

Water Quality Monitoring

Mount Rainier, North Cascades, Olympic, Ebey's Landing, Lewis and Clark

I & M RESOURCE BRIEF

Importance

The North Coast and Cascades Network (NCCN) contains over 5,300 miles of rivers and streams within its boundaries. The abundance of fresh, cold, and free flowing water is one of the defining characteristics of the NCCN, making water quality a high ecological, management, and legal priority for the network. These resources sustain 39 native fish and 17 native amphibian species as well as provide for human use, including recreation and domestic water supply. Due to their position in the landscape, rivers and streams integrate the physical, chemical, and biological characteristics of the watersheds they drain. This puts them at increased risk to a variety of environmental stressors, including changes in flow regimes due to climate change, atmospheric pollution, and more localized disturbances related to land management activities and recreational use.

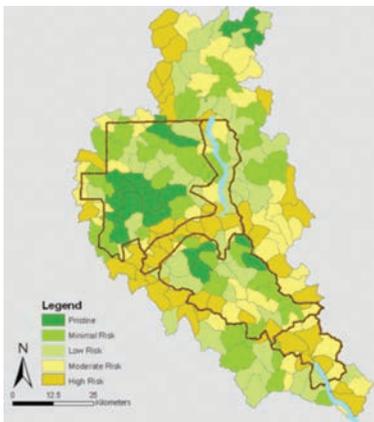
Status and Trends

To gain an understanding about the nature of the threats facing water quality in the NCCN, we conducted a watershed condition assessment to evaluate the impacts of roads, land development, mining, and trails in 465 watersheds. Since water flows into the NCCN from areas not managed by the National Park Service (NPS), the assessment covered 5,500 square miles, an area almost twice the size of NPS-managed lands. By ranking and mapping the watersheds, we were able to identify the areas that are at the greatest risk of impairment.

The NCCN Water Quality Protocol will sample 27 locations that are at the highest risk of impairment. The sample locations will be distributed among Ebey's Landing National Historical Reserve, Lewis and Clark National Historical Park, Mount Rainier National Park, North Cascade National Park Service Complex, and Olympic National Park. Ten indicators of water quality and riparian habitat condition will be measured at each location.

The primary goals of the NCCN water quality monitoring project are to:

1. Determine the status and trends in the ecological conditions for a selection of wadeable rivers and streams throughout the NCCN at high risk of impairment.
2. Provide timely and high quality data to park managers.
3. Identify and detect new and emerging threats to water quality.
4. Improve the understanding of the basic chemical, physical, and biological processes that affect environmental quality of these surface waters and determine if they are within their natural chemical and biological ranges.





Measurable Objectives

1. Determine the status and trends of the ecological condition in NCCN wadeable rivers and streams listed as impaired under section 303(d) of the Clean Water Act.
2. Determine similar status and trends in waters at a high risk of impairment. These waters are believed to be some of the most imperiled water bodies in the NCCN; many have little or no water quality information that can be used to ascertain their ecological condition. These waters will typically require the initiation of monitoring by the NCCN.
3. Compare water temperature data against state standards for chronic exceedance on a weekly, monthly, seasonal, and annual basis.
4. Compare indices of biological integrity against state standards for chronic exceedance on an annual basis.
5. Compare measurements of dissolved oxygen and pH against state standards for chronic exceedance on an annual basis

Discussion

Water is the issue of the century and will likely be the issue of the millennium. The Pacific Northwest has an abundance of fresh, clean water making it easy to overlook the fact that 3.575 million people worldwide, a population equal to the City of Los Angeles, will die this year from a water related disease.

The cleanest water in the United States flows from its protected forests, and it is estimated that 50% of Americans in the West depend on federal forests for their drinking water. The US Forest Service estimates that approximately \$7.2 billion a year is generated from water leaving federal lands. With its considerable freshwater resources, many of which are of likely the best quality in the region, the NCCN is of critical importance to the region-wide conservation of water quality.

Opposite Results of the watershed assessment for North Cascades National Park.

Above Students observe a redbreast shiner at Ross Lake, North Cascades National Park. North Cascades Institute Amy Brown

The National Park Service's ability to track the water quality within the NCCN will improve management and protection of this valuable resource.

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