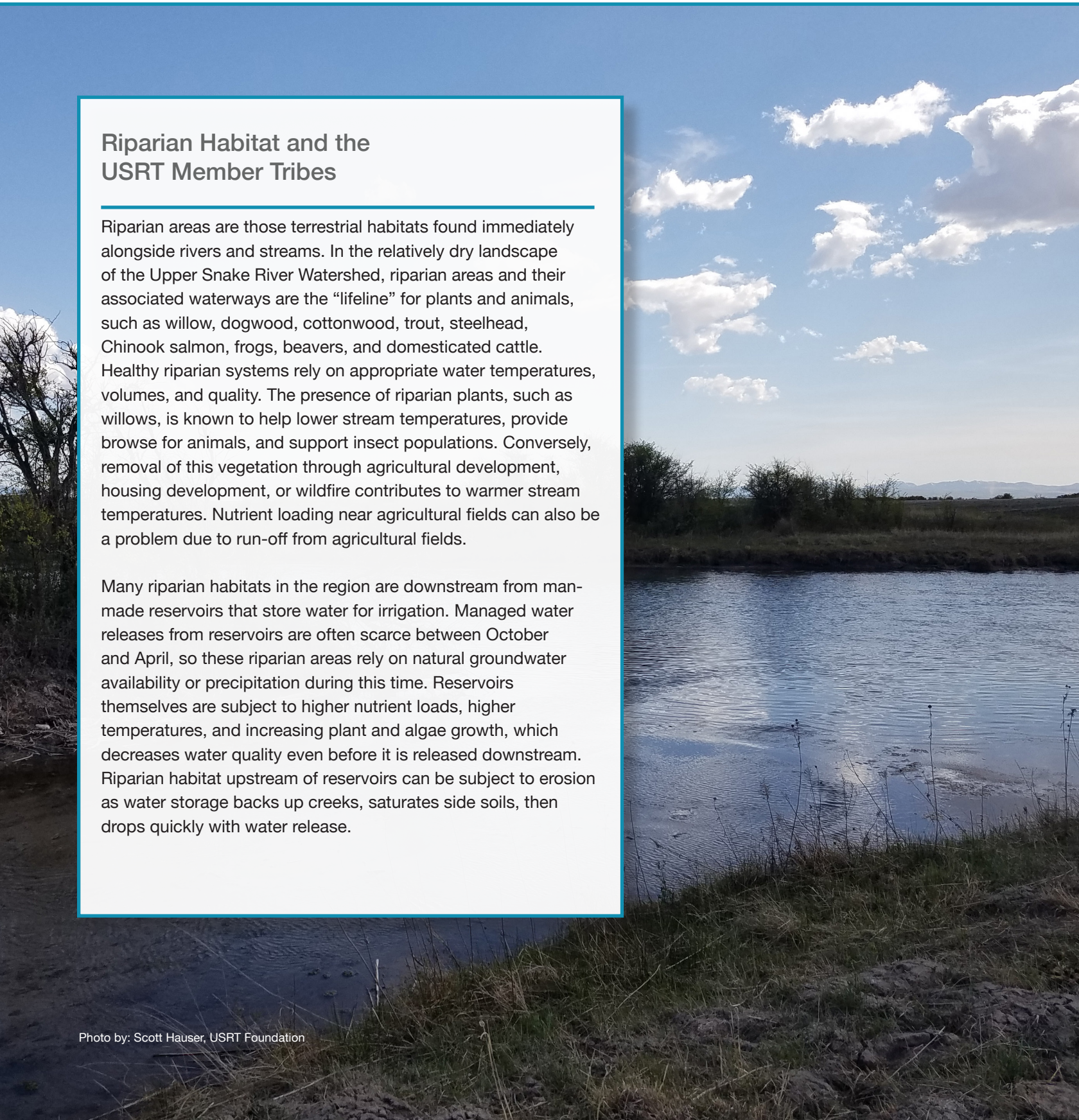
Climate Change Vulnerability Assessment in the Upper Snake River Watershed

Riparian Habitat



Riparian Habitat and the USRT Member Tribes

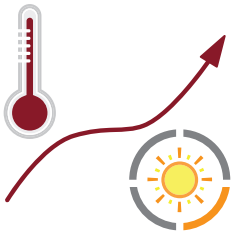
Riparian areas are those terrestrial habitats found immediately alongside rivers and streams. In the relatively dry landscape of the Upper Snake River Watershed, riparian areas and their associated waterways are the “lifeline” for plants and animals, such as willow, dogwood, cottonwood, trout, steelhead, Chinook salmon, frogs, beavers, and domesticated cattle. Healthy riparian systems rely on appropriate water temperatures, volumes, and quality. The presence of riparian plants, such as willows, is known to help lower stream temperatures, provide browse for animals, and support insect populations. Conversely, removal of this vegetation through agricultural development, housing development, or wildfire contributes to warmer stream temperatures. Nutrient loading near agricultural fields can also be a problem due to run-off from agricultural fields.

Many riparian habitats in the region are downstream from man-made reservoirs that store water for irrigation. Managed water releases from reservoirs are often scarce between October and April, so these riparian areas rely on natural groundwater availability or precipitation during this time. Reservoirs themselves are subject to higher nutrient loads, higher temperatures, and increasing plant and algae growth, which decreases water quality even before it is released downstream. Riparian habitat upstream of reservoirs can be subject to erosion as water storage backs up creeks, saturates side soils, then drops quickly with water release.

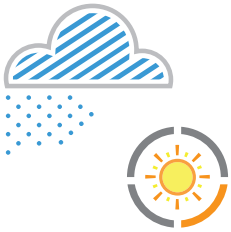
Photo by: Scott Hauser, USRT Foundation

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. These changes will likely increase evaporation and extend periods of drought, both of which will affect water volume and water temperatures in riparian habitats.



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



Summer precipitation is not projected to change.

Riparian habitat are:

"**very sensitive**" to environmental factors

Riparian habitats are very sensitive to environmental factors that will be affected by climate change. Increasing temperatures will lead to earlier peak spring streamflows that could lead to a reduction in the number of new trees due to a mismatch between peak flow timing and seed release. Riparian habitats are also very sensitive to competition from non-native species. Nearby groundwater withdrawals for agriculture can diminish the cold water tributary input into riparian habitat, ultimately decreasing the extent of the habitat and reducing temperature suitability for plants and animals.

"**moderately sensitive**" to temperature change

Warming temperatures, particularly during the summer, could dry out small creeks and groundwater-fed springs or shorten the duration of their seasonal presence. These systems offer important cold water inputs to riparian areas during the summer. If air and water temperatures warm considerably, species composition in some of these systems could change or species could disappear altogether.

"**somewhat sensitive**" to precipitation change

Shifts in the timing and amount of precipitation could affect water tables and soil moisture levels, which are particularly important to plant species composition and structure in riparian areas.

Photo by: Scott Hauser, USRT Foundation

These are select results of a more comprehensive climate change vulnerability assessment developed collaboratively by theUpper 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.

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