Klamath Network

Inventory and Monitoring Program

National Park Service
U.S. Department of the Interior

Crater Lake National Park | Lassen Volcanic National Park | Oregon Caves National Monument and Preserve | Redwood National and State Parks | Lava Beds National Monument | Whiskeytown National Recreation Area

Monitoring Park Vital Signs

How healthy are our parks? How are they changing?

A small team of National Park Service scientists is working to answer these questions for six diverse parks in northern California and southern Oregon. These scientists represent the Klamath Network Inventory and Monitoring Program, whose office is based in Ashland, Oregon. A set of natural resource "vital signs" were selected for long-term monitoring to reflect conditions within Network parks. Working with resource management and science staff at each park, university scientists, and other research partners, the Klamath Network sends teams into the field to collect rigorous data on these vital signs, report on their condition, and notify parks if conditions deteriorate. This long-term monitoring of vital signs helps park managers make science-based decisions.

Cave Communities and Environments

Caves contain natural treasures, from stalactites and stalagmites, to bats, exotic-looking invertebrates, and thirsty wildlife lured inside by pools of melted cave ice. Because these resources are sensitive to stresses, like human visitation, disease, or changing climate, we monitor plants, animals, water, ice, and climate in caves as indicators of cave health. We monitor caves at Lava Beds National Monument and Oregon Caves National Monument and Preserve.

Water Quality and Aquatic Communities

Life flourishes in and near water, from the tiny aquatic insects that feed fishes, frogs, and colorful warblers, to the lush vegetation prized by myriad wildlife. Because stressors like air pollution, invasive species, recreation, and upland land use can degrade water, we monitor two related vital signs—water quality and aquatic communities. Sampling the physical and chemical properties of lakes and streams, as well as the organisms that live in them, helps us track the health of these vital resources. We monitor lakes at Crater Lake National Park, Lassen Volcanic National Park, and Redwood National and State Parks. We monitor streams in all parks except Lava Beds National Monument.

Terrestrial Vegetation

Plants anchor the food web, providing food, shelter, and nesting habitat for animals and stabilizing soils with their roots. Changes in vegetation can ripple through entire ecosystems. To track the health of this basic building block of park ecosystems, we monitor the density and species of terrestrial plants. We also track woody debris conditions, which are intricately tied to fire behavior. We monitor terrestrial vegetation in all parks.

Exotic and Invasive Plants

Nonnative, invasive plants can wreak havoc. They squeeze out native plants. They can change soil chemistry and monopolize water. Given our incomplete understanding of how big or complex these changes can be, our approach to this vital sign is prevention! We send crews out to parks every other year to detect early invasions of nonnative, invasive plants before they take hold. We monitor exotic and invasive plants in all parks.

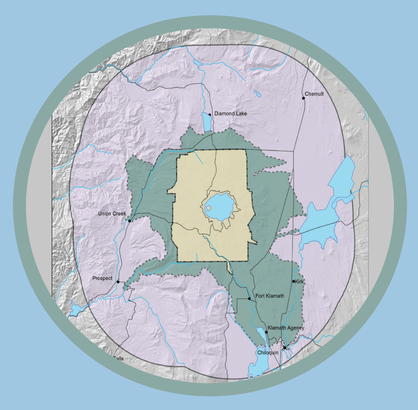
Intertidal Communities

Plants and animals of the rocky intertidal shoreline face constant change, where splash zones shift to dry zones with the ebb and flow of the tide. Beyond these natural stresses, they also face human-caused stresses, like oil spills and logging debris. We collaborate with UC Santa Cruz scientists to monitor these shoreline organisms. This information also contributes to a research network that tracks the health of intertidal communities up and down the Pacific coast. We monitor intertidal communities at Redwood National and State Parks.

David Lohse (UCSC)

Land Cover and Land Use

Parks may look like islands on a map, but they are not. Changing conditions outside their borders, like an increase in roads or housing, or disturbances like fire, can have far-reaching effects inside parks. For each park, we use national landscape data to synthesize patterns of land cover and land use at three scales—inside the park, inside select watersheds connected to the park, and inside a 30 km circular buffer around the park. This larger scale of analysis helps managers interpret changes in other vital signs monitored within park boundaries. We monitor land cover and land use in all parks.



Whitebark Pine

The iconic whitebark pine tree thrives in harsh subalpine climates, feeding wildlife with the nutritious seeds in its cones, stabilizing the thin rocky soil with its roots, and prolonging snowmelt with its shade. But white pine blister rust, a nonnative fungal infection, and mountain pine beetles have taken a toll on these trees. We monitor the extent of blister rust infection and beetle damage to assess the health of this keystone species and contribute to larger-scale research efforts throughout the West. We monitor whitebark pine at Crater Lake and Lassen Volcanic National Parks.

Landbird Communities

Landbirds delight us with song and beauty, but also with scientific data! Easily detected, they are good indicators of ecological health because they respond quickly to changes in the environment. Landbirds are also well loved by the public and key elements of many park management plans. We monitor the abundance, variety, and age distribution of landbirds in parks. We also contribute this information to larger-scale datasets that track landbird community health. We monitor landbirds in all parks.

Visit our website to learn more about inventory and monitoring in our parks

https://www.nps.gov/im/klmn/index.htm