

RARE PLANT PRESS

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RESEARCH IN ACTION

by Allie Howell

Allie Howell transitioned into Rare Care's seasonal Research Scientist position in February. Through September, she will be collecting field data, growing plants for outplantings, and writing reports on our research projects.

I have the exciting opportunity to delve deeply into several of this program's ongoing projects.

So far, most of my work has been devoted to conducting vulnerability assessments on the rare alpine plants I monitored in the North Cascades, Olympic and Mt. Rainier National Parks this past summer as a Rare Care intern. These assessments synthesize existing information on each plant monitored for this project to evaluate how at-risk the species is in each park. Doing this work has given me the opportunity to read a vast array of papers about alpine ecology. These reports will help guide management decisions for each plant to ensure its continued survival.

I also have had the opportunity to germinate and grow what may be

Washington's rarest plant: showy stickseed (*Hackelia venusta*). This species inhabits loose sandy soils that likely abrade the seed's spikey outer shell and allow the plant to germinate. In the lab, however, emulating these conditions is difficult: using a microscope, I manually removed every embryo from its spiny pericarp and seed coat to liberate the tiny plant's developing root. Soon after this excision process, the seeds rapidly awoke from their dormancy and sent me into a planting frenzy. In the fall, these showy stickseed seedlings will be outplanted in their original habitat.

One of the most interesting projects I get to work on at Rare Care is a study geared towards understanding the factors that influence seedling survival in Umtanum Desert buckwheat (*Eriogonum codium*). Umtanum Desert buckwheat is listed as

Endangered in Washington State because it is very vulnerable to extinction. The species inhabits a single ridgeline in eastern Washington, is not adapted to the area's increasingly-frequent fires, and has seen almost no recruitment since its discovery in 1995. Work on this plant has allowed me to ponder many unanswered questions about this mysterious species: What is so special about this plant's narrow ridgeline? Why have almost no seedlings survived to adulthood? What can we do to ensure this species isn't wiped out by a single, poorly-placed fire?

While I have only been in this role for about two months, I have already learned so much about the impacts of climate change on alpine ecology, rare plant cultivation, and the mystery of Umtanum Desert buckwheat seedling survival. I am excited to learn even more!



Allie Howell at Umtanum Ridge
Photo: Allie Howell



Showy stickseed (*Hackelia venusta*) seedlings in the greenhouse.
Photo: Allie Howell

UNRAVELING THE SIERRA CLIFFBRAKE PUZZLE

by Josh Wozniak



Josh Wozniak surveying Sierra cliffbrake above Lake Chelan.

Photo: Katie Messick

Lake Chelan is a narrow, glacially-carved trench: 50 miles long from North Cascades National Park to the town of Chelan. Along its shores, species typical of both the east and west flanks of the Cascades Range are well-represented. The areas surrounding the lake also contain a number of rare plant species, including some that occur nowhere else in Washington. One of these species is Sierra cliffbrake (*Pellaea brachtyptera*), identified as a priority for study by land managers in North Cascades National Park and Okanogan-Wenatchee National Forest. Its only known occurrence in Washington is along the north side of the lake, in a handful of populations identified during plant surveys in 1986 (Alverson and Arnett 1986). Otherwise, it occurs primarily in the Sierra Mountains of California, extending north along the Cascades Range to central Oregon (Camp and Gamon 2011, Hitchcock and Cronquist 2018, Hickman 1993).

Rare Care volunteers Katie and Steve Messick were given the assignment in 2017. Their survey confirmed early summer would be optimal for surveys, the sites were steep, and the presence of a systematic error in the spatial data associated with the historical archives (datum shift, or other offset). Katie and Steve returned in May 2018, joined by Julia Munger, Shelby Petro, George

Ritchotte, and myself. Katie and I are trained Rare Care survey leads, and all of us have conducted many plant surveys previously. Initial survey work did indeed support the hypothesis that the archived mapping was consistently about 1,500 feet horizontally and 200-300 feet vertically offset from the actual population locations. This certainly contributed to the difficulty previous surveyors experienced in attempting to re-locate these populations. Our survey crew in 2018 re-located all the populations in the vicinity and identified a number of new populations in similar adjacent habitats.

