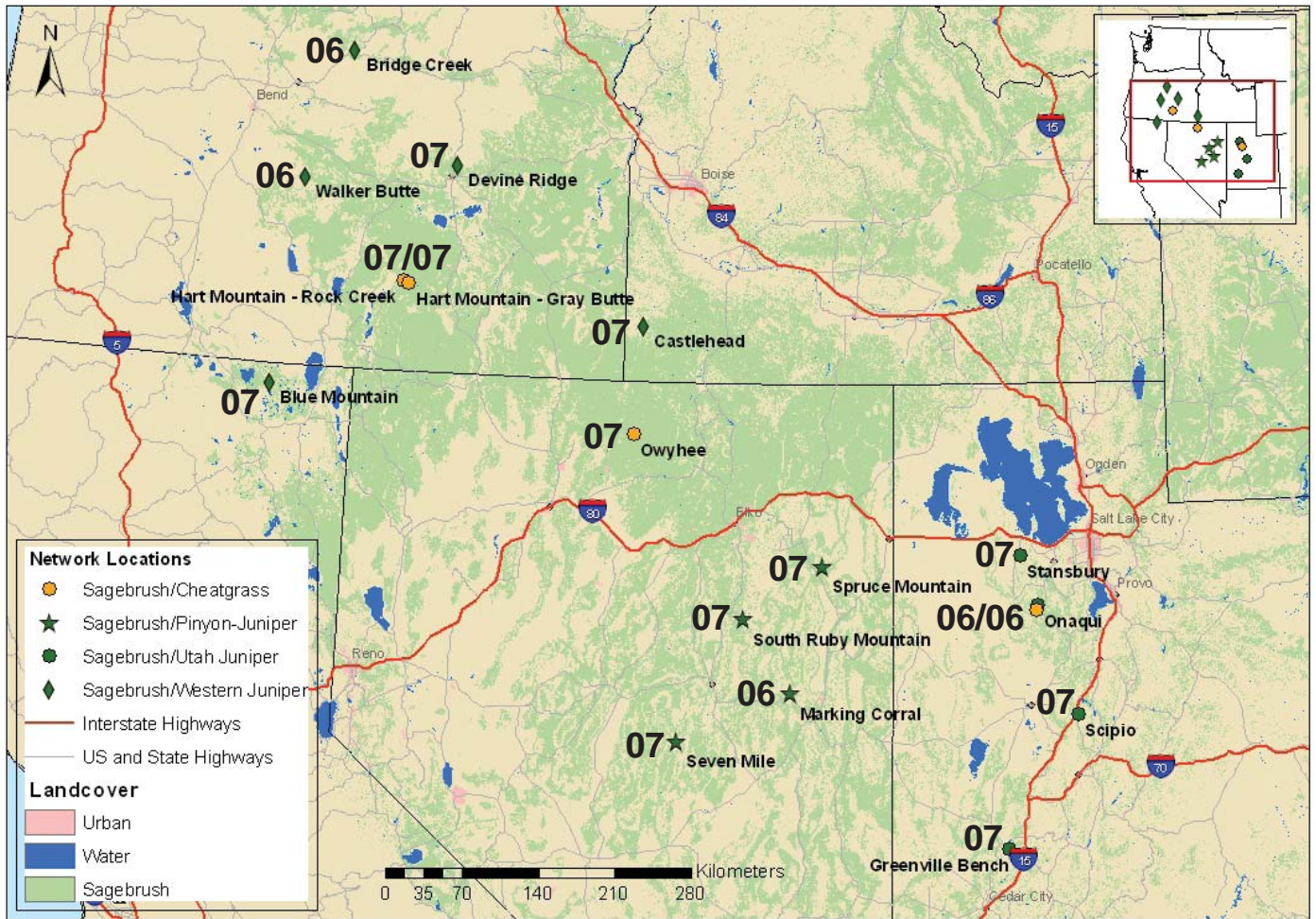
**Collaborative Projects Highlight: Seed Pool Studies**

Please send questions or comments on this newsletter to [summer.c.olsen@usu.edu](mailto:summer.c.olsen@usu.edu).

 Sagebrush Steppe  
**SageSTEP**  
Treatment Evaluation Project



# SageSTEP Network Treatment Year Map



**SageSTEP Network Map:** This map illustrates the locations of all current sites. Sites marked '06' received treatment in the fall of 2006, and sites marked '07' are scheduled to be treated in the fall of 2007.

