NORTHERN CALIFORNIA BOTANISTS

# BOTANICAL LEAFLETS

**ISSUE 15 SPRING 2015**

## PRESIDENT'S MESSAGE

It's beginning to look like summer and with the drought it will be interesting to see what the bloom is like farther upslope. I helped teach a Plant Families workshop in April for the Friends of the Chico State Herbarium. We went up Highway 70 into the Feather River Canyon to collect flowers for the class since the flowers in the Sacramento Valley were finished blooming by that time. I also helped with the Mt. Lassen Chapter CNPS Wildflower Show in Chico in April and the Siskiyou Wildflower Show in Yreka sponsored by the Klamath and Shasta Trinity National Forests. Both shows had plenty of specimens for people to see and were well attended.

I was able to attend the Southern California Botanists meeting last fall and the California Native Plant Society Conference in San Jose this past January. It was great to attend both events and see so many of you. Plans are underway for our next Symposium which will be held on January 11-12, 2016 with optional workshops on the 13th.

NCB has just completed it's review of the 2015-2016 research scholarship applications and have selected the award recipients. Again, we received numerous fantastic applications. We want to thank the Shasta Chapter of the California Native Plant Society for sponsoring a scholarship for research relative to their area. What a wonderful collaborative effort!

Have a great summer pursuing your many vast botanical adventures.

Linnea Hanson

## WELCOME JULIE KIERSTEAD NELSON TO THE NCB BOARD!

After four years of serving on the Board, Chase Lentz (Bureau of Land Management) has stepped down. Chase served on the Board from 2011 to 2015. Thank you Chase! Northern California Botanists is pleased to announce the appointment of our newest Board Member, Julie Kierstead Nelson. Julie is the Forest Botanist for the Shasta Trinity National Forest and has helped plan and give presentations at many of our past Symposia.

## MYSTERY PLANT

This knee-high plant represents a monotypic genus and is also the only representative of its family in California. Its range is restricted to northern California, where it is found under 600 m elevation, sometimes on serpentine soils. Flowers have 6 stamens, 6 staminodes, and a superior ovary. This geophyte pulls its seedling's corm deeper into the soil with a contractile root.

Photo by Robert Fischer (Answer on Page 2)



**INSIDE THIS ISSUE:**

## NCB 2016 Symposium Update & Keynote Speaker

The seventh Northern California Botanists Symposium will be held January 11-12, 2016. The theme: Plant Adaptations: Research, Conservation, and Management will include sessions on Botanical Genetics, Local Rarity: Disjunct and Marginal Populations, Restoration, Climate Change, Evolutionary California Groups, And Now Some Good News, and New Discoveries.

We are happy to announce that **Dr. Susan Harrison of UC Davis** will be our **Keynote Speaker**. Dr. Harrison's research focuses on the processes that shape and maintain plant species diversity at the landscape scale. She will discuss climate-induced changes to CA plant communities with a focus on diversity loss in a grassland community.

As our last session on Monday, we will have a half hour of six 5-minute long lightning talks. This is patterned after a similar session at the CNPS conference. If you are interested in giving a lightning talk, please send one or two sentences about your topic, a title, and your contact information to linneachanson@gmail.com.

The Reception on Monday evening will be held in Colusa Hall, just a few minutes walk from the BMU. The poster session will be on Tuesday morning. Coffee and breakfast food will be available.

We hope to see you next January!

## 2015-2016 Student Research Scholarship Awards

Northern California Botanists provides monetary scholarships for students doing research on botanical subjects in northern and central California. We received 31 applications this year and as usual there were many great research projects to choose from. We will be awarding eight scholarships which includes one sponsored by the Shasta Chapter of CNPS* for research in their Chapter Area (Shasta, Siskiyou, Modoc, and Lassen Counties). Abstracts and photos of each recipient and project will be included in our Fall newsletter. Congratulations to these students and thank you to all that submitted applications!

