50 Peaks Project: Alpine Plant Surveys in Washington's Cascades Range

Undergraduate Student Summer Field Work 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 https://50peaks-wa.weebly.com/). Field work includes 1) 5-day collecting trip (car-camping) to central Oregon (June 20-24) to gain experience with field collecting technique; 2) at least three multi-day collecting trips in Cascades in July and August involving some backpacking and backcountry camping (exact dates to be determined); 3) several 1-2-day trips involving car camping. We will try to do field work each week, weather and fires permitting, to meet a goal of sampling 12 peaks during the summer (approximately 20 days of field work in total).

Field work involves hiking or backpacking into remote areas from established trails, off-trail travel to some peaks, 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 involves trip planning, digital imaging of specimens collected or specimens held in the collections, generating species lists for targeted peaks using online specimen database (URL below in Supplemental Information), identifying and databasing collected specimens, data analysis and organization, social media outreach.

Compensation: $19.96/hour for 400 hours of work between June 16th and September 15th (average 30 hours per week; $7,984 total compensation)

Requirements: Completion of an introductory plant taxonomy/plant identification class (e.g., BIOL 317 or BIOL 446); prior experience with an endurance/aerobic-oriented activity (e.g., track, cross-country, bicycling, swimming, etc.); ability to hike up to 10 miles with 5,000 feet elevation gain in a single day; comfort with off-trail travel; not fearful of heights; interest in working in a herbarium collection; experience with Microsoft Office, Google; First-Aid certified (can complete at beginning of internship).

Preferred Experience (but not required): Backcountry travel and camping (i.e., backpacking); familiarity with or coursework in GIS, R package for statistical analysis.

Application Materials: One-page cover letter explaining your qualifications, interests in the position, and how this experience will benefit your career/academic 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. Please send questions or application materials via email to David Giblin (dgiblin@uw.edu).

Application Deadline: March 29, 2024

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
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 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) Have we documented all of Washington's alpine plant species and where they occur?; 2) How does alpine plant diversity change from the southern to the northern Cascades in Washington?; and 3) How will Cascade Range alpine plant communities respond to climate change?

Methods: This is a 5-year project to document plant diversity on 50 hikeable, previously uncollected Cascade Range alpine peaks equally distributed from the Goat Rocks Wilderness (Lewis/Yakima counties) to the North Cascades (Okanogan/Whatcom counties). We will survey an average of 10 peaks annually between June-August by collecting at least one specimen for each species encountered across all peaks, collect specimens for all species of taxonomic and distribution significance, and make a checklist for all observed species on each peak. All data from the estimated 2,000 specimens collected will be made freely available online to academic, professional, and amateur botanists through its regional Consortium database, and internationally through the Global Biodiversity Information Facility. We will also generate full checklists for each surveyed peak and make these lists 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 that we will survey. Each year we will hire two University of Washington undergraduate students from the Spring Quarter Introduction to Plant Identification and Classification course as field assistants to promote career development. Students will collect plants in the summer and help identify them in the Herbarium during the academic year. Burke Herbarium and Washington Native Plant Society volunteers will also participate, adding an important citizen science component.

Results from this project will 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.