



# Restoring Sagebrush Rangelands in the Great Basin

An Introduction to Alternative Land Management Strategies

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# Restoring Sagebrush Rangelands in the Great Basin: An Introduction to Alternative Land Management Strategies

## DVD Contents:

### Feature (22 minutes)

#### Bonus 1 - Planning Considerations (12 minutes)

- Knowing When to Treat: Woodland Encroachment
- Knowing When to Treat: Cheatgrass Invasion
- Wildlife Considerations
- Economic Considerations
- Considering Public Opinion

#### Bonus 2 - Treatment Considerations (8 minutes)

- Treatments
- Cost of Treatments
- Prescribed Fire
- Fire and Water
- Mechanical Treatments

**Plus DVD-ROM** with materials for assessing restoration options in the field.

All photos in this document were taken by Summer Olsen unless otherwise noted. Cover Photos: Sagebrush burning by Jeff Burnham, Sawyer by Brad Jessop.

Economic analyses are being conducted to evaluate the economic impacts of decisions about restoration and to assist landowners and managers in choosing appropriate strategies based on their individual situations. A socio-political research component is designed to help public land managers understand the opinions of the general public and various stakeholder groups regarding restoration in the Great Basin. Results of this project will provide resource managers with improved information to make restoration management decisions with reduced risk and uncertainty.



Richard Miller

### Additional Information

For more information about the restoration of sagebrush rangelands and the Sagebrush Steppe Treatment Evaluation Project (SageSTEP), visit our website: [www.sagestep.org](http://www.sagestep.org).

This is contribution number 15 of the Sagebrush Steppe Treatment Evaluation Project (SageSTEP), supported by funds from the U.S. Joint Fire Science Program.



The following ecological data are being collected at the study sites:

- **Vegetation and Fuels:** 10-, 100-, and 1000-hour fuel samples, and various other vegetation and fuel measurements are being collected in both the understory and overstory. Non-fuel vegetation measurements will allow scientists to learn more about the types of plant communities that are likely to appear after a wildfire or management action.
- **Soils:** Soils are being sampled for chemical analyses and soil profile descriptions. This information will tell scientists more about the effects of treatments on the availability of essential plant nutrients.
- **Hydrology:** Rainfall simulations are being conducted to learn more about how changes in vegetation and ground cover affect runoff and erosion.
- **Wildlife:** Wildlife data collection focuses on the effects of treatments on migratory songbirds.
- **Insects:** Butterflies are being surveyed for biodiversity, and ants are being studied because of their importance to sagebrush steppe systems, particularly for seed dispersal and predation
- **Soil Moisture and Temperature Stations:** Soil moisture and temperature data are being collected continuously at most sites.



## Introduction

Sagebrush rangelands cover millions of acres in the Great Basin including parts of Oregon, California, Idaho, Nevada, and Utah. This land provides a variety of important services, including wildlife habitat, clean water, recreation, and economic opportunities; it also serves as the primary forage base for the region's livestock industry. Healthy sagebrush rangelands are rapidly being lost due to a variety of factors including severe wildfires, woodland expansion, invasion of non-native species, urban development, and drought. This loss can have significant impacts on those who depend on the land for goods and services. This DVD provides information to help put land owners and managers on the path to restoration of sagebrush rangelands and the services they provide.



Todd Black

Todd Black





## How to Use this DVD

The purpose of this DVD is to serve as a tool for extension and technical assistance professionals working with private landowners on sagebrush rangeland improvements in the Great Basin. As the health of these rangelands declines, the livelihoods of many people who depend on the land for goods and services are threatened. Information provided on this disc can help land owners and managers start the process of restoring healthy rangelands and the services they provide.



The main feature portion of this DVD is designed for outreach professionals to show to land manager clients in a forum where the professionals can be present to answer questions about the topics presented. The bonus tracks can be viewed all at once or individually depending on the needs and interests of the individual. The DVD-ROM provides additional information that can be used in the field to help make decisions about restoration treatments. After viewing appropriate sections of the DVD, technical assistance professionals should be available to discuss restoration options based on characteristics of the site in question and the needs of individual land owners.

The information on this DVD has been provided by individuals with years of experience working on sagebrush rangelands in the Great Basin. This information is not

two large-scale studies, one looking at sagebrush sites in various stages of cheatgrass invasion and one in sagebrush sites facing pinyon and juniper woodland encroachment.

**Cheatgrass Research:** For this experiment, sites are located in sagebrush communities threatened by cheatgrass invasion. Researchers are studying the effects of four land management options: no management action (control), prescribed fire, mechanical thinning of sagebrush by mowing, and herbicide application (tebuthiuron) to thin old, unproductive sagebrush plants and encourage growth of young sagebrush and native understory grasses. An additional herbicide application (imazapic) to control cheatgrass will be applied within portions of treated areas. The objective is to learn how much native perennial bunchgrass must be present in the understory of a sagebrush community in order for managers to improve land health without having to conduct expensive restoration, such as reseeding of native grasses.

**Woodland Research:** For this experiment, sites are located in sagebrush communities threatened by woodland encroachment. Researchers are studying the effects of no management action (control), prescribed fire, and mechanical removal of trees by chainsaw cutting and tree mastication (in Utah only). The objective is to learn how much of the native sagebrush/perennial bunchgrass community must remain in order for managers to improve land health without having to conduct expensive restoration.

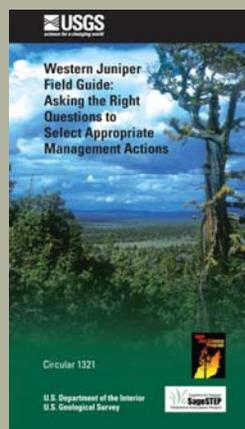


## Bonus Track - Treatment Considerations

The second set of bonus tracks provides additional information about the use of different land management treatments. One track provides information about the relative costs of treatments. Another discusses additional pros and cons of using prescribed fire and the impacts of fire on water systems, which can be very important in this arid region. The final track presents additional pros and cons of mechanical treatments.

