

50 Peaks Project:

Undergraduate Student Summer Internship Opportunity at the University of Washington Herbarium, Burke Museum

I am hiring two undergraduate student interns to assist with a field and herbarium-based project to document the diversity and distribution of alpine plants in Washington's Cascades Range (see project summary below). Interns will participate in a minimum of one 5-day collecting trip (car-camping) to central Oregon (June 16-20) to gain experience with field collecting techniques, and two or more multi-day, backcountry collecting trips in Washington in July and August (exact dates to be determined). There will also be one or two one-day outings to nearby peaks. We will visit a minimum of 10 peaks over the course of the summer.

Field work will involve backpacking into remote areas, collecting and pressing plants, collecting plant tissues for future DNA-based studies, and making a list of all species encountered on each peak.

Herbarium-based work will involve trip planning, digital imaging of all specimens for 50 targeted alpine species in the collections, generating species lists for targeted peaks for Summer '22 based on specimen records in the Consortium of Pacific Northwest Herbaria online database (URL below in Supplemental Information), identifying plants collected during field work, and data organization and analyses.

Compensation: \$17.70/hour for 300 hours between June 16th and September 15th (\$5,310 total)

Requirements: Completion of an introductory plant taxonomy class (e.g., BIOL 317 or BIOL 446); experience with backcountry travel and camping (i.e., backpacking); ability to hike up to 10 miles with 4,000 feet elevation gain in a single day carrying a backpack; interest in working in a herbarium collection; experience with Excel, Google Sheets, GPS units; First-Aid certified (can complete during internship).

Application Materials: One-page cover letter explaining your qualifications, interests in the position, and how this experience will benefit your career interests; resume; names and contact information for two references. In your cover letter please give an example of any backcountry or physically demanding experience that you have had. Send application materials via email to David Giblin (dgiblin@uw.edu).

Application Deadline: April 15, 2022

Supplemental Information: To learn more about the Herbarium you can visit the following URLs:

Herbarium overview:

<https://www.burkemuseum.org/collections-and-research/biology/plants-and-fungi>

Plants of Washington Image Gallery:

<https://biology.burke.washington.edu/herbarium/imagecollection.php>

Consortium of Pacific Northwest Herbaria online database:

<https://www.pnwherbaria.org/data/search.php>

The 50 Peaks Project: Documenting Novel Species Distributions and Generating Baseline Alpine Plant Diversity Data in Washington's Cascade Range

David Giblin, Ph.D.
Herbarium Collections Manager and Research Botanist

Background: The alpine zone (i.e., above treeline) in Washington's Cascade Range is among the state's most pristine habitats due to minimal human disturbance. However, plant diversity and distributions are poorly documented in this area due to physically challenging access for most plant collectors and a 10-week growing season for most species. In contrast, we have outstanding specimen-based documentation of Washington's flora in easily accessible habitats such as sagebrush desert, grasslands, lowland to montane forests, and coastal dunes. This deep knowledge informs plant conservation and land management priorities on these lands.

Notably, over the past 10 years most additions to Washington's native flora have come from collections made in alpine locations. These novelties include rare species, boreal and arctic species whose southernmost populations occur in Washington, and in some instances species new to science (i.e., previously undescribed). Alpine species populations at their southern distribution limit are particularly vulnerable to climate change impacts due to their inability to "migrate" upwards in elevation to more suitable habitat. Comprehensive documentation of alpine plant diversity and distribution in the Cascades will help inform plant conservation goals on Washington's public lands and serve as baseline data for future climate change impact studies.

Research Questions Addressed: 1) What is the diversity and distribution of Washington's alpine plants?; 2) How does alpine plant diversity change from the southern to the northern end of the Cascades Range in Washington?; 3) What factors influence alpine plant species richness?; 4) To what extent do alpine peaks resemble islands in terms of species turnover? 5) How will Cascades Range alpine plant communities respond to climate change?; 6) How does plant morphology and dispersal mode compare between the least common and most common alpine species?

Methods: In 2021 I began a 5-year project conducting comprehensive plant surveys on 50 hikeable alpine peaks across the Cascades Range from the Goat Rocks Wilderness (Lewis/Yakima counties) to the North Cascades (Okanogan/Whatcom counties). Working with undergraduate student interns, I sample 10 peaks annually between June-August collecting at least one specimen for each species encountered across the 50 peaks. Additional collections are made for all taxonomically difficult species and/or populations of distribution significance. All specimen data and images of specimens from the estimated 1,500 collections made over the course of the project will be freely available online to academic, professional, and amateur botanists through the [Burke Herbarium's database](#), its [regional Consortium database](#), and internationally through the [Global Biodiversity Information Facility](#). Full checklists for each surveyed peak will be downloadable from the Herbarium's webpages within the Burke Museum website.

Impacts: This project leverages the Herbarium's long-standing partnerships with the U.S. Forest Service and National Park Service, who manage the lands surveyed in this project. To promote career development, each year I will hire two University of Washington undergraduate student field assistants who either are in or have already completed the Introduction to Plant Identification and Classification course. Results from this project advance our knowledge base of Washington's alpine plant communities through discovering new Washington rare plant populations, locating additional Washington populations of boreal and arctic species, and generating baseline plant diversity and distribution data for future comparative studies examining climate change impacts on Washington's alpine flora.