

BOTANICAL LEAFLETS

ISSUE 18

FALL 2016



PRESIDENT'S MESSAGE

There are dogwoods with red leaves in the foothills so I know that fall is coming. But the Valley still feels like summer. Watch out for the yellow jackets. I was stung recently!

There were lots of fires again this last summer—some close to where we live and others farther away. I guess that will be the norm each year now.

Here in the northern end of the state the winter rains brought a more normal

spring wildflower season than past years. And with the hot weather in the summer, the summer wildflower season seemed to go quite well.

I was able to spend some time in southeastern Arizona at the Native Orchid Conference in August. Their monsoon rains provide the water for a great summer of wildflowers. I also saw five native orchid species that were new to me which was exciting!

We are busy planning our 2017 Symposium which will be January 9 and 10 at California State University, Chico. See details within the newsletter about the symposium. We plan to have workshops on January 11 as well. It is really going to be a great event!

Have a great fall with your many vast botanical adventures. And hope to see you in January at the Symposium.

Linnea Hanson

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NORTHERN CALIFORNIA BOTANISTS SYMPOSIUM! 9-10 JANUARY 2017—REGISTRATION IS OPEN!

The Northern California Botanists will host their 8th symposium at California State University, Chico, January 9-10, 2017 with optional workshops on the 11th. The 2017 Symposium is titled *Diverse Environments: How Plants Succeed in Northern California*.

See Pages 2 and 9 for more information.

MYSTERY PLANT

Habit of this little annual varies from prostrate to erect. Heads are about 1 cm across. The plant is found in wet places in Northern California, and its overall geographic range extends from lower elevations in California across southern parts of the country to the Atlantic coast, and south to Mexico and beyond. It is native to the Americas but is found as a weed in continents in the Eastern Hemisphere! The genus name comes from a Greek word meaning “deficient”—because the pappus is nearly or totally lacking.

Photo by Rob Schlising



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2016 NCB SYMPOSIUM (CONTINUED)

Diverse Environments: How Plants Succeed in Northern California will provide updates and perspectives on topics such as Special Soil Endemics, the Great Basin, Influence of Summer Fog on Patterns of Plant Diversity, Insects on Plants, Soil Seed Banks, Now the Good News, and New Discoveries. We will again have a Lightning Talks Session with 5-minutes per

talk. The Poster Session will be held on Tuesday morning.

Three optional workshops will follow on Wednesday and will include:

- Field Data Collection using Esri Collector
- Preparing for Consulting Botanists Certification Exams

- Native Plant Propagation.

The California Botanical Society will again host a Mixer on Sunday evening January 8, at 5:30 at the Madison Bear Garden. Come to town early to join in on this fun social event.

Visit our webpage at <http://www.norcalbotanists.org> for more information.

2016 SYMPOSIUM KEYNOTE ADDRESS—DR. HUGH SAFFORD

We are pleased to announce Dr. Hugh Safford as the Keynote Speaker for the Northern California Botanists 2017 Symposium. Dr. Safford will give a talk on the major environmental threats facing Sierra Nevada forests, focusing on climate change, the negative effects of fire suppression, and invasive species and pest outbreaks. He will also explain how interaction between these threats will likely lead

to major changes in Sierra Nevada forests, and will discuss what sorts of management actions—both active and passive—can be employed in Sierra Nevada forests to increase ecosystem resilience to future change. Dr. Safford is the Senior Vegetation Ecologist for the US Forest Service Pacific Southwest Region (California, Hawaii, Pacific Territories) and a member of the research faculty in the

Department of Environmental Science and Policy at UC Davis. Hugh's talk is titled **"Fear and Loathing in the Sierra Nevada: Confronting a Wicked Problem."**

The Keynote Address will follow the banquet on Monday evening, January 9, 2017 from 7:30 - 8:30 p.m. Although the banquet requires a paid ticket, the Keynote Address is open to all.