## DVD-ROM

The DVD-ROM section of the disc contains access to a PDF version of the publication *Western Juniper Field Guide: Asking the Right Questions to Select Appropriate Management Action* (USGS Circular 1321). This guide is the first in a set of three 'user's guides', one each for sagebrush ecosystems threatened by western juniper encroachment, pinyon-juniper encroachment, and cheatgrass invasion.



These guides 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 land owners and managers make more informed decisions as they consider how to apply land management treatments under a wide variety of conditions.

Updated information about the guides is available at <http://www.sagestep.org/pubs/userguides.html>. PDF versions of the two remaining guides will be available to download from this webpage after they are published.

## The SageSTEP Study

This DVD was produced as part of the Sagebrush Steppe Treatment Evaluation Project (SageSTEP) Outreach Program. SageSTEP, is an interdisciplinary, 5-year research program that is exploring ways to improve the health of sagebrush rangelands across the Great Basin. The project is funded by the federal government's Joint Fire Science Program (JFSP) and is a collaborative effort among five universities, six federal agencies, and one non-governmental organization. This study seeks to address the rapid loss of healthy sagebrush rangelands in the Great Basin due to invasion of cheatgrass, severe wildfires, and expansion of pinyon and juniper woodlands.

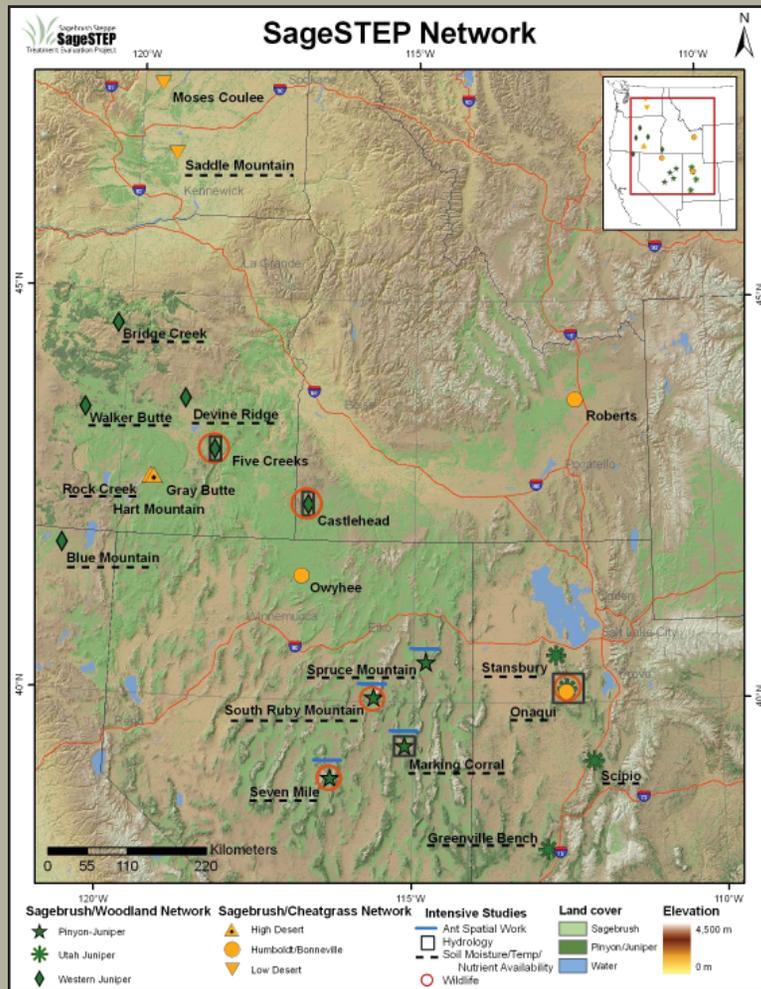
The purpose of SageSTEP is to conduct research that will provide land owners and managers with improved information to make decisions about restoring sagebrush rangelands. More than 25 scientists are working in collaboration with land managers in more than 20 different offices throughout the Great Basin to implement the project. SageSTEP is a unique study that will produce new scientific findings about sagebrush steppe ecosystems as well as practical information about restoration that can be applied on the ground.

SageSTEP has 21 study sites scattered throughout six Great Basin states, primarily on public lands (see map on p. 6).



This regional network will allow scientists to understand the thresholds between healthy and unhealthy sagebrush communities over a broad range of conditions across the Great Basin. The research project focuses on results from

meant to be all-inclusive, but rather should serve as a starting point for improved understanding of the current situation and possible courses of action that could be considered. In all cases, local experts should be consulted for advice about site characteristics (soils, vegetation, climate, etc.) for a particular area.



## Feature

The DVD feature track gives an overview of current threats to sagebrush rangelands, the need for active restoration, information about some of the existing land management treatments, and a summary of some of the social and economic concerns related to restoration. Subject matter experts, including ranchers, scientists, and public land managers, share information based on years of experience working in these systems.

## Bonus Track Set 1 - Planning Considerations

The first set of bonus tracks provides additional information for land owners and managers to consider when deciding whether or not to implement a restoration treatment. In this section experts give advice about the phases of woodland encroachment and stages of cheatgrass invasion, and what site characteristics one might look for when considering treatment of a particular area. Wildlife considerations include threatened and endangered species, and Sage Grouse Working Groups as an example of community action to effect change. This section also includes considerations about public opinion and economic concerns for those planning restoration treatments.

