Dedicated to the Preservation of California Native Flora

The California Native Plant Society

Bristlecone Chapter Newsletter

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2023 DeDecker Grantee Reports Edition

Brooke Wallasch and Rachel Friesen, Cal Poly, San Luis Obispo

From the White Mountains to Yosemite: New Vegetation Monitoring Transects Established on Mt. Dana

In late summer, a garden of petite wildflowers blooms beneath the boots of peak-baggers and view-seekers on the highest peaks in California. Growing amongst the rocks and ice, these plants have special adaptations that have allowed them to persevere for decades, or even centuries, in the harsh alpine environment. With temperatures warming more quickly in alpine environments compared to lowland areas, alpine plant species may be a bellwether for the ecological effects of climate change. Researchers want to know—how have California's alpine plant communities changed over time and more importantly, how will they change in the future?

Townsend's daisy near Sheep Mountain (top). Left to right, Dr. Dena Grossenbacher, Rachel Friesen and Brooke Wallasch on the top of Campito Mountain (bottom).

One organization striving to answer these questions is the Global Observation Research Initiative in Alpine Environments, or GLORIA. This summer, the Great Basin chapter of GLORIA assembled an enthusiastic group of botanists, students and volunteers at the Crooked Creek Research Station to complete alpine plant surveys on Campito and Sheep Mountain. Among the volunteers were Dr. Dena Grossenbacher, master's student Rachel Friesen, and undergraduate biology student Brooke Wallasch from Cal Poly, San Luis Obispo. Over the course of a week, Grossenbacher, Friesen and Wallasch familiarized themselves with the GLORIA downslope survey protocol. while surrounded by a lively crew of plant-enthusiasts and the beautiful backdrop of White Mountain Peak. In addition to admiring charismatic alpine species like Townsend's daisy (*Townsendia condensata*), these Cal Poly affiliates

Cal Poly field crew in the Yosemite backcountry (top). Cut-leaf daisy near the peak of Mt. Dana (bottom).

Placement of the 12 downslope transects on the southwest slope of Mt. Dana.

prepared for their own field season where they planned to use what they learned and install downslope transects on a new peak: Mount Dana, the second highest peak in Yosemite National Park.

Soon after the GLORIA Great Basin downslope surveys, Friesen and Wallasch were joined by three more Cal Poly San Luis Obispo undergraduates: Eda McColl, Ben Sherman and Maddie Windsor in Yosemite to establish new monitoring plots on the southwest slope of Mt. Dana. Using high-accuracy GPS units, they established 12 belt transects following elevation contours that crossed verdant subalpine seeps, talus gardens, and alpine fell-fields. Only a 20-minute hike from Tioga Road, these new monitoring plots are more accessible than the previous vegetation plots, and encompass a ~1000 ft elevation gradient from treeline to ridgeline that will be informative in terms of the effects of climate change on alpine plant communities. During the field season,

Jan Nachlinger and Dr. Dena Grossenbacer (bottom) and Kaleb Goff (top) using "bidents" to survey the downslope transects on Mt. Dana.

Friesen and her crew were assisted by GLORIA Great Basin botanists who aided in the survey efforts. This project aims to inform adaptive management strategies within Yosemite National Park to preserve alpine plant communities threatened by climate change.

The connections made during the enriching week of botany, networking, and fun during the GLORIA surveys had impacts far beyond the White Mountains! Our team is grateful for the funding provided by the Bristlecone CNPS chapter which helped support our work on Mt. Dana, as well as efforts to resurvey historic vegetation plots throughout Yosemite's alpine this past summer.

Rachel Tageant, Master's Student, California Botanic Garden

Mary DeDecker Botanical Grant Progress Report

I am a second-year master's student at the California Botanic Garden conducting a floristic inventory of the Owens River Headwater Area (ORHA) in the central eastern Sierra Nevada. My study area is approximately 52 mi^2 and includes the Owens River Headwater designated wilderness area in the Inyo National Forest. Located along the eastern side of the Sierra Nevada crest, approximately 12 miles northwest of Mammoth Lakes in Mono County. This area is unique as it is located near a transition zone between the California Floristic Province and the Great Basin Floristic Province. The elevational range of the OHRA is 7,200 – 11,520 ft and is characterized by pumice pebble flats, volcanic outcrops, forested

Left: *Fritillaria pinetorum* found near the trailhead of Yost Meadow and Fern Lake. Right: *Botrychium simplex* found in Yost Meadow.

mountain slopes, high elevation meadows and lakes, and alpine summits. The primary goal of my master's research is to conduct a comprehensive floristic inventory of the ORHA and surrounding areas through collecting herbarium specimens, compiling an annotated species checklist, and characterizing the vegetation types in each habitat.

