

SageSTEP

Sagebrush Steppe Treatment Evaluation Project

SageSTEP is an interdisciplinary, long-term research program exploring ways to improve the health of sagebrush rangelands across the Great Basin. The purpose of SageSTEP is to conduct research and provide improved information about restoring sagebrush rangelands degraded by conifer encroachment or exotic grassland invasion. This information will help resource managers make restoration management decisions with reduced risk and uncertainty. The research team is comprised of experts in a variety of disciplines from 5 universities and 5 resource management agencies in 5 states in the Great Basin.

Land management treatment options—including prescribed fire, mechanical thinning of shrubs and trees, and herbicide applications—are being evaluated to learn how to create healthy and diverse plant communities that will be more resilient to fire and resistant to weed invasion. Baseline data was collected in the summer of 2006 and treatments took place at five sites in fall 2006. Treatments at the remaining sites are planned for fall 2007. Monitoring data will be collected in subsequent years to determine the impacts of treatments.



An Interdisciplinary Approach

Vegetation and Fuels: 10-, 100-, and 1000-hour fuel samples, and various vegetation measurements in both the over- and understory.

Soils: Sampled for chemical analyses and soil profile descriptions.

Hydrology: Various measurements to quantify relationships between changes in vegetation and ground cover and hydrologic and erosion processes.

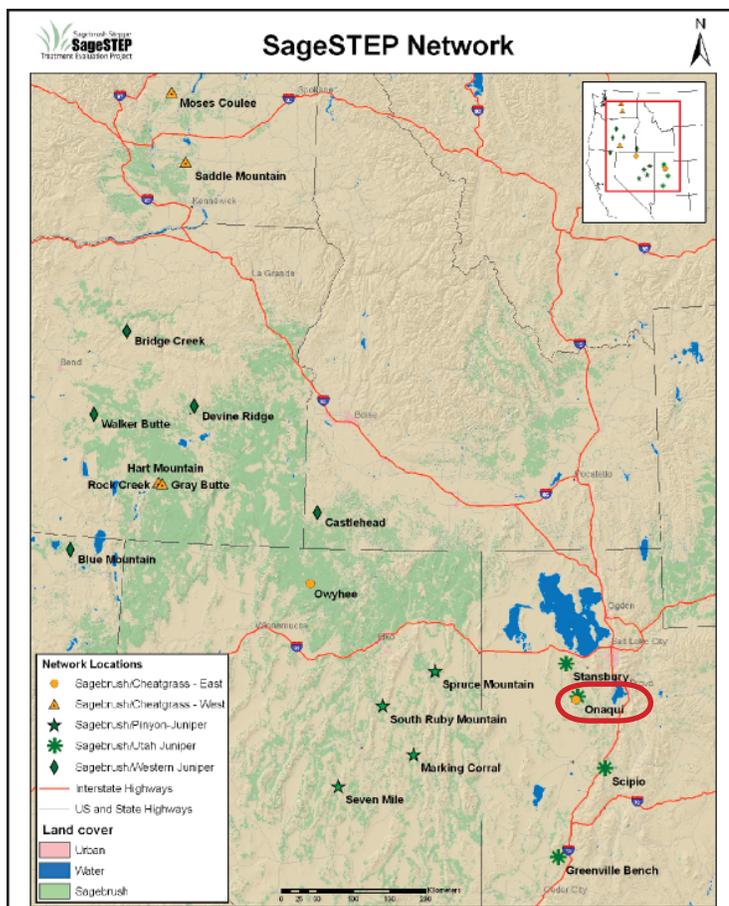
Wildlife: Focus on passerine birds to determine if and how wildlife populations benefit from treatments.

Insects: Surveys of butterflies for biodiversity and ants because of their importance to sagebrush steppe systems, particularly for seed predation and dispersal.

Additional Ecologic Data: Yearly standard photographs, multiple soil moisture sensors, and a climate station at each site.

Economics: Environmental valuation study to identify and measure changes in environmental benefits (such as recreation and ranching) resulting from ecosystem changes caused by treatments.

Sociopolitical: Focus on understanding the social acceptability of management practices as well as factors that influence managers' willingness to use them.

