



# THE JEPSON GLOBE

A Newsletter from the *Friends of The Jepson Herbarium*

VOLUME 26 NUMBER 2, Fall 2016

## Director's column:

### A new, comprehensive grant to study multiple dimensions of biodiversity in dryland mosses

By Brent D. Mishler

A major new grant from the National Science Foundation's Dimensions of Biodiversity Program to study the desiccation tolerant moss lineage *Syntrichia* was just announced. Getting funding from this program requires integrated studies of biodiversity at all dimensions, ranging from genomes and genetics, to physiology and development, to population genetics, systematics, and ecosystem function.

The research will be done by a diverse team, including Lloyd Stark (University of Nevada, Las Vegas) and Kirsten Deane-Coe (St. Mary's College of Maryland), whose labs will study physiological ecology of different species and life stages of *Syntrichia*; Kirsten Fisher (Cal State LA), whose lab will study population genetics of *S. caninervis* and *S. ruralis* including sex ratios (see the article featuring Fisher's studies of moss sex in *The Jepson Globe* (25, #2: pp. 1-8, 2015); Mishler, whose lab will study phylogenetic systematics and evolution of the whole group of 15+ species; Matt Bowker (University of Northern Arizona), whose lab will study *Syntrichia* as part of the important cryptogamic crust community in western North America, including the likely effects of climate change; and Mel Oliver (University of Missouri, Columbia), whose lab will sequence the

(Continued on page 7)



### A Lasting Legacy for Lichens

By Amy Kasameyer and Richard L. Moe

Lichens have long captured the attention of biologists, and the University Herbarium has played an important role in cataloging them for over 150 years. Now, with a generous gift from Dr. Shirley Tucker, lichens will be supported in perpetuity by an endowment fund! The Tucker Lichenology Fund will support a new position, the "Tucker Curator of Lichenology" and the person recruited for that position will conduct research in the University Herbarium on the systematics of lichens, lichenicoles, and/or allied fungi in California and beyond. The Tucker Curator will also participate in outreach and educational activities involving lichens and be responsible for the continued growth and curation of the lichen collection at the University Herbarium.

Shirley is a renowned lichenologist  
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### Bruce Baldwin honored by the National Tropical Botanical Garden

Bruce Baldwin, Jepson Herbarium Curator and Professor in the Department of Integrative Biology, has received The Robert Allerton Award for Excellence in Tropical Botany, one of the highest honors bestowed by the National Tropical Botanical Garden.

The Allerton Award recognizes specific achievements or a lifetime of achievements in tropical plant science. "Dr. Baldwin is an important collaborator for many in Hawai'i. He has worked tirelessly for decades to better understand the unique and often unexpected relationships tropical plants share with their distant continental cousins," said Chipper Wichman, NTBG's Director and CEO. "Bruce's research sheds new light on the origins of the Hawaiian flora and has implications that extend well beyond the Pacific.

Bruce's findings provide evidence that the American West was a major source area for bird-dispersed plants  
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Cover photo: Shirley Tucker in the University and Jepson Herbaria, October 2016. Photo by Ana Penny.

## The Herbaria Welcome New Faces!

### Biodiversity Informatics Manager

The Herbaria are pleased to announce the arrival of Dr. Jason A. Alexander, our new Biodiversity Informatics Manager and IT specialist. Although Jason is a native Californian (he was born in Sacramento), he lived in over 15 different places in several western states before graduating from high school in Casper, Wyoming. He first became interested in plant collecting while attending summer field science courses taught by his freshman biology teacher. After graduation, his father moved to Las Vegas, Nevada, to work at Hoover Dam and Jason decided to move with his parents and attend the University of Nevada, Las Vegas (UNLV). Although he was enrolled at UNLV in the Invertebrate Paleontology degree program, his experience in plant identification did not go unnoticed. During the fall of his freshman year, a graduate student in the Biology for Majors class noticed Jason's plant identification skills and advised him to talk to Dr. Wesley Niles (then curator of the UNLV herbarium) and enroll in Plant Taxonomy during the spring. After taking that class, Jason was hooked on herbaria and plant taxonomy and switched majors, eventually graduating with a degree in Environmental Studies with an emphasis in Botany.

During his undergraduate years at UNLV, he advanced from a student data entry technician to the data manager and part-time collections manager of the UNLV Herbarium. Plant specimen data management so intrigued him that he wrote a review of data management techniques used in herbaria and a technical instruction manual for the UNLV Herbarium database as his undergraduate senior thesis.

His years of herbarium database management experience at UNLV made him an ideal candidate for the graduate program at the Oregon State University Herbarium (OSC), which was starting a major floristic initiative to database all of the Oregon herbarium specimens (around 150,000 specimens). At OSC,

while pursuing a master's degree, he held a dual position, the herbarium curatorial assistant and the database manager for the Oregon Flora Project. His duties ranged from filing herbarium specimens, annotating misidentified specimens (especially those from his specialty regions of the Great Basin and Mojave Desert), training teams of 5 to 10 data-entry students, developing techniques for georeferencing large batches of specimens, maintaining the herbarium computers, and creating GIS shapefiles for use by the Oregon Flora Project.