For the first part of 2023 I started by compiling a species checklist, obtaining a permit from the Inyo National Forest, and preparing for field work by planning out trips based on the phenology of the plant species that occur in my study area. From May to September 2023, I spent approximately 55 days in the field collecting plant specimens, taking field notes, and making vouchers. In the 2023 field season, I collected a total of 1,016 specimens, representing 54 families and 124 genera.

Pinus albicaulis found on the San Joaquin Ridge (top). San Joaquin Ridge from Deadman Pass (bottom).

Throughout the 2023 field season, I was able to relocate several rare, sensitive, or vulnerable taxa located within my study area, including *Lupinus duranii* (1B.2), *Fritillaria pinetorum* (4.3), and *Pinus albicaulis*. Additionally, I found new occurrences of *Botrychium simplex*, *Pyrola asarifolia*, *Platanthera sparsiflora* at Yost Meadow, Glass Creek Meadow, and *Lewisia pygmaea* at White Wing Mountain; all species are known to the area, just never collected in these meadows. More range extensions and population occurrences of species are expected as I continue to identify collected specimens.

At the start of the 2023 field season, I attended a training conducted by the Inyo National Forest for White Pine Blister Rust identification on *P. albicaulis.* During the field season I surveyed the National Forest for blister rust in *P. albicaulis* populations throughout my study area. White Pine Blister Rust is known in the area, however, during the past field season I did not find any trees infected with the rust.

I am very grateful to have received the Mary DeDecker Botanical Grant, which helped fund the cost of travel to and from my study area and aided in the purchase of necessary equipment I needed for my research. Thank you for your generosity, and I look forward to sharing more of my discoveries.

Glass Creek Meadow.

Zoe Wood, 2nd-year PhD Student
University of California, Davis
From museum to field and back: Inyo National Forest herbarium collections in the viewfinder

In 2023 I used the Mary DeDecker Grant to work in collaboration with the Inyo National Forest Service on 1) an herbarium project integrating forest service practices with historical collection efforts, and 2) to create interpretive material and art linking herbaria and field specimens. Last year's record-breaking snow year made it an exciting time to conduct a project in the Eastern Sierra!

Top: Geographic distribution of specimens in the Inyo National Forest herbarium collection. Bottom: *Erigeron breweri*, Oak Creek, Inyo NF with herbarium specimen INF00560, collected by Mary DeDecker 6 June 1971. Photograph taken May 21 2023 by Zoe Wood.

The Inyo National Forest herbarium (INF) holds 4,461 vascular plant and bryophyte specimens of 1,520 species within the Inyo National Forest Supervisor's Office in Bishop. In 2023, INF finished imaging and digitizing their collection with help from the Cal Poly SLO herbarium and virtual intern Bridget Lee, California Phenology Network and CNPS volunteers, and digital volunteers via the platform Notes from Nature. Anyone can now view and download information about these specimens, including their images and associated collection data, via the Consortium of California Herbaria (CCH2) web portal (www.cch2.org/portal/).

During this project I collaborated with staff at the Inyo National Forest to cross-reference a spreadsheet of 107 species of conservation concern (SCC) with the CCH2 database. I used CCH2 to link individual specimen reference numbers and collection years with each species, which will aid the forest service in future conservation monitoring efforts. Additionally, I updated small discrepancies in the checklist, identified species with high resurvey priority, and gathered information for 31 of the 107 SCC not represented in the INF herbarium (see page 5) using iNaturalist, CalFlora, and CCH2 to assist future collection efforts.

