



Alagnak

Aniakchak

Katmai

Kenai Fjords

Lake Clark

# Lichen Inventory

Lichens are an important component of biological diversity and are sensitive indicators of air quality and climate. Despite their ecological importance in southwest Alaska, there is a general lack of information regarding lichen occurrence in the Southwest Alaska Inventory and Monitoring Network (SWAN) parks. To address this information need, the SWAN has partnered with Oregon State University (OSU) to conduct a lichen inventory of its three largest parks: Katmai, Lake Clark, and Kenai Fjords.



NPS/James Walton

Lichenologists take a closer look at Katmai National Park's lichens.

## Preliminary Results

Under the guidance of OSU and the NPS, a team of lichenologists from North America and Europe visited Katmai in 2013, Lake Clark in 2014, and Kenai Fjords in 2015. They surveyed sites throughout each park that were selected by NPS botanists to span a range of rich lichen habitats, including coastal rock outcrops and forests, large interior lakes, river and forest systems, and interior and coastal alpine zones. Researchers observed a lichen flora with an interesting mix of arctic-alpine, boreal, and coastal elements. The Beringian element that is evident on the Seward Peninsula and Aleutian Islands did not appear to be prominent in SWAN parks. A number of oceanic forest species were found at low-elevation, moist forest sites. Certain species groups or genera common to the alpine were surprisingly rare in Katmai. These included the

alpine ground-dwelling *Rinodina* species, ground-dwelling *Hypogymnia*, and *Dactylina*. These genera were somewhat more abundant in Lake Clark than in Katmai, but still not as abundant as in more continental climates.

Nitrophilous species (e.g., *Caloplaca*, *Xanthoria*) do not appear to be abundant in any park, suggesting low levels of nitrogenous pollutants. Few calciphiles were encountered, owing to the predominantly acidic rocks in all parks. Although the team was unable to sample on limestone or dolomite in Katmai or Kenai Fjords, they did visit one site with marble on the shore of Lake Clark. Species found at that site differed from those occupying more acidic rock in surrounding areas.

At present, several notable lichen collections have been made, including the discovery of three species new to science, *Rinodina pallidescens* Sheard and Tønsberg, *Parvoplaca*

*nigroblastidiata* Arup, Halıcı, and Vondák and *Rinodina incurva* Sheard (awaiting publication). Additionally, new populations of the globally endangered lichen, *Erioderma pedicillatum* (Hue) P. M. Jørg., were discovered in both Katmai and Lake Clark. Many other interesting finds were made, including new records for North America and Alaska, plus one or more additional new species.

Lichenologists are continuing the process of curating and identifying collections from Katmai, Lake Clark, and Kenai Fjords. Final products will include a comprehensive voucher-based lichen species list and accompanying database for each of the three parks. Specimens collected during the course of the inventory will be provided on loan to the University of Alaska, Museum of the North Herbarium and several other institutions, where they will be available for research and educational purposes.