

Species Inventory Explores Visitor Impact on Cave Lichens at Lava Beds National Monument

[Lava Beds National Monument](#)

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At [Lava Beds National Monument](#) (NM), a species inventory helps park managers understand the rich diversity of lichens in the park, allowing them to craft management strategies to preserve lichens.

Approximately 100,000 people visit the caves of Lava Beds NM each year, but there is little known about whether visitors impact lichen abundance and diversity. To effectively protect these resources, park managers need to know which lichen species live in caves within the park, and if the number and type of lichens differ at cave sites with low and high visitor use.



Acarospora schleicheri (left) and *Hypogymnia imshaugii* (right) are two examples of lichen species often found on soil or trees outside cave areas.

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Lichens are made up of fungi and algae or bacteria that work together to survive. This mutual support allows lichens to thrive in various environments, from rocky surfaces to tree bark. In dry ecosystems, caves provide critical habitat for lichens, offering moderately moist, mild climates in

otherwise harsh landscapes. At Lava Beds NM, located in a semi-arid zone of northern California, cave lichens represent a unique floral component for the region, and include many rare or little-known species. But the impacts of visitor use on these lichens were not fully known. To help managers understand visitor impacts and other ecological drivers on the park's cave lichens, staff from the National Park Service's [Inventory & Monitoring Division](#) arranged for an inventory and visitor use study at Lava Beds NM. Surveyors explored 42 diverse caves in the monument, across a spectrum of visitor use. They uncovered a total of 211 lichen taxa, 27 of which had never been documented in Lava Beds NM. The total number of lichen taxa recorded in the park increased to 288 with these newly documented species. Ice caves were found to host many rare lichens, and caves with deeper entrances and larger sink areas were found to support more diverse lichens.



Scientists surveying lichen in a cave at Lava Beds National Monument.

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The researchers also found that there was no difference in lichen diversity among cave plots with high and low visitor use. They concluded that infrastructure, such as railings and stairways, may minimize visitor impacts on lichens. Visitors likely have localized impacts on lichens, such as trampling or scraping them, but it is promising that visitor use does not appear to reduce

lichen diversity on broader, landscape-level scales. Visitors can help protect these delicate organisms by sticking to designated trails and being mindful of where they step or touch.

This inventory confirmed that the caves in Lava Beds NM provide vital habitat for a diversity of lichens. It also gave park managers insight into how concerned they need to be about visitor impacts to cave lichens when doing management planning—and added to our knowledge of these unique organisms within the park.

Want to learn more?

Find additional [information on lichens here!](#)

This article was summarized from the source below:

Siskiyou BioSurvey, LLC. 2023. Lichen inventory and visitor use study: Lava Beds National Monument. Natural Resource Report NPS/NRSS/IMD/NRR—2023/2547. National Park Service, Fort Collins, Colorado. <https://doi.org/10.36967/2299861>