

Vulnerability and Habitat Suitability Analysis for Aquatic Invasive Species in Lake Chelan Scope of Work

Background:

Lake Chelan is an ultra-oligotrophic lake on the east slope of the Cascades in north central Washington known for its clear waters and majestic scenery. It is the third deepest lake in the United States and stretches 53 miles from the City of Chelan to the town of Stehekin at the northern end. The entire Lake Chelan watershed covers 1,044 square miles.

Lake Chelan is characterized by two zones within the lake which are commonly referred to as the upper Lucerne basin and the lower Wapato basin. The forested upper Lucerne basin is owned and managed by the Okanogan Wenatchee National Forest (Chelan Ranger District) as well as a smaller portion owned and managed by the National Park Service as part of the North Cascades National Park near Stehekin.

The lower Wapato basin is characterized by shrub-steppe ecology and substantial private ownership and activities near and around the lake. All of the surface water discharged from Lake Chelan as runoff through the Chelan River, over 1 million acre feet (AF), is regulated through a Federal Energy Regulatory Commission (FERC) license for hydropower with Chelan County Public Utility District (Chelan PUD).

Within the Wapato basin are the cities of Chelan and Manson, significant irrigated tree fruit and wine grape agriculture, recreational amenities, lakeside homes, wineries, residential development, and tourism-related businesses. There is substantial tourism and visitation in the area. All of these activities and user groups rely on Lake Chelan as their water source.

There is great concern that Lake Chelan may offer suitable habitat for invasive mussels (even though dissolved calcium measurements are below optimal mussel growth and reproduction) and other species and that vulnerability to an invasive species infestation may be heightened due to extensive recreational watercraft, commercial watercraft, agriculture, and hydropower facilities use in the lake.

Overall Project Goals/Objectives:

- The goal of the Vulnerability and Habitat Suitability Analysis project is to assist the Lake Chelan Planning Unit in its efforts to prevent aquatic invasive species (AIS) infestations from occurring in Lake Chelan.

- The project objective is to provide a comprehensive report of the level of risk of an AIS infestation by analysis of vulnerability and habitat suitability variables associated with Lake Chelan

The Report will include:

Risk of Introduction

A vulnerability analysis of recreational watercraft and all pathways that use Lake Chelan, including number and suitability of access points around the lake, estimates of the number and type/complexity of watercraft using Lake Chelan (i.e. wakeboard boats with ballast tanks), waterbody history and origin of watercraft launching at Lake Chelan (i.e. last used in mussel infested waters, out-of-state boats, etc.), knowledge of AIS issues and the clean, drain, dry message, travel routes compared to state inspection programs. This information will be used as an indicator of the risk of introduction for invasive mussels and other aquatic species.

Risk of Establishment

A habitat suitability analysis of water quality parameters to include calcium, pH, water temperature, hardness, secchi depth, conductivity, dissolved oxygen, as well as substrate conditions to be used as an indicator of the risk of establishment for invasive mussels and other aquatic invasive species.

Impacts

An analysis of the potential environmental and economic impacts to water quality, recreation, irrigation, water supply facilities and dams, and fish and wildlife if aquatic invasive species were to be introduced/become established

Recommendations

Based on the vulnerability and habitat suitability analysis, recommend actions that will decrease the risk of an AIS infestation in Lake Chelan. Recommendations may be for planning, monitoring, inspection, infrastructure, and education and outreach. All recommendations will be based on current scientific literature