It was at OSC, through the influence of Dr. Aaron Liston, that Jason became a specialist in the population genetics, phylogenetics, and biogeography of the genus *Astragalus* (Fabaceae) in western North America. For his master's degree he investigated the population-level genetic diversity of the rare, sand dune endemic, *Astragalus oniciformis*, known only from a narrow range from Picabo southward to Shoshone along the Snake River Plains in Idaho.

Near to the end of his master's degree research, Jason wrote a detailed Ph.D. project proposal for a population-level genetic study of *Astragalus mokiaticensis*, a then not-well-known and notoriously problematic rare plant from the Lake Mead region of southern Nevada and northern Arizona. Rupert Barneby in his monograph refers to this plant as a taxonomic "pitfall and snare" to all the botanists who have studied it. This proposal convinced Dr. Liston to accept him into the molecular phylogenetics Ph.D. program in his lab.

After successfully defending his Ph.D. thesis, Jason moved to Utah to start a job as the new Curator of the Utah Valley University Herbarium (UVSC) in Orem, Utah. During his eight years at UVSC, Jason expanded the collection by nearly 10,000 specimens through his own collections and expanding the exchange program to include regional herbaria outside of Utah. In addition, he expanded the out-



Jason Alexander, taken at Tecopa Hot Springs, California, with all the monstrous *Geraea canescens* and *Malacothrix* during this year's extraordinary Mojave El Nino bloom in the background. Photo by Narcie Alexander.

reach program into collaborating with the Utah Native Plant Society (UNPS) and provided space for the Utah Natural Heritage Program Botanist to study herbarium specimens for his rare plant research. Eventually, Jason was elected to be the President of the state organization of the UNPS and was the primary organizer for the Annual Utah Rare Plant Meeting from 2013-2016.

While at UVSC, Jason published a revision to the UNPS Rare Plant List for the state of Utah as well as papers revising the type status of several *Astragalus* species. His current on-going research includes a treatment of the genus *Lomatium* for the Oregon Flora Project, a phylogeographic study of the varieties of *Astragalus lentiginosus*, and a treatment of the Fabaceae for the Flora of New Mexico.

Working at the University and Jepson Herbaria as the Bioinformatics Manager for the Herbaria and the Consortium of California Herbaria was too tempting an opportunity to pass up. Jason is very excited to be back in California after his many-years-long exile in the Intermountain Region and is looking forward to helping the University and Jepson Herbaria with the development of their many online floristic projects. 🌱



## Research Associates

In October of 2015, Drs. Carol A. Wilson and Clyde L. Calvin joined the research group at the University and Jepson Herbaria; Carol as a Research Botanist and Clyde as a Research Associate.

Carol holds a Ph.D. in Integrative Biology from UC Berkeley, where she studied the evolution of *Iris* series *Californicae* under the mentorship of Dr. Bruce Baldwin in Integrative Biology and Dr. Donald Kaplan in Plant and Microbial Biology. She held a two-year postdoctoral fellow position in the University Herbarium where she researched haustorial forms in the Loranthaceae with Dr. Brent Mishler, director of the UC Herbarium, and Dr. Roger Polhill, senior curator at the Herbarium of the Royal Botanic Gardens, Kew. After completion of her botanical training Carol took an assistant professor position in Environmental Science at Portland State University. Prior to coming to the University and Jepson Herbaria she was at the Rancho Santa Ana Botanic Garden and Claremont Graduate University where she was an assistant and then associate professor of botany.


The main focus of Dr. Wilson's research is the genus *Iris*. She utilizes data obtained from Sanger and next generation sequencing, comparative morphology, spatial relationships, and environmental parameters. She currently has three funded projects: phylogeny, morphology, and biogeography of subgenus *Iris*; phylogeny of subgenus *Xiphium*; and phylogeny and biogeography of series *Californicae* in subgenus *Limniris*. Carol also collaborates with Dr. Clyde Calvin in his research on mistletoes. Carol and Clyde have extensive fieldwork experience and Carol maintains a large living collection of species in *Iris*.

Clyde holds a Ph.D. in Botany from UC Davis, where he studied host-parasite tissue relationships in the American mistletoe, *Phoradendron serotinum*, under the mentorship of

Dr. Katherine Esau. Subsequently he held a one-year postdoctoral fellowship in Biological Sciences (also with Dr. Esau) at UC Santa Barbara where he undertook electron microscope studies of the haustorial system of *Phoradendron*. His first academic position was at California State University, Long Beach, as an assistant professor. He then moved to Oregon where for one year he was an associate professor at Western Oregon University. The remainder of his academic career was spent in the Department of Biology at Portland State University where he was an associate and then full professor. During this time, he also served as a visiting professor, first at VPI&SU (Virginia Tech) and later at the University of Utah. He also spent 6 months as an Erskine Fellow at the University of Canterbury, Christchurch, New Zealand. In 2006, he moved, with his wife Dr. Carol Wilson, to the Rancho Santa Ana Botanic Garden, Claremont, CA, where he was an Emeritus Research Associate.