LIGHTNING TALKS

This year we are again offering a 5-minutes per talk session. Consider giving a talk if you: are working on a project and want to give an update, are aware of an issue of concern or growing need in the botanical community, want to promote something

exciting, need to hire people for an upcoming botanical project, have discovered something novel and interesting, know of new laws or regulations that the community should know about, or want to update about

what your organization is doing. If you are interested in giving a lightning talk, contact jennyost@gmail.com by November 15th. Please see our website for more information.

CALL FOR POSTERS

The NCB symposium planning committee invites you to bring a poster to share your work and knowledge of the biology, ecology, conservation and/or management of our Northern California plant life with others at the 2017 Symposium. This will be a great opportunity for continuing education and networking.

The first session on Tuesday morning, January 10 will be a dedicated poster session. Poster authors are requested to be present with posters during a portion of the session.

Deadline for submitting Poster Abstracts is December 5, 2016. Space is limited to 40 posters, so get yours in early.

Additional information can be found on the website at:

www.norcalbotanists.org/symposia_callforposters.htm

Contact Barb Castro for more information at barbcastro@hotmail.com

See Page 9 for information on the Student Poster Contest!

NORTHERN CALIFORNIA BOTANISTS IN ACTION

A continuing series that highlights well-known to possibly less-well-known botanists, with photographs from the present to several decades back. Please share unpublished pictures of northern California botanists: send jpegs and information to rschlising@csuchico.edu



Stephanie Puentes is a botanist with Sierra Pacific Industries in Cottonwood. She is shown in this picture by Lawrence Janeway on an outcrop in the Plumas National Forest, studying *Lewisia kelloggii* subsp. *Hutchisonii* (as part of a comparative analysis of similar plants in northwest California, in a cooperative study by Sierra Pacific Industries, Six Rivers and Plumas National Forests). Stephanie concentrated on botany in her studies at Cal Poly San Luis Obispo.



Jane Van Susteren has studied the phylogeny of *Sedum* subgenus *Gormania*, and is shown focusing on a *Sedum* plant in this picture by Julie Nelson. Jane has worked for industry, in academic research labs, as a consultant and with a national forest, and is now employed by the CA Department of Water Resources, Division of Environmental Services, in West Sacramento. She is an active member of the Board of Directors for the Northern California Botanists.



Steve Schoenig has had a long career in California state service and recently retired from the CA Department of Fish and Wildlife as Chief of the Branch that oversees the California Natural Diversity Database. He has also served as president of the California Invasive Plant Council. Steve is a specialist on monkeyflowers, and in this photo by Julie Nelson, is examining an “odd” monkeyflower that Julie found near Shasta Lake (that was soon published as *Erythranthe taylorii* by Guy Nesom). Steve is now the California Native Plant Society Rare Plant Treasure Hunt botanist.



Robin Fallscheer is a state overseer of private timber harvest activities, working out of the CA Department of Fish and Wildlife Regional Office in Redding. An excellent botanist, she also actively keeps up with identifying new species of animals as well as plants (and their habitats) in northern California. Robin has served on the Board of Directors of NCB. Earlier she published her research on the sting apparatus of yellowjackets (Vespidae) in the journal “Sociobiology.” Julie Nelson photoed her near Stonewall Pass in the Trinity Alps.

2016-2017 STUDENT RESEARCH SCHOLARSHIP AWARDS

Northern California Botanists is pleased to announce the recipients of this year's research scholarship awards. As in the past, we received many worthy applications. This year we awarded 10 scholarships of \$1,000 each. The Sacramento Valley and Shasta chapters of the California Native Plant Society have teamed up with NCB and are each funding one of the scholarships.

Israel Borokini is a PhD student at the University of Nevada, Reno.

The title of his research is
"Genetic diversity, distribution modelling, and soil seed bank density studies on endangered *Ivesia webberi* Gray."



Conservation biology is concerned mainly with the long term persistence of species in the wake of local and global changes. However, theories in ecology and evolution, and supporting empirical research suggest that species with restricted distribution have higher extinction risk from demographic and genetic stochasticities. Therefore, more research and management attention is needed for these species at high risk. This helps to maintain ecosystem health and functioning at various spatial scales.