The crew returned in 2019 and completed surveys of all the previously identified populations within the valley. They confirmed the persistence of all but one population, located in an area that experienced a large fire in 2010 and was now dominated by a robust, neck-deep stand of snowbrush (*Ceanothus velutinus*). It is unknown whether the Sierra cliffbrake is persisting in the understory of the snowbrush and downed logs, but they escaped our detection. The remainder of the survey sites were completed in 2019, 2020 and 2021.

In 2021, a new population was found south of the known population. Moving south, the populations began to increase,

culminating at the south end of the trail where hundreds of populations occur in a fascinating and unique landscape co-dominated by another locally rare plant with a primary range in the California Sierra, green leaf manzanita (*Arctostaphalos patula*).

Throughout its distribution at Lake Chelan, Sierra cliffbrake grew in loose rocky soil, often near rock outcroppings and warm exposures, with a preference for sites with fine views of the lake. These habitats are very prone to impacts from fire, forest encroachment from fire suppression and invasive species. Except at its southernmost extent, the species occurred in a narrow elevation band, and in areas with sparse vegetation adapted for harsh, dry conditions. Pinemat manzanita (*Arctostaphalos nevadensis*), Oregon cliff-fern (*Woodsia oregana*) and cliff-fern (*W. scopulina*), Oregon cliffbrake (*Aspidotis densa*) and death camas (*Toxicoscordion venuosum*) were common associates.

To read more about this monitoring effort, check out Josh's article in the most recent edition of *Douglasia*: "Unique Habitats of Lake Chelan: Rare Plants Occupying an Equally Rare Geologic Niche".

TIPS OF THE TRADE

Tom Erler and Darcy Dauble are two long-time rare plant monitoring volunteers with a breadth of experience to share with our 38 recently trained monitors! During the monitoring season you will catch Tom searching for rare plants across the state, anywhere from the San Juan Islands to Douglas County. His day job is with the King County Noxious Weed Program. Darcy Dauble is a retired librarian who can be found botanizing the Blue Mountains of southeastern Washington. Here are some excerpts from our interview on what it takes to be a successful rare plant monitor. Their full responses can be found on our blog: bit.ly/RPM-Tips

What are tips for someone just starting as a Rare Plant Monitor? What skills and strategies lead to success?

Darcy: Take advantage of all the programming offered by Rare Care and the Washington Native Plant Society. Stick to one local plant species to begin with. Branch out as you become more confident.

I enjoy researching the old reports for my assigned site. Who are these people that wrote them? How long did they spend in the area? What was going on in that part of the desert, forest, or river when the plant was identified? When do the cattle come through? When was the last fire? Are they logging this month? The plants – their presence or absence – are part of a story of land use. Google Maps is great for finding remnants of old roads, trails or landmarks. The Umatilla National Forest website has road conditions, historical photographs from early 1900s and management studies. David Giblin, Joe Arnett, Walter Fertig and Paul Slichter publish plant lists, photographs, articles and Natural Heritage reports. The Burke Herbarium is my primary go-to for background information and photos. It has images, descriptions, historical data on sightings, and updates to the “Field Guide to the Rare Plants of Washington” and “Flora of the Pacific Northwest”. Those ‘Area Managers’ listed in your assignment cover letter are invaluable too for local conditions.

Stay off private property and take the initiative in introducing yourself to patrolling, nervous caretakers. Take a companion even if just for driving or photography or counting or to have someone else who can go for help. Plus it’s just more fun having someone to share the experience.



Tom Erler monitoring snowball cactus (*Pediocactus nigrispinus*)
Photo: Margaux Erler



Darcy Dauble and Howard Beuhler monitoring Blue Mountains beardtongue (*Penstemon pennellianus*).
Photo: Sly Beuhler

Tom: I would encourage asking experienced members for help. Use the directory contact info to find volunteers from old assignments. I spent two very soggy days on the Olympic Peninsula looking for an inland giant chain fern (*Woodwardia fimbriata*) in the exact area described; however, encroachment by conifers seemed to have considerably altered the landscape from the original description from the 1970’s. I found the original botanist’s (who had collected the voucher) contact info online and asked if he ever went back to the site and he was gracious in his response. He lived nearby and it had been gone for some time. David Giblin at the herbarium is also an amazing local resource and generous with his time.