### 2015-2016 NCB Research Scholarship Recipients

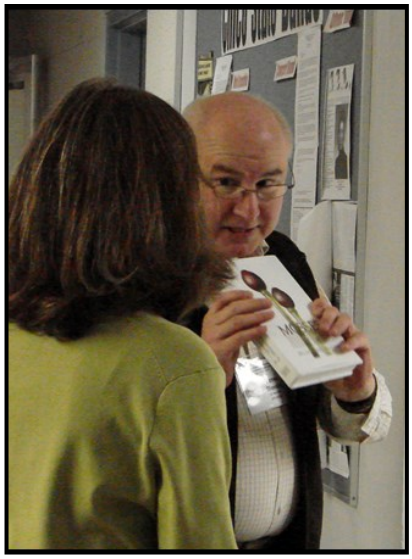
| Recipient | Degree Program | College | Title of Research Project |
|---|---|---|---|
| Kyle Christie | PhD | University of California, Davis | Cryptic diversity and integrative taxonomy of the *Strepthanthus breweri* complex |
| Julia Michaels | MS | University of California, Davis | Grazing for vernal pool plant diversity across a heterogeneous landscape |
| Kristen Nelson | MS | California Polytechnic University, San Luis Obispo | Allelopathic inhibition in understory vegetation in California eucalyptus groves |
| Moria Robinson | PhD | University of California, Davis | Trickle-up economics: effects of resource availability and quality of plant traits and trophic networks |
| Tommy Stoughton *Shasta Chapter CNPS Scholarship* | PhD | Claremont Graduate University | Evolution and systematics of *Claytonia lanceolata*: untangling polyploidy origins in a challenging species complex |
| Devon Thrumston | Undergrad | Mills College | Is herbivory driving a genetic bottleneck in *Calochortus tiburonensis*? |
| Crystal Weaver | MS | San Francisco State University | The effects of sediments and their associated microbial communities in eelgrass (*Zostera marina)* restoration |
| Andrew Weitz | PhD | University of California, Berkeley | The phylogenetic, ecological, and physiological determinants of disease pressure in rapidly changing plant communities |

Answer to "Mystery Plant": *Odontostomum hartwegii*, Hartweg's Odontostomum (Tecophilaeaceae, Tecophilaea Family)

# Northern California Botanists in Action

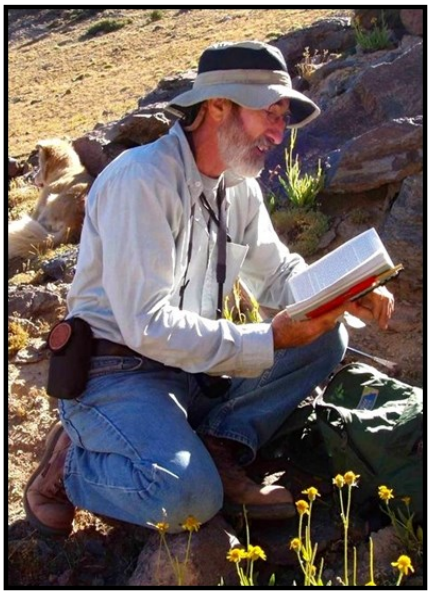
Botanists in Action is a continuing series featuring well-known to possibly less-well-known botanists, with pictures from the present to several decades back. If you have unpublished pictures of Northern California Botanists to share, please send jpegs and relevant information to rschlising@csuchico.edu

**Jim Shevock**, a retired botanist with the US Forest Service and US National Park Service, is now a Research Associate with the California Academy of Sciences. In 1997, his research shifted to bryophytes (which he has collected throughout the world), with one specialty being bryophytes of fast-flowing streams. His numerous publications include a (co-authored) book "California Mosses." Many plant species are named for him, including a new genus of moss (*Shevockia*). Jim gives quality lectures and workshops on bryophytes—including at NCB symposia.