INF Herbarium highlights

❖ *Dedeckera eurekensis*
INF has the oldest collected specimens of the shrub *Dedeckera eurekensis* (July Gold, California Rare Plant Rank 1B.3) listed in CCH2. While the holotype or "type specimen" is housed at the United States National Herbarium at the Smithsonian Institution, it was actually collected a few weeks *after* (on July 29, 1975) the specimen that currently lives in INF, which was collected on July 4, 1975 by Mary DeDecker (INF03342) in the "N-facing limestone slopes" of the Last Chance Mountains, southeast of Eureka Valley Dunes. Mary DeDecker, founder of the CNPS Bristlecone Chapter, was the first to describe this species to science (along with five other plant species). *Dedeckera eurekensis* turned out to belong to an entirely new genus, which was named in her honor. From *A Tribute to Mary DeDecker* comes this lovely excerpt: (see box on page 5, or https://bristleconecnps.org/dedecker/tribute_to_mary.php).

iNaturalist and CalFlora searches reveal several flowering specimens in recent years in Coldwater

Mary's interest in the nearby desert mountains grew as she became involved with preservation of the Eureka Dunes, managed by the Bureau of Land Management (BLM). Not surprisingly, there was controversy over which roads should be open for ORV use. A "road" in the Last Chance Mountains from Saline Valley to Eureka Valley wound through a canyon and over dry falls. Mary was concerned about the impact vehicles might have on Buddleja utahensis*, a rare butterfly bush that occurs in this canyon. While she was there doing a survey of buddleja, she "picked a sprig of this strange bush that looked like a buckwheat and took it home." She and Paul returned a month later on July 4 to collect it in flower, and were impressed with the dramatic view of this golden shrub growing all over the dark canyon walls. After John Thomas Howell inspected the specimens Mary sent him at the California Academy of Sciences, he told her she had a new genus. He and James Reveal, a buckwheat expert from the University of Maryland, named it* Dedeckera*, in honor of Mary. Mary gave* Dedeckera eurekensis *the common name of July gold. … In a 1985 interview, Mary remarked '…I was doubly pleased. I was, of course, very happy to have it named after my namesake, but I think it's really a wonderful idea to have places named for plants because plants don't really get enough recognition." This discovery constituted the second new genus in California since 1949.*

31 Species of Conservation Concern (SCC) not represented in INF:

Alliaceae
Allium atrorubens var. atrorubens

Apiaceae
Cymopterus globosus
Lomatium foeniculaceum ssp. inyoense

Asteraceae
Erigeron uncialis var. uncialis

Boraginaceae
Phacelia inyoensis
Phacelia monoensis
Phacelia nashiana
Plagiobothrys parishii

Brassicaceae
Boechera pendulina (*Arabis* sp.)
Boechera tularensis
Hesperidanthus jaegeri
Physaria ludoviciana
Polyctenium williamsiae
Streptanthus oliganthus
Thelypodium milleflorum

Cyperaceae
Carex davyi
Carex petasata
Carex praticola
Carex stevenii
Carex vallicola

Fabaceae
Astragalus kentrophyta var. *elatus*
Ladeania lanceolata (*Psoralidium lanceolatum*)

Helodiaceae
Helodium blandowii

Loasaceae
Mentzelia torreyi

Montiaceae
Calyptridium pygmaeum
Claytonia megarhiza

Opphioglossaceae
Botrychium lineare

Peltigeraceae
Solorina spongiosa

Polygonaceae
Eriogonum alexanderae

Rosaceae
Ivesia kingii var. *kingii*
Petrophytum caespitosum ssp. *acuminatum*

Canyon and between Silver and Poleta Canyons. The most recently collected *D. eurekensis* specimen in INF was collected in 1984.

- Most represented collectors (more than ~200 specimens) in the INF:

James D. Morefield (529 specimens), Jack L. Reveal (383 specimens), Mary DeDecker (376 specimens), Kathleen Nelson (253), Michael Honer (204), Michèle Slaton (301), and Kathryn Strohm (199).