Ivesia webberi Gray (Webber's ivesia or wire mousetail) is a short perennial herb belonging to the Rosaceae, with distribution limited to 18 known sites in northern California and northern Nevada. In spite of its restricted distribution and rarity, it is threatened with habitat loss from land use change and biological invasion by alien weeds. Consequently, non-governmental, and governmental conservation institutions at state and federal levels have flagged this species for urgent conservation efforts, while it was federally listed as "threatened" in the Endangered Species Act. However, lack of empirical studies has hitherto hampered development of conservation plan for this species.

Therefore, my research focuses on investigating the levels of genetic variation in *I. webberi* using molecular markers and how this will impact its future persistence. Likewise, I intend to build ecological niche models (ENMs) for this species in order to highlight the environmental factors that increase its probability of occurrence and identify novel suitable areas for management and translocation. ENMs will be built using four comparative regression and machine learning algorithms. Furthermore, the regeneration potential of the soil seed bank at *I. webberi* population sites will be studied, as an indicator for its long term persistence. It is hopeful that findings from these studies will be useful in the management of *I. webberi*.

Katherine Ross is a PhD student at the University of California, Santa Cruz.

The title of her research is **"Physiological Sensitivity of Eastern Sierra Nevada Conifers to Climate Change."**



Understanding plant responses to climatic changes is important for predicting future vegetation patterns to manage effectively for conservation. I am broadly interested in understanding the relationship between the physiological and distributional responses of plants in the context of climate change, especially the physiological mechanisms underlying range shifts. My research focuses on four conifer species—Jeffrey pine (*Pinus jeffreyi*), lodgepole pine (*P. contorta*), whitebark pine (*P. albicaulis*), and red fir (*Abies magnifica*)—in the eastern Sierra Nevada near Mammoth Lakes, California and their physiological sensitivity to climate change. In this project, I am exploring current patterns in photosynthetic rates, biochemical vs. stomatal limitations to photosynthesis, water potential, and intrinsic water use efficiency of these species across an elevation gradient and over the course of three years. Spatial and temporal patterns in photosynthesis and water status may have consequences for tree growth and mortality, which may in turn affect geographic distribution and forest structure. Within range and interspecies differences in physiological responses may improve predictions of demographic and distributional shifts resulting from climate change. Ultimately, I plan to collaborate with modelers to develop a physiologically based mechanistic model to predict future distributions under climate change. Modeling future distributions of these species will make it possible to predict and investigate potential consequences for ecosystem function, and suggest areas where management intervention should be prioritized.

2016-2017 STUDENT RESEARCH SCHOLARSHIP AWARDS (CONT.)

Jacob Francis is a PhD student at the University of Nevada, Reno.

The title of his research is **“Do nectary plants make good neighbors? Facilitation and competition between pollen rewarding plants and their communities.”**



Our understanding of coevolution between plants and animals has long been shaped by study of consumers' (such as herbivores and pollinators) nutritional needs, including how they select resources to meet their nutritional requirements. Flowering plants predominantly offer two nutritional rewards to pollinators: pollen, primarily protein, and nectar, primarily carbohydrates. However, nearly all of the research investigating how pollinators respond to available resources focuses on a single reward (nectar). This perspective has limited our understanding of the outcome of plant-pollinator interactions in nutritionally complex systems; most notably the ecology of the some 8-10% of bee pollinated plants that offer only pollen as a reward (Pollen-only Rewarding Plants: PORPs, such as *Papaver*, *Solanum*, and some *Primula*). Nectarlessness is intriguing because most bees collect pollen and nectar and rely on both for survival, while most co-flowering plants surrounding PORPs offer both of these resources. To address this gap, I am investigating how the nutritional community surrounding a Northern California PORP, *Lupinus lepidus*, shapes their interactions with pollinators, and their reproductive success.