**Clare Golec** is an Environmental Scientist with the California Department of Fish and Wildlife, in the coastal Habitat Conservation Program, where duties include CEQA reviews for rare plants. Past positions include re-vegetation specialist with Caltrans, staff botanist for a private consulting firm in Northwestern California, and survey and forestry technician with USFS Pacific Northwest Experimental Station and three National Forests. She is an active conference-goer and has chaired a session at a NCB symposium.

**Robert Fischer**, a building contractor in Chico, is an excellent amateur botanist—as expert in lichens as in seed plants—shown here field-keying in the Warner Mountains. He is active in local checklisting and CNPS rare plant searches, and does complete local florulas (e.g. for Ahjumawi Lava Springs State Park in Northeastern Shasta County). He is known as a reliable provider of fresh plant material from the field for research projects on the West Coast. Robert has presented posters at NCB symposia.



**Josephine Guardino** runs a consulting firm in Los Molinos with her husband John Dittes, doing contracts for federal, state, and private groups. Here she is pointing at the bear claw scratches on a *Populus* trunk during a survey near Lake Davis. She has served as President of the Mount Lassen Chapter of CNPS and is active in several botanical groups in Northern California. In the summer of 2014, Jo was a team leader in the botanical survey for the Stanislaus National Forest Rim Fire Recovery Project.

# TADPOLE FEN RESTORATION FOR MINGAN MOONWORT, BOTRYCHIUM MINGANENSE

*By Kathy Van Zuuk, West Zone Botanist, Tahoe National Forest (photos by American River RD staff except as noted)*

Tadpole Fen is located on the Tahoe National Forest, American River Ranger District near Duncan Peak. Fens are unique plant communities and are on the Tahoe National Forest watch list. A fen is a wetland that has at least 40 centimeters of peat. There are less than five fens known to occur on the entire American River Ranger District. Tadpole Fen is the only known location of Mingan Moonwort (*Botrychium minganense)* on Tahoe National Forest system lands. *Botrychium minganese* is a small fern with sterile and fertile portions and is a Tahoe National Forest sensitive plant species.

Tadpole Fen in August 2011 with bog orchid (*Platanthera dilatata* var. *leucostachys*) and wandering daisy (*Erigeron peregrinus*).

Mingan Moonwort (*Botrychium minganense*). Photo by Tim Ditzman

Motorized vehicle damage to Tadpole Fen in April 2013.

In April of 2013, at least two 4-wheel drive vehicles illegally entered Tadpole fen damaging this important ecosystem. Some ruts were over a foot deep and all ruts had running water during the spring of 2013.

David Merritt, USDA Rocky Mountain Research Station and Colorado State University, and David Cooper, Colorado State University, both experts in riparian ecosystems were contacted to determine the best restoration techniques for this site. It was determined that raking the peat back into place and blocking future access were the best methods to use. Restoration needed to happen quickly since maintenance of the hydrology is one of the most important elements of fen maintenance and health. Direct damage to the *Botrychium minganense* occurrence did not occur. However, the hydrologic changes within the fen were indirectly impacting it.

Kathy Van Zuuk, West Zone Botanist, Tahoe National Forest, was the technical advisor for the American River Ranger District. Emergency restoration activities were needed to prevent further damage. Therefore, the restoration activities were categorically excluded from the National Environmental Policy Act process. The district paid for this project using existing district funds.

In early May of 2013, American River Ranger District employees and the Green Corp, a program designed to take veterans and retrain them for civilian work, raked in the ruts and blocked access to the fen. Monitoring of this restoration in 2013 showed that restricting the vehicle access was working and that the vehicle ruts had revegetated.

Tadpole Fen prior to raking of the ruts.

Tadpole Fen after ruts were raked in.

Access to Tadpole Fen blocked using logs.

In 2014, the barricades were checked to make sure they were keeping vehicle access out of the fen. The barricades were indeed working and the fen looked great. The ruts were continuing to revegetate.

New vegetative growth in the ruts in May 2013.

Note: Kathy Van Zuuk has been a botanist on the Tahoe National Forest since 1985 and will retire on June 16, 2015. She has worked for the Forest Service for 33 years and 8 months. We wish Kathy well in her retirement!