(*Treatments* continued from page 1)

fire preparedness level was at 5 at the same time that many SageSTEP burns were originally scheduled to take place. Lack of personnel and then a sudden turn to wet weather postponed several burns. Other treatments have been postponed as a result of delays in the NEPA process, funding issues, or lack of suitable weather including moisture levels and wind speeds. Treatments at the Spruce Mountain site, located on land managed by the BLM Elko Field Office, have been halted by a temporary injunction awarded in response to a lawsuit filed by Western Watersheds Project regarding a larger fuels reduction project in that area. Land managers face challenges like these on a regular basis, and researchers look forward to trying again next year.

Overall, researchers have been pleased with the outcomes of the implemented treatments. Agency



**Prescribed fire at the Onaqui sagebrush/cheatgrass site, managed by the BLM Salt Lake Field Office.**



(*Treatments* continued from page 2)

partners have been very helpful in overseeing the safe implementation of treatments while also following the project's protocol. Below are brief descriptions of treatments that have been implemented this fall.

## Prescribed Fires

All sites within the SageSTEP Network have a prescribed burn plot. Sagebrush/woodland sites are being burned to reduce juniper dominance, restore a more natural fire pattern, and improve the native sagebrush/bunchgrass community. Prescribed burns are being implemented on sagebrush/cheatgrass sites to mimic disturbance events that can eliminate sagebrush and determine levels of disturbance that are most ecologically and economically conducive to restoration of native perennial bunchgrasses.

The prescribed burns that took place this year blackened approximately 60-90% of the core plots, which range in size from 35 to 200 acres. The Onaqui 1000-acre sagebrush/Utah juniper extensive plot was also burned and effects were patchy resulting in a plot that was about 40% blackened. Burn coverage varied among sites depending on factors such as wind speeds, moisture levels, and the presence and density of understory fuels. At some plots, crews went in after the fire and burned individual trees and shrubs to insure that the burn was as thorough as possible.



A firefighter lights a juniper tree with a drip torch.



Post-burn at the Walker Butte site, managed by the BLM Lakeview Resource Area. (Photo by Jaime Ratchford).

## Mechanical Treatments



Mowing at the Onaqui sagebrush/cheatgrass site, managed by the BLM Salt Lake Field Office.

### Mowing

The mowing treatment was implemented at the Onaqui sagebrush/cheatgrass site. Sagebrush was mowed using a tractor with an 8-foot wide mower attached to the back. Mower height was set at 12-15 inches to reduce sagebrush density by approximately 50%. The goal of the mowing treatment is to reduce sagebrush abundance, improve native perennial bunchgrass communities, and determine the threshold at which these communities can resist exotic species invasion.

### Chainsaw Lop-and-Scatter

This treatment was implemented at the Marking Corral, Walker Butte, Bridge Creek, and Onaqui woodland sites. All trees in these plots taller than 1/2 meter in height were cut with a chainsaw and left where they fell. Limbs were not removed from the trunk after being cut. This treatment is being implemented to reduce juniper dominance and increase the native sagebrush/bunchgrass community.





**Left: A sawyer cuts down a juniper tree at the Onaqui woodland site. Right: Onaqui woodland mechanical and burn plots post-treatment. (Photos by Brad Jessop.)**

(*Treatments* continued from page 3)

### **Bull Hog™**

The Bull Hog™ treatment is being implemented at the Utah woodland sites to reduce juniper abundance. The Bull Hog™ grinds brush and trees leaving the mulch on site. This fall, all trees in the Onaqui Bull Hog™ plot were leveled and mulched. This treatment is being implemented at Utah sites because it has been of particular interest to Utah landowners and managers for fuel reduction to reduce fire hazards. Other goals include improved understory plant growth and wildlife habitat.



**The Bull Hog™ knocks down and mulches a juniper tree at the Onaqui woodland site.**

### **Herbicides**

Application of tebuthiuron (Spike™ 20P) occurred at the rate of 1.5lbs/acre at the Onaqui sagebrush/cheatgrass site in the form of pellets dropped aerially. Concentrations necessary to reach the desired 50% sagebrush mortality will vary at other sites due to variations in soil type. Tebuthiuron is being used to reduce sagebrush abundance, restore native perennial bunchgrasses, and determine the threshold at which these communities can resist exotic species invasion.

Plateau™ pre-emergence herbicide treatment was sprayed by hand on various sub-plots of the Onaqui sagebrush/cheatgrass site. Its use is intended to decrease the emergence of cheatgrass and thereby provide a competitive advantage to native grasses and forbs. This treatment is being crossed with the four main treatments: prescribed fire, mowing, tebuthiuron, and control.



**Plateau application on the Onaqui sagebrush/cheatgrass burn plot.**

For site-specific information about treatments, including photos, visit [http://www.sagestep.org/about\\_the\\_project/treatments.html](http://www.sagestep.org/about_the_project/treatments.html).



# Thank You

to all of the public land managers, firefighters, and contracted workers who helped safely implement the alternative land management treatments this fall.

