

## Lichens, Air Quality, and Climate



**Figure 1-Doug Glavich, a Forest Service air quality specialist, collecting lichen samples in the snow.**

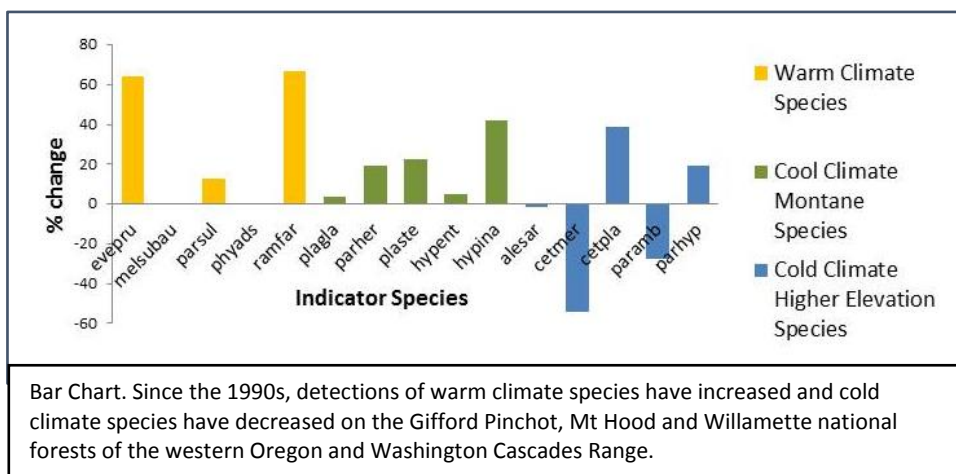
Doug Glavich is an air quality specialist for the Forest Service Pacific Northwest Region who focuses on lichen monitoring and analysis. He first learned about lichens at Humboldt State University in California. “It was in the general biology class of Professor Steve Sillett, an international expert on canopy botanic. He explained the subject very well, and that really sparked my interest.”

Glavich’s interest led him to Linda Geiser, the current leader of the US Forest Service Air Program. Linda recognized Glavich’s passion and hired him to conduct summer field work. “I collected and identified lichens all over the western US and Alaska to measure levels of acidifying and fertilizing pollutants, metals, and persistent organic pollutants in the environment. I also studied the requirements of rare species and wrote management recommendations to protect biological diversity in old growth forests. After several years Glavich joined the Forest Service Air Program as a botanist.

Recently, Glavich has been helping managers understand climate change. “We study the lichen species that we collected 20 years ago and compare them with the ones we find today. Then, we analyze where species are increasing or decreasing due to changes in temperature.”

Glavich conducts nature hiking tours. To help connect people to the outdoors and share with them how air quality and ecosystem health are linked. He shows community groups lichens in polluted air, and, then, they compare them with lichens from clean sites to ‘read air quality from the trees’ and see the direct effects.

However, Glavich highlights that the next step is to make the public aware of Air Program information and tools. “There is a lot of information, and we have developed interactive applications that are publically accessible. Now that we have the data, we would like people to start using it. This is not only for the national forest managers, but for all people.”



**Figure 2Doug talking about the importance of lichens in air quality**