To do this, I established five and ten-meter diameter circular plots around focal *L. lepidus* plants near Soda Springs, CA. Within these plots, I measured floral density and floral rewards of all co-flowering species. Additionally within these plots, I monitored bumblebee foraging behavior, and captured twelve foraging bees to analyze the pollen diversity in their corbicular pollen loads. Finally, for each focal *L. lepidus* individual I collected stigma samples to measure heterospecific pollen deposition, and collected fruits and seeds to measure plant fitness. I am in the process of processing preliminary samples from the 2016 field season, and searching for new study locations for 2017.

Michelle Tran is an Undergraduate student at Mills College

The title of her research is **“Drought and loss of genetic diversity: implication for a rare endemic plant in a rapidly changing climate.”**



The Tiburon jewelflower, *Streptanthus glandulosus* subsp. *niger*, is a critically endangered annual, endemic to the Tiburon peninsula. *S. glandulosus* subsp. *niger* grows exclusively in serpentine soil. Once widespread on the peninsula, the population of this species has been reduced by urban development. Additionally, the recent consecutive drought years led to substantial decline in the standing population. This rapid decline in population size is likely to be coupled with loss of genetic diversity. Seeds in the seed bank could buffer a population from extinction by germinating in wet years, thereby increasing the effective population size. These seeds come from many generations, years and parents, which can increase genetic diversity. Soil samples were collected from the field in 2015 and 2016 and grown in a common garden to assess the size of the seed bank. To determine whether the standing population has suffered a loss of genetic diversity and whether the plants that have emerged from the seed bank harbor any genetic diversity missing from the standing plant population, ten microsatellite loci were tested for genetic variation.

Of the 300 soil samples collected in 2015, only 83 seedlings emerged, suggesting that the seed bank is very small, and that successive drought years may have depleted the seed bank. The first round of results shows that both the standing and seed bank populations are genetically identical and the seed bank does not harbor any novel genetic diversity. As a serpentine endemic, migration to a preferable climate is impossible, therefore, *S. glandulosus* subsp. *niger* has to adapt in situ to the changing climate or go extinct. Understanding the population dynamic and the genetic structure of *S. glandulosus* subsp. *niger* is crucial in designing the Marin County Parks conservation plan.

2016-2017 STUDENT RESEARCH SCHOLARSHIP AWARDS (CONT.)

Stephanie Saffouri is an MS student at San Francisco State University

The title of her research is **“The impacts of an invasive *Limonium* species on a native congener in San Francisco Bay.”**



Coastal salt marshes in San Francisco Bay have seen aggressive expansion of invasive plants, displacing native species and the broader communities and functions they support. I am researching a recent invasive, *Limonium ramosissimum*, known as Algerian sea lavender. Marsh patches containing *L. ramosissimum* have experienced a marked decline in native halophytes, including the only *Limonium* native to California: the Western marsh rosemary, *Limonium californicum*.

My project investigates the impacts of *L. ramosissimum* on the fecundity of its native congener. Given the spatial proximity, overlapping flowering periods, and relatedness, there is definite potential for *L. ramosissimum* and *L. californicum* to compete for pollinator services. The reproductive mechanisms for these species are still unresolved, and shifting pollinator habits may favor the spread of one species over the other. Through controlled pollinations in the greenhouse, I will determine whether each species is self-compatible, how interspecific pollen affects seed production, and whether or not hybridization is possible. I am also conducting a field experiment in which I will create plots of *L. ramosissimum* and *L. californicum* at varying densities and observe relative visitation rates by pollinators. My field sites are located at three marsh fragments in Marin County. *L. ramosissimum* thrives in the mid to upper salt marsh and marsh-terrestrial ecotone, both of which host high species richness and provide critical habitat for endangered vertebrates. In certain locations, it has formed sweeping monotypes. If I discover a critical point at which relative density of *L. ramosissimum* significantly shifts pollinator habits, this research will allow managers to assess the invasion potential of *L. ramosissimum* in the San Francisco Bay Area. My investigation will also provide a mechanistic understanding of wetland invasion more generally and provide new information about the reproductive strategies within the highly-variable *Limonium* genus.

