

Upper Columbia Basin Network Inventory and Monitoring

National Park Service
U.S. Department of Interior

Pacific West Region



Sagebrush Steppe Monitoring

John Day Fossil Beds National Monument



Sagebrush at the Sheep Rock Unit. Photo by Miguel Vieira.

Why is sagebrush steppe important?

Sagebrush steppe is one of the most threatened ecosystems in the Intermountain West. Substantial portions of this region have been converted to agriculture and heavily grazed rangeland. Much of the remaining sagebrush steppe has been degraded through altered fire regimes and invasion of introduced plants. Historic and current land use practices, both within and adjacent to Upper Columbia Basin Network (UCBN) park steppe communities, continue to fragment and alter steppe ecosystems, and predicted climate change scenarios for the region will likely exacerbate these changes.

Why do we monitor sagebrush steppe?

- To determine the status and long-term trends of sagebrush steppe communities. This includes determining the composition and abundance of native and invasive plant species.
- To determine the status and trend in the amount of bare soil (a fundamental indicator of soil stability).

How do we use the monitoring data?

- To provide critical information on the park ecological condition
- To identify areas susceptible to invasion by exotic annual grasses
- To provide feedback to park managers on the success of restoration activities
- To support resource managers in their efforts to protect and restore this landscape

What have we found?

Data collection in 2014 occurred over the course of three weeks from June into early July. Monitoring is done by recording estimated cover of native plants, invasive plants and exposed bare ground in randomly located plots in the four units of John Day Fossil Beds National Monument (JODA). Big sagebrush is sparse and was observed in a small proportion of the plots. Snakeweed, a native fire tolerant species, is the dominant shrub across the Monument. Sandberg's bluegrass, bluebunch wheatgrass and needlegrasses are the most abundant native perennial bunch grasses. Invasive annual grasses are widespread, with scattered cover of invasive forbs. Cheatgrass occurs ubiquitously across the landscape and medusahead is widely present. The correlation between fire and the spread and persistence of invasive annual grasses has been well established. The shorter fire return intervals, associated with the increase of annual grasses, continues to pose a threat to the remnant stands of native vegetation in JODA. In addition, big sagebrush does not recover well after fire; thus, fire is very likely a contributing factor to the paucity of this species.



The Broom snakeweed shrub (*Gutierrezia sarothrae*) is a native fire tolerant species at JODA.



Native grass Bluebunch wheatgrass (*Pseudoroegneria spicata*) in the Clarno Unit.



Medusahead (*Taeniatherum caput-medusae*) is a non-native, invasive species in JODA.



Upper Columbia Basin Network

105 East 2nd St., Suite #5

Moscow, ID 83843

<http://science.nature.nps.gov/im/units/ucbn/monitor/sagebrush.cfm>