Climate Change Vulnerability Assessment in the Upper Snake River Watershed

Geyer's Willow

MORE WARMING	LOW VULNERABILITY	Medium Vulnerability	High Vulnerability	Extreme Vulnerability
LESS WARMING	LOW VULNERABILITY	Medium Vulnerability	High Vulnerability	Extreme Vulnerability

Results above highlight **Geyer's willow 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.

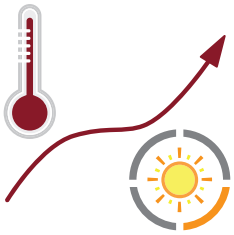
Geyer's Willow and the USRT Member Tribes

USRT member tribes have reported seeing Geyer's willow die-offs on their reservations, likely tied to recent land use practices in riparian areas such as agriculture, grazing, and development, and possibly influenced by changes in temperature and cyanobacteria blooms. Willow species are known to lower surrounding water temperatures and some of the tribes are actively restoring willows alongside creeks and streams. Geyer's willow also holds potential for successful adaptation to climate change due to its ability to grow in diverse thermal environments and a variety of habitats.

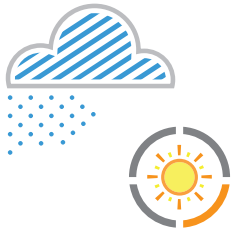
Photo by: Andrey Zharkikh

Key Climate Impacts

Climate change projections for the Upper Snake River Watershed include increasing summer temperatures. By the 2050s, summer maximum temperatures are projected to increase 6.5° to 8.5° Fahrenheit with little or no change in summer precipitation. Geyer's willow prefers riparian habitats alongside waterways that may be affected by changing precipitation patterns and the availability of water throughout the year. Warmer summer temperatures, paired with consistently low summer precipitation, will increase evaporation and decrease water availability for willow during the summer.



Maximum summer temperatures are projected to increase 6.5ºF to 8.5ºF.



Summer precipitation is not projected to change.

Geyer's Willow have:

factors that "**somewhat increase**" vulnerability

Dependence on water availability
Geyer's willow is found in wet meadows and marshes, adjacent to seeps and springs, and alongside streams and beaver ponds. Climate change will potentially shift the timing and availability of water in these areas, which could negatively affect willows.

factors that "**do not increase**" vulnerability

Tolerance of disturbance
Top-killed Geyer's willow plants are able to sprout following fire. Fast, hot fires typically result in numerous sprouts per plant, but longer, slower burning fires reduce sprouting because they burn down into the roots.

Seed dispersal
Geyer's willow is wind- and water-dispersed, increasing its ability to migrate as climate change alters habitat conditions.

Tolerance of temperatures
Geyer's willow is not particularly restricted by the thermal characteristics of the environment.

Photo by: Andrey Zharkikh

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.uppersnakerivertribes.org/climate or contact Scott Hauser, Executive Director, USRT at scott.hauser@usrtf.org.