Devon Picklum is a PhD student at the University of Nevada, Reno

The title of her research is **“Floral visitation and pollen deposition of *Bombus* pollinated *Dodecatheon alpinum* and *Pedicularis groenlandica* in the Sierra Nevada.”**



Pollinators provide reproductive services to flowering plants by carrying pollen between individuals while collecting nutritional resources in the form of nectar or pollen. Pollinators learn about flower color, shape, and scent when foraging for resources, and use these floral cues when making foraging decisions. In diverse flowering communities, a bee's ability to distinguish between different species has direct consequences for plant fitness, as hetero-specific pollen transfer represents cost in both lost male fitness, and may prevent subsequent pollination.

Here, we investigate the reproductive biology of two flowering species with multimodal similarity. *Dodecatheon alpinum* (alt. *Primula tetrandra*, Alpine shooting star) and *Pedicularis groenlandica* (Elephant head lousewort) share similar color, pollen reward, specific behavioral requirements (buzz pollination), habitat preference, and are both predominately visited by *Bombus* species. In order to understand if an overlap in several floral traits provides an evolutionary benefit or cost to individual plants, we investigate if *D. alpinum* and *P. groenlandica* facilitate or compete for pollinators where they co-occur. We first show that bees move between these species where they co-occur both with observational data and by looking for presence of both pollens on the bodies of bees. We further investigate where pollen is placed on the bodies of visiting pollinators, and if it is being actively collected and stored in bees' pollen baskets. We investigate how bee behavioral patterns translate to plant fitness using pollen analysis of stigmas, and look at seed set in populations where plants are interspersed, and where they occur in discrete patches. Together these data will illuminate the extent to which these species are co-pollinated, and will set the groundwork for further understanding the evolution of floral traits.

2016-2017 STUDENT RESEARCH SCHOLARSHIP AWARDS (CONT.)

John Mola is a PhD student at the University of California, Davis.



The title of his research is **“Colorful pollination competition between native and invasive co-flowering legumes.”**

Understanding color polymorphisms and the consequences of plant-pollinator interactions for selection on those observable pollinator behavior known as floral constancy, where individual pollinators will visit similar species or color morphs repeatedly, even while skipping over other potentially more rewarding flowers. Pollinator constancy results in more conspecific pollen delivery than to flowers visited by less-constant pollinators, potentially resulting in greater fruit and seed set. However, in invaded environments, introduced species may have a negative impact on natural plant populations through competition for pollinators or by sharing pollinator species that deposit heterospecific pollen. Therefore, the degree to which pollinators express constancy (i.e. color vs. species constancy) may, in part, determine the winners and losers in plant invasions.



Lupinus microcarpus pink (left) and yellow (center) morphs and *Vicia villosa* (right).

At the University of California McLaughlin Reserve in 2015 and 2016, I collected yellow-faced bumblebees (*Bombus vosnesenskii*). During these collections, I observed a color polymorphism in the native *Lupinus microcarpus* in which these are yellow and pink morphs. Additionally, the invasive vetch (*Vicia villosa*) shares a similar pink colorations as the pink lupine morph. Given that bumblebees readily visited both species and both color morphs, there is the potential for stronger competition between pink lupine and vetch as compared to yellow lupine and vetch. If this color-driven competition holds true, we should expect selection to act against the pink lupine morph in invaded environments.

Kristen Shive is a PhD student at the University of California, Berkeley

The title of her research is **“Detecting conifer regeneration patterns across a gradient of high severity.”**



After over a century of fire suppression, fire regimes in historically fire-adapted mixed conifer forests are shifting toward larger patches of high severity fire (>90% mortality) fire. These patch sizes can exceed thousands of hectares, which is thought to be well outside the natural range of historic variability. Patch size is important because post-fire conifer regeneration has been assumed to be limited by distance to live, green tree seed sources. These assumptions rest on the lack of serotiny in the major conifers of this region (*Pinus ponderosa*, *Pinus lambertiana*, *Pseudotsuga menziesii*, *Abies concolor*, *Calocedrus decurrens*), and their limited dispersal distances (generally ~20-50 meters from the parent tree). These traits suggest that the majority of areas of contiguous overstory tree mortality lack a local seed source, which could significantly delay natural reforestation.

