



### Water Quality, Aquatic Communities, and Intertidal Monitoring

A vital dimension of biodiversity in the Klamath Network (KLMN) lives underwater. The I&M Program monitors water quality in all KLMN parks except LABE. Our program is designed to provide integrated information about water quality and aquatic communities in lakes and streams of the Network. In addition, the Network conducts collaborative intertidal monitoring with the University of California, Santa Cruz. Taken together, these monitoring programs will give a multifaceted view of climate change effects on varied aquatic resources.

### Terrestrial Community Monitoring

Landbird and vegetation community monitoring are the flagship biodiversity monitoring projects for terrestrial resources in all KLMN parks. Vegetation community monitoring emphasizes high-elevation and riparian ecosystems because these are expected to be the most susceptible to changes in temperature and moisture regimes, respectively. Landbird monitoring will be conducted in concert with vegetation monitoring to track concurrent changes in park ecosystems. In addition, KLMN is collaborating with the SIEN, UCBN, and NCCN to jointly develop a monitoring program for five-needle pines, which are expected to be severely impacted by climate change.

### Subterranean Monitoring

Lava tube cave and karst ecosystems are central features of the park landscapes in LABE and ORCA. These ecosystems harbor globally endemic arthropods, elevationally disjunct alpine species (pika), and unique geologic features (cave ice). These unique features are believed to be directly threatened by the environmental alterations with climate change. The Network's Integrated Cave Monitoring Program will allow KLMN staff to develop a multifaceted picture of cave ecosystems over time.

### Interpreting Climate Change

The KLMN and Southern Oregon University partnered to produce a series of climate change Intranet web pages, making research and monitoring results accessible to park interpreters. Rebecca Slosberg, an Environmental Education master's student, developed park-specific pages, which address park-prioritized themes and synthesize available project information.

([http://www1.nrintra.nps.gov/im/units/klmn/outreach/out\\_climate.cfm](http://www1.nrintra.nps.gov/im/units/klmn/outreach/out_climate.cfm))

### Collaboration and Leadership

The KLMN staff has provided leadership within the Klamath Region in investigating the primary threats and information needs with respect to climate change. In 2008, the Network hosted a climate change interpretive meeting that gathered scientists, managers, and interpreters from throughout the Pacific West region. In fall 2009, the Network hosted a meeting of major Department of Interior Agencies to identify core monitoring and research across the varied DOI agencies of the Klamath Region.

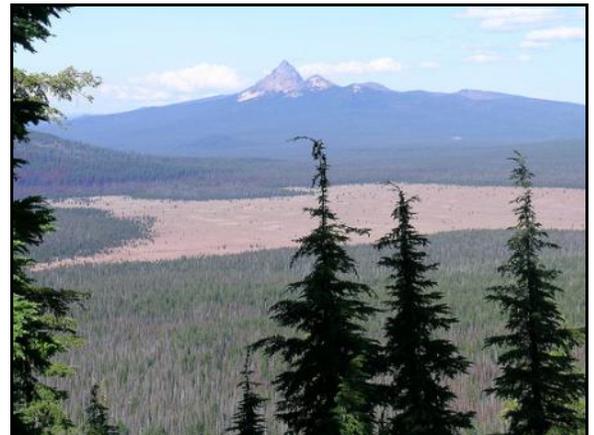
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Sampling intertidal of algae, Redwood National and State Parks (RNSP).



Pumice Desert and Mount Thielsen from Cinder Cone whitebark pine sampling site, Crater Lake National Park (CRLA).



Resource Chief David Larson investigating ice loss in Crystal Cave, Lava Beds National Monument (LABE).