Anything else you want people to know?

Darcy: On a monitoring assignment there may be no one else around. It is such a privilege to be able to be on the land with the feel of rocky soils under foot, the plants, the smell on the breeze, the horizon, the light, and memories of previous visits. Rare Care is my excuse for any day in the outdoors and it’s a good one.

Tom: Not every assignment has to be crazy or challenging, it’s just my preference now since I’ve associated this kind of experience with Rare Care, and I love it. It’s up to the volunteer to make the experience what they want it to be! Kayaking inter-island in the San Juan Islands in early spring, or canoeing through the Salish Sea shipping lanes at dusk is much more variable than visiting a low elevation, roadside location but not necessarily any more rewarding depending on what you want to see!



Basalt daisy in bloom
Photos: Richard Ramsden



Basalt daisy habitat on basalt cliffs
Photo: Jennifer Youngman

VOLUNTEER SPOTLIGHT

Each year Rare Care recognizes volunteers for their outstanding contributions.

Steven Clark has been with Rare Care since the inception of our rare plant monitoring program in 2001! Since then, Steven has contributed over 320 hours and submitted nearly 40 reports. He integrates Rare Care into the biology courses he teaches at Clark College, and helps inspire the future conservation biologists of our state. Recently he shared his love of rare plant monitoring with Crosscut in a Human Elements feature. Check out his search for the gorge daisy (*Erigeron howellii*): bit.ly/GorgeDaisy



Ellie Dugarian, Steven Clark and Kate Glover searching for gorge daisy (*Erigeron howellii*)
Photo: Steven Clark



Gorge daisy (*Erigeron howellii*)
Photo: Steven Clark

FOCUS SPECIES PROFILE

Basalt daisy (*Erigeron basalticus*) is a cliff dweller, found exclusively along the Yakima River Canyon and Selah Creek. There you will find it tucked into crevices and cracks of the basalt cliffs formed in the late Miocene (5 to 11 million years ago). There are six known populations in Washington State. Over the past few years Rare Care has made a concerted effort to re-monitor all known occurrences, and we only have one left to visit! This is the second round of concentrated monitoring we've done for basalt daisy. In 2007, for Rare Care's very first monitoring weekend, volunteers surveyed all of the known populations.

As expected for a plant that grows on tall canyon walls, most of these plants require binoculars or a high-powered spotting scope to view. Sometimes a monitoring effort even requires a float down the Yakima River or Selah Creek. Other populations are growing in road cuts.

Once you do have the basalt daisy in your sights, look for white ray flowers that dry to pink or pinkish purple. Flowering occurs from late May to mid-June and occasionally into August. The stems are 10-15 cm long, branched, and leafy, especially towards the tip. Leaves are 1.5-4 cm long, wedge-shaped, and irregularly three-lobed at the tip. Hidden in the crack is the basalt daisy's strong taproot that anchors it to its precarious perch. You will usually find basalt daisy growing alone but its associated species are Columbian goldenbush (*Ericameria resinosa*), roundleaf alumroot (*Heuchera cylindrica*), Richard's beardtongue (*Penstemon richardsonii*), cutleaf thelypody (*Thelypodium laciniatum*), Sandberg bluegrass (*Poa secunda*), and cheatgrass (*Bromus tectorum*).

Although each population is only visited about once every 10 years, we believe them to be holding steady.

UPCOMING EVENTS

SEED COLLECTOR TRAINING
Saturday, May 21st
Center for Urban Horticulture

BOTANICAL SURVEYS
Friday, May 6th & Friday, June 24th
Marcellus Shrub Steppe Preserve

ANNUAL MONITORING WEEKEND
Friday- Sunday, June 3rd-5th
Trout Lake Creek Campground

SIDALCEA SAMPLING
TBD Late June/Early July
Camas Lands

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