



Climate Change at Lake Roosevelt

Lake Roosevelt was created by the completion of Grand Coulee Dam in 1941 for purposes of irrigation, power generation, and flood control along the Columbia River. Although these activities and the resulting fluctuations in the water level have transformed the 154-mile riparian corridor through Lake Roosevelt National Recreation Area (LARO), preservation of its natural and cultural resources continues to be part of the park's mission. The impacts of long-term climate change on those resources will therefore affect management of the entire reservoir, which is jointly overseen by the National Park Service, the Bureau of Reclamation, the Bureau of Indian Affairs, the Colville Confederated Tribes, and the Spokane Tribe.

Wildland Fire

Although fire is a natural part of Columbia Basin ecosystems, LARO generally puts out all fires as quickly as possible because of its small, narrow land units and the proximity of private property. Most fires in the park are caused by human carelessness rather than lightning, but warmer temperatures in the western U.S. in the last three decades have reduced fuel moisture during the summer, promoting easier ignition and faster spread of fires. Mechanical thinning and prescribed burns are used in and around LARO to reduce fuel loads, create defensible space around structures, improve tree health and resistance to disease and insects, and partially replicate fire's natural role in recycling nutrients, eliminating diseased trees, and natural selection. However, fire is not effective in eliminating most of the nonnative plants that are spreading through much of the park, and fire can increase their presence by leaving bare ground conducive to the establishment of some invasive species.

Invasive Plants

While resource and recreational uses have contributed to the spread of nonnative plants in LARO, an increase in fire frequency and intensity or changing precipitation patterns that result from climate change would also give an advantage to some invasive plants. The southwest part of the park, which still



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Prescribed burn at Whispering Pines, 2006.

contains some areas of intact sagebrush-steppe vegetation, has been invaded by dalmatian toadflax and the highly flammable cheatgrass, leading to loss of native vegetation and habitat for species such as the sagebrush lizard. Knapweeds, exotic thistles, vetch, and a host of other plants are widespread in the northern half of the park where they grow amid conifer stands and easily resprout from roots or sprout from seeds buried in the ash and soil after a fire. Park staff use chemical and mechanical methods to control weeds, but this is not feasible for species that become widespread and well established.

Forest Communities

Bark beetles are native to western forests, but some infestations in the West are causing the most widespread tree mortality in recorded history. Earlier snowmelt, milder winters, warmer temperatures, and extended droughts have made trees more vulnerable to attack, and longer summers may make it possible for some pests to complete more reproductive cycles. The most prolific forest pests in LARO have been the western pine beetle, pine engravers, and western dwarf mistletoe, all of which are causing mortality in the park's ponderosa pine. The park's long extent from south to north also makes the area a likely candidate for climate-related shifts in range for ponderosa pine, which is tolerant of a relatively warm climate with dry summers, and for the Douglas fir found along north slopes and wetter canyon bottoms. These range shifts would have impacts on the wildlife species that use the habitats created by these trees. Shrub-steppe habitat may expand northward, affecting bald eagles and osprey who use large ponderosa pine trees and snags for nesting and roosting habitat.

For More Information

Upper Columbia Basin Inventory and Monitoring Network
<http://science.nature.nps.gov/im/units/ucbn/>



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An osprey nesting in LARO and a sagebrush lizard.