## A Multimedia Approach to Sharing Research Information

In September of this year, a project began to document the alternative land management treatments being implemented as part of SageSTEP. Upon completion, this video program will be used to inform public and private sagebrush land managers of the relative advantages of these treatments and their short-term impacts on sagebrush rangelands.

Videographers from Utah State University's Multimedia Services Department were on hand for two prescribed burns, sagebrush mowing, tebuthiuron herbicide application, and Bull Hogging™ at the Onaqui sagebrush/cheatgrass and sagebrush/Utah juniper study sites (see map on p. 2).

Final products of this project will include a DVD and workbook set that will be distributed to interested outreach, extension, and technical assistance professionals free of charge. These items are scheduled for distribution in early 2008. This project is funded by a grant from the Western Sustainable Agriculture and Research Education (SARE) program.



The film crew gets a close-up with a BLM escort.



Videographer Stu Parkinson goes out of his way to get a good shot.



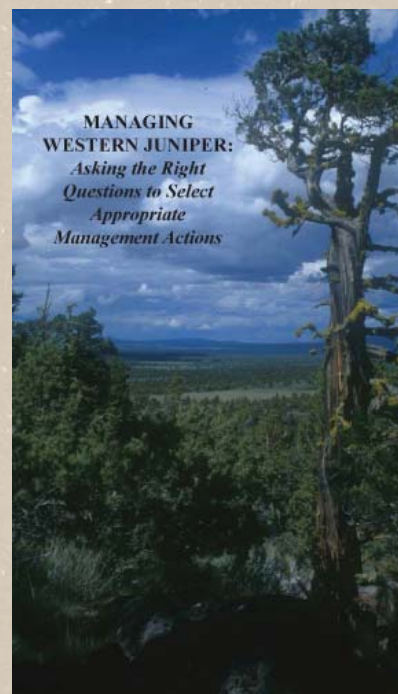
## Western Juniper User's Guide Update

One of the products of SageSTEP will be a set of three 'User's Guides', one each for sagebrush ecosystems threatened by cheatgrass invasion, pinyon-juniper woodland encroachment, and western juniper encroachment. These guides will contain the latest information on how to evaluate these systems and how they are known to respond to available treatments. The guides are intended to help both public and private landowners make more informed decisions as they consider how to apply land management treatments under a wide variety of conditions.

The first of these guides is entitled *Managing Western Juniper: Asking the Right Questions to Select Appropriate Management Actions*. Drafts of this guide have gone through an extensive review process including on-the-ground testing during the 2006 field season. Based on the feedback received, changes are being made and copies of the final version are scheduled to be distributed free of charge in late 2007.

**We would like to thank everyone who has reviewed and field-tested the guide. Thanks for your invaluable feedback!**

If you have questions about the guide, please contact Summer Olsen (435-797-8455 or [summer.c.olsen@usu.edu](mailto:summer.c.olsen@usu.edu)). Also let Summer know if you are interested being placed on a mailing list to receive updates about the status of the guide and a copy of the finished product.



## Recent and Upcoming Events

The SageSTEP research team is committed to sharing information with the broadest possible audience. Watch for SageSTEP presentations at these upcoming meetings...

**Workshop on Collaborative Watershed Management & Research in the Great Basin**  
Silver Legacy Resort Hotel and Casino, Reno, NV, November 28-30, 2006

**2nd Fire Behavior and Fuels Conference**  
Destin, FL  
March 26-30, 2007  
<http://emmps.wsu.edu/fire.behavior/>

**Society for Range Management 2007 Annual Meeting**  
Reno, NV, February 9-16, 2007  
<http://www.ag.unr.edu/srm2007/>  
Rick Miller, *Ecological Sites as a Tool for Risk Assessment for Vegetative Treatments/Fire Thresholds in Juniper Rangelands*, *Vegetation Management for Improved Watershed Function Symposia*  
Robin Tausch, *Fire Ecology Symposia*  
Mark Brunson, Jeanne Chambers, Bruce Roundy, *SageSTEP Poster*

### Members of the SageSTEP team recently presented at...

- Intermountain West Rangeland and Mohave Desert Sky Islands Regional Fire Learning Network - Rick Miller, *Fire Regimes in Sage-Steppe: Interpretation and Implementation*
- Oklahoma State University - Mark Brunson, *Restoration or Ruination: Human Dimensions of Conifer Removal*
- Nevada Governor's Workshops - Robin Tausch, *Condition of Pinyon-Juniper/Sagebrush Steppe Ecosystem Resources: Effects of Changing Communities, Increasing fuel Loads and Invasive Species*
- Society for Range Management 2006 Utah Section Meeting - Jeff Burnham and Summer Olsen, *SageSTEP Overview and Update*, Afternoon session, "What's all this fuss about sagebrush?"



