



Climate Change Vulnerability Assessment in the Upper Snake River Watershed

Big Sagebrush

MORE WARMING

Low Vulnerability

Medium Vulnerability

HIGH VULNERABILITY

Extreme Vulnerability

LESS WARMING

Low Vulnerability

MEDIUM VULNERABILITY

High Vulnerability

Extreme Vulnerability

Results above highlight **big sagebrush climate change vulnerability in the 2050s** for two different climate change scenarios. The higher climate change scenario (RCP 8.5) is labeled “More Warming” and the lower climate change scenario (RCP 4.5) is labeled “Less Warming”. Generally, more greenhouse gas emissions over a longer time will lead to more severe impacts from climate change.

Relative vulnerability rankings were determined by combining the best available climate change science with the local and traditional knowledge of the Upper Snake River Tribes (USRT) Foundation’s four member tribes. These rankings are based on climate change projections, species-specific sensitivities, and the ability of species to adapt and respond to the projected changes.

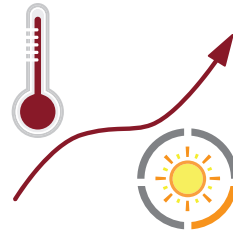
Big Sagebrush and the USRT Member Tribes

Big sagebrush and sagebrush steppe habitat in many ways define the Upper Snake River Watershed. The plants, animals, and springs of this landscape have been utilized by the USRT member tribes for thousands of years and still provide important wildlife habitat and grazing areas for managed species.

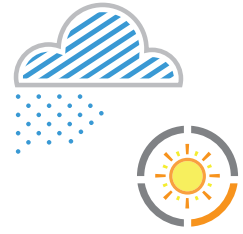
USRT member tribes have reported seeing large stands of dead and dying sagebrush, likely attributable to recent drought and a large scale moth infestation in 2006. Dry sagebrush habitat increases fuel loads for wildfire and tribes have observed the wildfire season extending from April to October. In some low elevation areas, sagebrush have been outcompeted by invasive cheatgrass and medusahead, as these species can sprout earlier, are more tolerant of drought, and can grow back more quickly after wildfire.

Key Climate Impacts

Maximum summer temperatures in the Upper Snake River Watershed are projected to increase 6.5° to 8.5° Fahrenheit by the 2050s, leading to an increasing risk of drought and wildfires. These changes will likely shift locations and diminish suitable habitat for big sagebrush. Lower elevation habitat will likely be the most affected by these changes. Drought and wildfire disturbance may allow invasive species to outcompete big sagebrush.



Maximum summer temperatures are projected to increase 6.5°F to 8.5°F.



Summer precipitation is not projected to change.

Big sagebrush have:

factors that “**greatly increase**” vulnerability

Limited seed dispersal

It is estimated that 90% of big sagebrush seed disperse within 30 feet of the parent shrub. This limited dispersal distance reduces the species’ ability to shift location as climate conditions change.

factors that “**somewhat increase**” vulnerability

Susceptibility to fire

Sagebrush plants frequently die during wildfire events, but are able to reestablish themselves if given enough time (10–15 years). However, more frequent wildfires, as have already been observed in the region, do not give sufficient time for sagebrush regeneration and allow invasive weeds and annual grasses to compete for habitat.

Disturbance from alternative energy development

Sagebrush steppe could potentially provide sites for solar array development, due to the open characteristics of the landscape.

factors that “**do not increase**” vulnerability

Thermal and hydrological tolerance

Big sagebrush is able to tolerate a wide range of temperatures and precipitation/hydrologic regimes.



Photo by: Bureau of Land Management Idaho

These are select results of a more comprehensive climate change vulnerability assessment developed collaboratively by the Upper Snake River Tribes Foundation, Burns Paiute Tribe, Fort McDermitt Paiute-Shoshone Tribe, Shoshone-Bannock Tribes, Shoshone-Paiute Tribes, Adaptation International, the University of Washington Climate Impacts Group, and Oregon Climate Change Research Institute.

For more information on this assessment or to get involved, visit: www.upper-snakerivertribes.org/climate or contact Scott Hauser, Executive Director, USRT at scott.hauser@usrf.org.