Proximity to live tree seed sources is likely to remain the dominant factor driving regeneration patterns. However, my recent research indicates that the gradient within high severity may also be important for conifer regeneration. Even in areas of complete mortality, a tree can be killed in two ways: 1) torching, where the crown burns and all of the needles are consumed or 2) scorching, where heat from a surface fire scorches all of the needles in the crown and browned needles remain on the tree. The difference between scorch and torch has important implications for post-fire conifer regeneration. We have found significantly higher conifer regeneration in scorched areas, regardless of the distance to live tree seed sources. Most of these scorched areas had relatively intact cones on-site, supporting our hypothesis that some cones and seeds survived the fire. This finding changes our understanding of post-fire forest regeneration patterns, and I am now subsequently using it in a predictive model of conifer regeneration for mixed conifer forests across California.

2016-2017 STUDENT RESEARCH SCHOLARSHIP AWARDS (CONT.)

Amanda B. Everett is an MS student at California State University, San Diego

The title of her research is **“The Phylogeny of *Pogogyne* (Lamiaceae).”**

*Shasta Chapter, CNPS

Award Winner*

Pogogyne is a small genus (eight described species) of annuals in the mint family (Lamiaceae). The etymology of the name ‘*Pogogyne*’ derives from Greek roots, and means “bearded woman”. Indeed, these intoxicatingly pungent little herbs all have a style that is lined with trichomes. *Pogogyne* species are specialists within ephemeral wet habitats, such as vernal pools or seasonally wet meadows, and are distributed throughout such habitats within the California Floristic Province. The genus is a monophyletic lineage estimated to have diverged roughly 0.9 to 1.9 mya. Phylogenetic research places *Pogogyne* as sister to *Acanthomintha* and *Monardella* within sub-tribe Menthineae, sub-family Nepetoideae. Our understanding of the relationships within *Pogogyne* has been previously obscured by the limited availability of markers with adequate phylogenetic signal. In the only phylogenetic study of this genus, 30 nodes are recovered, and only about half are strongly supported.

As Next Generation Sequencing becomes more commonly used, sequence alignments are reaching sizes that were previously inconceivable. As a result, many recalcitrant phylogenies are being revisited with new data and bioinformatics. Here, using sequence data obtained with ddRADseq, the phylogeny of *Pogogyne* is revisited using Maximum Likelihood and Bayesian Inference. The resulting tree is compared with trees produced using the same phylogenetic methods applied to genome skimming data. Both data types yield trees with the majority of nodes having high support. The trees derived from plastome and cistron genome skimming data conflict, however, while the concatenated ddRADseq supermatrix produces a single tree with better support values than the preliminary genome skimming analysis. Multiple new, geographically restricted taxa are uncovered by this analysis. Findings will also contribute to the understanding of evolution and biodiversity in the vernal pool habitat, which is in critical decline.

Karen Tanner is a PhD student at the University of California, Santa Cruz

The title of her research is **“Impacts of renewable energy development on annual plant seed banks and aboveground community composition.”**



The California Solar Initiative has spurred renewable energy development in the Central Valley and Desert regions, with >100,000 hectares of land occupied by energy facilities in planning, permitting, or operational stages. Such facilities increase energy sustainability while reducing greenhouse gas emissions but are not cost-free in terms of ecological impact. Installations profoundly alter the landscape, changing natural light and water regimes in ways that can strongly affect plant communities. These changes are likely to favor some species over others: invasive plants may increase where infrastructure or related disturbance facilitate seed movement or create altered microsite conditions favoring invader success. Design and siting of facilities to minimize negative impact requires understanding how altered light and runoff patterns affect belowground seed reserves as well as aboveground life stages for both native and exotic species.