# Collaborative Projects Highlight: Seed Pool Studies

Collaborative projects include anything outside of the core SageSTEP study that is taking place on, or in relation to, the SageSTEP study plots. Collaboration provides researchers with study sites while increasing the amount of information generated by the SageSTEP treatments. We will be highlighting various collaborative projects in order to share this the broad range of information with as many people as possible. More information about collaborative projects can also be found at [www.sagestep.org/collaborative\\_projects.html](http://www.sagestep.org/collaborative_projects.html).

## Seed Pool Studies

Three seed pool studies taking place on SageSTEP plots began this fall. These studies will provide information about seed banks in areas of increasing juniper abundance, prescribed fire, and other restoration treatments. The results of these studies should help land managers predict what species will grow following different restoration efforts. This information will also help managers decide when additional inputs are necessary for restoration and when the land is likely to recover on its own.

### ***Seed Pool Response to Juniper/Pinyon Encroachment and Fire***

This study is being conducted by Ph.D. candidate Kert Young and Dr. Bruce Roundy of Brigham Young University. As juniper invades, it can reduce the numbers of more desirable species that were formerly present. This study will help land managers understand vegetation response after juniper removal and correlations with pre-control juniper density for a particular site.

The objectives of this study are:

- To determine the effect of fire on viable seed pool composition and species abundance;
- To determine influence of Utah juniper/pinyon density gradient on viable seed pool composition and species abundance.

This study is being conducted using the SageSTEP Onaqui sagebrush/Utah juniper study site (see map on p. 2). The researchers collected pre-burn soil core samples this fall and will be collecting post-burn and then yearly samples for at least two years. They are interested in the species composition of both soil and litter, so these components of the samples will be separated. The seed bank will be evaluated by direct germination in a greenhouse, and results will be used to meet the objectives above.



**Collecting pre-burn soil core samples.  
Photo by Bruce Roundy**

*(Seed Pool Studies continued on page 8)*

**Are you interested  
in conducting a  
study using one or  
more of our plots?**

We welcome proposals for non-invasive research on aspects of sagebrush ecosystems that are not covered in the SageSTEP proposal.

If you are interested, please contact  
Jim McIver, SageSTEP Project Coordinator  
(541)562-5396  
[james.mciver@oregonstate.edu](mailto:james.mciver@oregonstate.edu)



### ***The Relationships Between the Seed Bank and Above-Ground Vegetation in the Context of Restoration***

This study is based out of Utah State University and is being conducted by M.S. candidate Kristen Pekas and Dr. Gene Schupp. They will be examining the relationship of seed banks with the response of vegetation to restoration treatments. They are also interested in the relationship between the seed bank and the above-ground vegetation.

They will be using the SageSTEP Onaqui sagebrush/cheatgrass study site (see map on p. 2) and will be collecting samples in the prescribed burn, herbicide, and control plots. Pre-treatment samples were collected in August 2006, and post-treatment data will be collected next summer. Seed banks will be evaluated by direct germination. Above-ground vegetation will also be surveyed before and after treatments in order to determine their relationship with the seed bank.

### ***Effects of Increasing Juniper Abundance on Seed Pools***

This study, based out of Oregon State University, is being conducted by M.S. candidate Corinne Duncan, Dr. Rick Miller, Dr. Dave Pyke, Jaime Ratchford, and Dr. Jane Mangold. These researchers are interested in how seed pools change with increasing juniper canopy cover and volume.

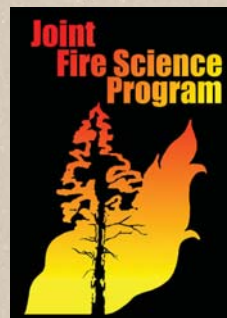
The objective of this study is to determine the composition of plant species found in the seed bank under a gradient of increasing western juniper abundance during early fall (the standard burning season).

This study is being conducted using the SageSTEP Devine Ridge and Bridge Creek western juniper study sites (see map on p. 2). Soil core samples will be collected in the fall before and after prescribed burning. Fire destroys seeds in the litter layer, so researchers will separate litter from the mineral soil. The seed pool will be evaluated by direct germination carried out in a greenhouse.

### **SageSTEP is a collaborative effort among the following agencies and universities:**

- Brigham Young University
- Oregon State University
- University of Idaho
- University of Nevada, Reno
- Utah State University
- Bureau of Land Management
- US Fish & Wildlife Service
- US Geological Survey
- USDA Agricultural Research Service
- USDA Forest Service

Funded by:



**For more information and updates, visit our website:**

**[www.sagestep.org](http://www.sagestep.org)**