# RARE PLANT SPECIES RESPONDING FAVORABLY TO PRESCRIBED FIRE AND FUELS TREATMENT IN WHISKEYTOWN NATIONAL RECREATION AREA

*By Jennifer Gibson, Ecologist, Whiskeytown National Recreation Area (photos by Jennifer Gibson and Whiskeytown NRA staff except as noted)*

Whiskeytown National Recreation Area borders an urban interface that is comprised of homes and structures within a diverse assortment of oak woodland, chaparral, and knobcone/ponderosa pine vegetation types. The combination of hot and dry summers, steep slopes, and frequent fire starts has created a situation in which wildfire is inevitable. It is because of this threat that the National Park Service has implemented a fuels management program designed to reduce hazardous fuels adjacent to developed areas and restore fire-dependent ecosystems. This is accomplished with a combination of prescribed fire and a network of shaded fuelbreaks, which are constructed by the cutting and pile-burning of small diameter trees and understory shrubs along ridgelines and roadsides.

Prescribed fire in urban interface (above) and Shasta County arnica habitat (below).

CNPS listed rare plant species that benefit from these activities include the Klamath endemic, Shasta County arnica (*Arnica venosa*). Typically found along road cuts, the largest population of Shasta County arnica at Whiskeytown is approximately 7 acres and makes up a significant portion of the understory plant community along the oldest shaded fuelbreak in the park.

Shasta County arnica (*Arnica venosa*) in a roadcut (above) and in a fuelbreak (below).

Prescribed fire in Shasta County arnica habitat (note the cut stumps of manzanita in the foreground).

This fuelbreak has been repeatedly treated with prescribed fire and understory thinning since the early 1990's with the overarching goal of preventing a large wildfire from leaving the park boundary and posing a threat to nearby communities. Fire crews have worked laboriously to remove a once impenetrable thicket of dense whiteleaf manzanita from under mixed conifers and large diameter black oaks, resulting in a diverse understory of native grasses and herbaceous species.

In nearby prescribed burn units, Shasta County arnica appears to be a "fire follower" in that seedlings have germinated within the first few years post fire. Fire effects monitoring data also revealed new populations of Shasta County arnica in areas that have burned multiple times over the past ten years – either with prescribed fire or in combination with wildland fire. In the absence of treatment, these populations appear to fade with time as the succession of native shrubs and trees takes hold.

Shasta County arnica seedlings germinate in an area recently treated with prescribed fire.

Similarly, Sanborn's onion *(Allium sanbornii var. sanbornii)* has responded favorably to the select thinning of dense stands of whiteleaf manzanita and chamise around park structures on dry, south-facing slopes. Since the manual cutting and removal of overstory shrubs can mimic the effects of fire on the structural patterns of woody vegetation, native perennial herbaceous species, such as Sanborn's onion, have clearly taken advantage of the availability of sunlight in the areas that have been repeatedly treated. Unfortunately, annual exotic grasses have invaded, but appear to not have an adverse impact on Sanborn's onion. Whiskeytown staff carefully time their defensive space projects so as to not negatively impact Sanborn's onion before it has a chance to flower and go to seed.


Sanborn's onion habitat (*Allium sanbornii var. sanbornii)* (far left) and closeup. (photo by Sean Smith)

NPS fire effects monitoring photopoints of the Monarch Mountain Prescribed Burn Unit demonstrating conditions before treatment in 1995 (left) and after three prescribed burns in 2010 (right). Shasta County arnica and understory native grasses and herbaceous species thrived after multiple prescribed fire treatments.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*Save the Date!*

*2016 NCB Symposium*

*CSU Chico*

*January 11-12, 2016*

*With optional workshops on the 13th*

*Check our website in September for more information*

# MEMBERSHIP APPLICATION/RENEWAL

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MEMBERSHIP DUES:

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In addition, I would like to donate $_____ to Northern California Botanists to help fund NCB programs and student research scholarships.

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