In my ongoing work, I study how annual plants utilize variation in natural and modified landscapes, using demographic data to build models estimating population growth of focal species in different microhabitats. Sensitivity analyses of these models show that population growth estimates improve with higher seed bank survival rates, and indeed population performance and persistence likely hinge on belowground dynamics for these and other annual species forming persistent seed banks. Because moisture is known to negatively affect seed survival in other systems, possibly by facilitating pathogen attack, novel moisture gradients created by solar infrastructure may have a strong effect on annual plant population dynamics. I will test effects of shade and fungicide treatment as well as seed age on seed viability and germination rates, incorporating these data into models predicting how microhabitat conditions may drive shifts in population performance and community composition.

STUDENT POSTER CONTEST—NEW FOR 2017

ATTENTION STUDENTS!

Northern California Botanists will be holding a contest for the best student poster presentations. Participating student posters will be evaluated by a panel of judges during the poster session on the second day of the Symposium.

Three cash awards will be given to the top ranked posters (\$100, \$75, \$50). Winners will be announced at the Symposium and featured in an issue of the Northern California Botanists Newsletter.

Students, come present a poster to highlight your research and compete

for this new award! For more information on the poster session, please visit the “Call for Posters” webpage at http://www.norcalbotanists.org/symposia/symposium2017_call-for-posters.htm

2017 SYMPOSIUM SPONSORSHIP

Please help make the 2017 Symposium a success!

NCB invites sponsorship for our 8th Symposium. Your help is important and allows us to keep our registration rates low, support student attendance, and keep our programs moving forward.

All sponsors of \$100 or more will receive recognition in the symposium program, on our website, and in our newsletter. Sponsorships of \$200 or more receive additional benefits including an Exhibitor Booth space.

If you or your company would like to partner with us in this event or if you have questions about sponsorship, you may contact us at ncbotanists@gmail.com

or visit our website at www.norcalbotanists.org

Thank you to all who have sponsored in the past and those that have already pledged support for the 2017 Symposium.

STIPENDS (\$200) FOR COLLEGE STUDENTS ATTENDING THE 2017 SYMPOSIUM

Northern California Botanists will provide a number of \$200 stipends to help cover expenses of travel, lodging, meals, and registration for current college students who wish to attend the NCB symposium in January 2017. Butte College and CSU Chico students are also encouraged to apply; NCB will provide registration refunds to a number of local area students.

More information and the application form can be found on our webpage. Once verified, awards are given on a first-come basis. Get your applications in early!

For questions, please contact Daria Snider at dsnider@madroneeco.com. Applications must be received by December 5, 2016 and should be emailed to Daria Snider. Applicants awarded stipends will be notified by email in

late December. The check for \$200 can be picked up at the registration desk at the conference in January.

Requirements:

- 1) Must be a current college student;
- 2) Must provide evidence on application form of interest or involvement in plant sciences, and
- 3) Must register for the NCB symposium by 16 December 2016.

2017-2018 STUDENT RESEARCH SCHOLARSHIP AWARDS

Northern California Botanists provides competitive botany and plant ecology research scholarships to undergraduate and graduate students who are studying botany and/or plant ecology.

Applications for the 2017-2018 school year will be posted on our website in November and are due in March.

A flyer will also be available for posting. Please help get the word out by

letting botany and plant ecology students and faculty know of this opportunity.



NORTHERN CALIFORNIA
BOTANISTS

P. O. Box 8042
Chico, CA 95927-8042

*NCB Symposium
January 9-10, 2017 with
optional workshops on
the 11th.*

Registration is now open!

Please send address changes to:
ncbotanists@gmail.com

MEMBERSHIP APPLICATION/RENEWAL

Name: _____

Affiliation: _____

Address: _____

City: _____ State: _____ Zip: _____

Email: _____

MEMBERSHIP DUES:

_____ Individual \$25.00 _____ Student/Limited Income \$15.00

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

Make checks payable to "Northern California Botanists" and mail to:

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