Artwork

I worked to develop a body of artwork that highlighted both the Inyo NF herbarium alongside the extant, diverse flora of the Eastern Sierra that the Forest Service aims to protect and preserve. Through an experimental film photography approach, I created multiple exposure photographs to manually layer images inside of the camera (i.e. no digital editing) to evoke the complexity of phenology, community ecology, coexistence, and change over time. I visited several areas mentioned in the Bristlecone Chapter brochure *Wildflower Hotspots of the Eastern Sierra*. In several photos, I placed natural "field" specimens in the same frame as herbarium specimens to allude to the relationship or "conversation" between specimens collected systematically for research and casual observations made while out in the field. Below are images from 2023. Looking forward, I am hoping to coordinate an exhibit in a local gallery in Bishop this spring or summer, and continue collaborating with the National Forest Service to bring my art to an Inyo NF trailhead in the future!

I enjoyed getting to know the Eastern Sierra more intimately through the Inyo National Forest herbarium, Wildflower Hotspots of the Eastern Sierra guide, and visiting the Bishop Paiute Tribe Conservation Open Space Area. I capped it off by hiking ~200 miles of Steve Roper's High Route in August, which was a technically challenging and extremely rewarding experience. I recorded natural history observations along the way, which I uploaded to iNaturalist.

Top: Snapshot of three species in Fish Slough, May 18, 2023. Bottom: *Aquilegia pubescens* (2023) in Sabrina Basin with INF3748 (1979, collected by Kathryn Strohm).

DeDecker Grant recipient Zoe Wood.

Polemonium eximium near Gabbot Pass.

Acknowledgements
Many thanks to Blake Engelhardt, Jonathan Knight, Ken Yamazaki, and White Mountain Research Center Staff Gaylene, Steven, and Sarah for their kindness and welcoming spirits.

Additional 2023 DeDecker Grant Awardees

Mahima Dixit, *Phylogeny and taxonomy of the Eriogonum deflexum complex*

Peri Lee Pipkin, *A floristic inventory of the Silver Peak Range*

Kimberly Schaefer, *A vascular flora of the Sacatar Trail Wilderness*

Visit our new website (chapters.cnps.org/bristlecone/dedecker-grant/) to read their reports published in our previous issues as well as any video recordings of recipient talks.

Up-Coming Events

Chapter Events

Wednesday, November 20th, 6:00 pm
Chapter Board Meeting (Zoom)

All members are welcome to join. Contact our Secretary, Kathleen Nelson, at secretary@bristleconecnps.org for the Zoom link.

Up-Coming Events

Other Events

Thursday, September 26th 6:30 pm – 8:30 pm
White Mountain Research Center
3000 E. Line St., Bishop

Speaker Andy Zdon
Title: Desert Springs of Inyo County

Friends of Fish Slough present Andy Zdon, geologist and hydrologist, who will talk about desert hydrogeology concepts with an emphasis on some of the complications associated with investigating and managing desert springs. Beyond the scientific methods, Andy will discuss how understanding the cultural history of an area can inform those water investigations. This will be followed by a virtual tour of Springs in Inyo County and east of Owens Valley. The character of the springs varies greatly from spring to spring. Alone and together, they tell interesting stories.

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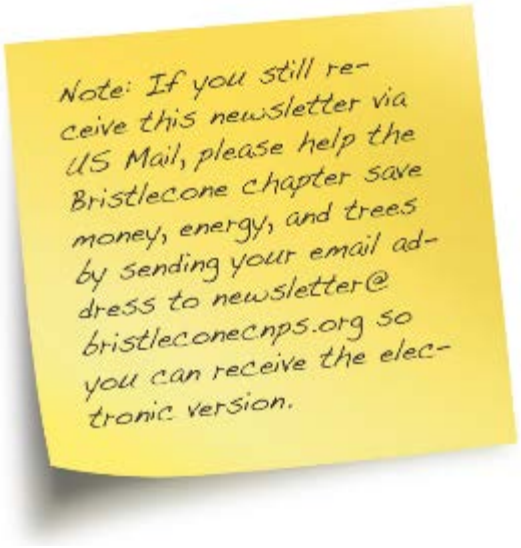

Membership

The California Native Plant Society is an organization of laypersons and professionals united by an interest in the plants of California. It is open to all. The society, working through its local chapters, seeks to increase the understanding of California's native flora and to preserve this rich resource for future generations.
To join or renew online: Go to www.cnps.org and click JOIN/RENEW (at the top-right or select it after clicking the menu button of the webpage) or mail the form below:

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