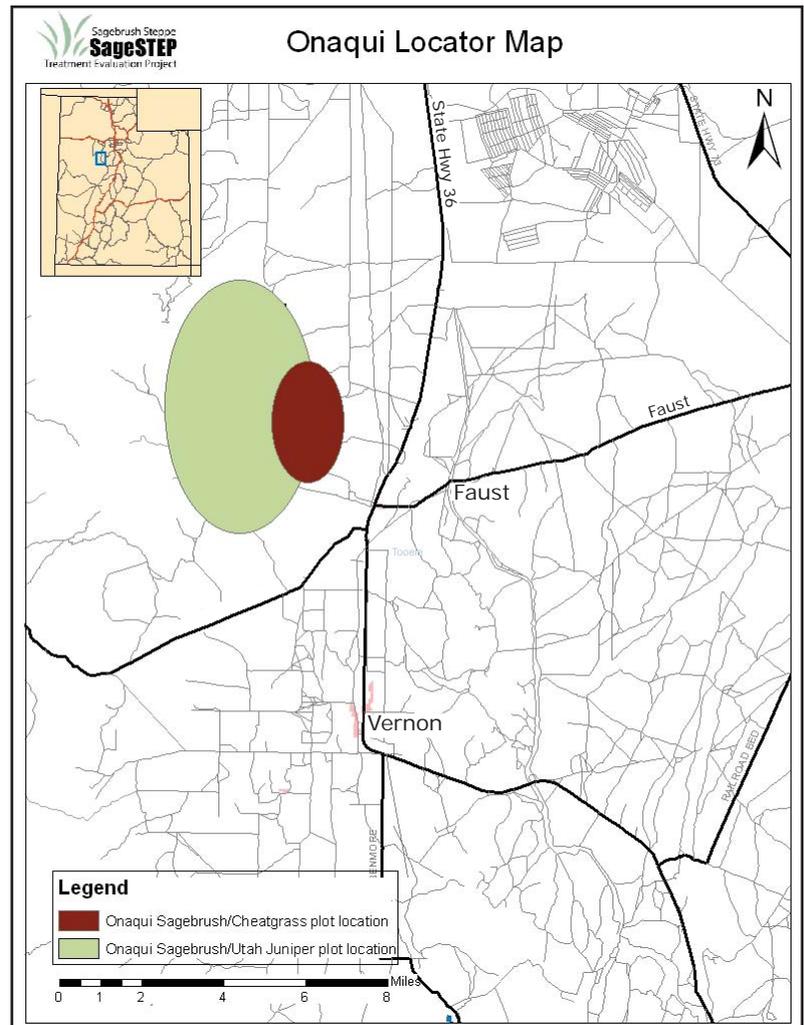


Onaqui Research Sites

Two of the SageSTEP study sites are located in Rush Valley, Utah, just 90 minutes from Salt Lake City. The nearest towns are Vernon (~5 miles) and Tooele (~25 miles), and the land is managed by the Bureau of Land Management (BLM) Salt Lake Field Office. Onaqui is the only SageSTEP network location with two sites of different vegetation composition adjacent to each other: a sagebrush/cheatgrass site, and a sagebrush/Utah juniper site.

Each site consists of four core plots which contain numerous sub-plots from which data are collected. The Onaqui sage/Utah juniper site is one of only three sites in the network that also includes a larger “extensive” burn plot with a paired control plot used to accommodate the study of hydrology and wildlife.

The Onaqui site is located on an active grazing allotment, and plots have been fenced for the duration of the study to exclude livestock. Grazing is not being tested in this study since there is no single grazing treatment that could be applied identically across such a wide network of sites. Arrangements have been made for the permittee to use other grazing land throughout the course of this study.



Sage/Utah Juniper Site Quick Facts

Plots: Four 50-acre core plots (Control, Burn, Mechanical, and Bull Hog™) and two 1000-acre extensive plots (Control and Burn)

Elevation: 5500-6200 ft.

Topography: 2-30% slope and aspect of 90-105°

Common Vegetation: Utah Juniper, Wyoming big sagebrush, black sagebrush, bluebunch wheatgrass, Sandberg bluegrass, Indian ricegrass, cheatgrass, and various native wildflowers.

Soils: Gravelly loam and sandy loam

Fire Regime: Historically ranging from 20 to >100 years. Woodland invasion suggests that the majority of these communities have not burned since the late 1800s. As woodlands gain dominance, the fire regime shifts to infrequent, high-intensity fires.

Representative Land Base: Several million acres in western Utah, northeastern Nevada, and southern Idaho.

Sage/Cheatgrass Site Quick Facts

Plots: Four 75-acre plots (Control, Burn, Mechanical, and Herbicide)

Elevation: 5400-5500 ft.

Topography: 3-4% slope and aspect of 90-105°

Common Vegetation: Wyoming big sagebrush, shadscale, viscid rabbitbrush, Sandberg bluegrass, squirreltail, Indian ricegrass, bluebunch wheatgrass, basin wildrye, and cheatgrass.

Soils: Fine-loamy

Fire Regime: Historically, several decades. Many of these communities experienced an increased fire return interval with settlement and overgrazing. Cheatgrass invasion can cause larger fires and reduce this interval to 10 years or less.

Representative Land Base: Several million acres in western and central Utah, southern Idaho, northern Nevada, and eastern Oregon.

Land Management Treatments

The Bureau of Land Management Salt Lake Field Office successfully implemented all treatments at the Onaqui sites in the fall of 2006.

Sagebrush/Utah Juniper Treatments

- Prescribed burn: blackened ~70% of core plot and ~40% of larger extensive plot
- Chainsaw: all trees <.5m were cut and left on site
- Bull Hog™: all trees mulched and left on site
- Control: untreated



Sagebrush/Cheatgrass Treatments

- Prescribed burn: blackened ~70% of plot
- Mowing: mow height of ~12-15" throughout plot
- Tebuthiuron (Spike 20P) Herbicide Application: aerial application of pellets at ~1.5lbs/acre
- Control: untreated

Plateau pre-emergence herbicide treatment was crossed with the four main treatments on half of the site's subplots to achieve cheatgrass control.

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