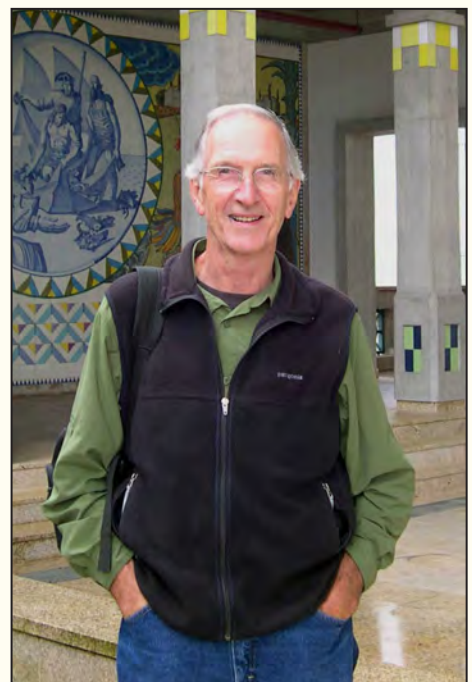
Dr. Calvin's research focus has been primarily on the developmental, functional, and comparative anatomy of mistletoe in the well-represented California family, Viscaceae. He has been particularly active in comparative studies of the haustorial system, focusing primarily on *Arceuthobium* and *Phorodendron*. More recently, and in collaboration with Carol Wilson, he has turned his attention to two related topics 1) epiparasitism in *Phoradendron* where at least 10 species are obligate parasites only on other *Phoradendron*, and 2) haustorial system evolution in the largest mistletoe family, Loranthaceae, with the goal of determining evolution of the aerial habit in the family. Clyde has brought to UC a large dried and vouchered collection of woody haustoria collected during fieldwork in Africa, Asia (esp. SE Asia), Europe, Oceania, southern North America, Central America, and South America. These haustoria and vouchers will enhance two important mistletoe collections already held at UC, one representing

the life work of Dr. Job Kuijt (Univ. Victoria, BC) and the other the collections of Drs. Frank Hawksworth and Del Wiens at the USDA Forest Service Laboratory, Fort Collins, CO.

Additional information on research and publications of Dr. Wilson and Dr. Calvin is available on webpages currently under construction and linked to the University and Jepson Herbaria staff website. 



Carol A. Wilson. Photo by Clyde L. Calvin.



Clyde L. Calvin. Photo by Carol A. Wilson.



## New Faces continued

### Silva Center Postdoctoral Researcher

In March 2016, Dr. GaHun Boo joined the University and Jepson Herbaria as the Postdoctoral Scholar in Seaweed Systematics, sponsored by the Silva Center for Phycological Documentation. He received his PhD in August 2015 at the Chungnam National University, Korea, where he studied the phylogeny and phylogeography red algae in the order Gelidiales under the direction of Professor Sung Min Boo and committee chair Dr. Kathy Ann Miller from the University of California at Berkeley.

Species in the Gelidiales are economically important because they produce agar, a colloid that is used as food, culture media, laboratory gels, and paper pulp. It is a large and fascinating group of poorly known species. For one of the papers from his dissertation, GaHun analyzed five protein-coding genes, including the nuclear cellulose synthase catalytic subunit A (*CesA*) gene, for a better understanding of phylogenetic relationships in the Gelidiales. His results resolved a novel clade that represents a new family, the

Orthogonoladiaceae (Molecular Phylogenetics and Evolution 101: 359-372, 2016). For another paper, he generated mitochondrial genomes from 10 type specimens housed at UC using next-generation sequencing to solve nomenclatural and taxonomic problems in the Gelidiales. His study of *Gelidiella acerosa*, a wide-ranging tropical species, revealed the occurrence of ten cryptic species and supported the Coral Triangle as the center of origin of the complex. GaHun was also a research assistant for the Korean Marine Plants Collection project ([www.kmpc.kr](http://www.kmpc.kr)) that included studies of morphology and phylogeny as well as herbarium maintenance.

At Berkeley, he is extending the methodologies that he developed during his PhD research to the Californian seaweeds, working with Dr. Kathy Ann Miller, the curator of algae at the University Herbarium. He is contributing to the Californian Seaweed eFlora



*Gelidium hirsutum* (Okamura) G.H.Boo & R.Terada. Photo by Ryuta Terada.

project and designing research related to California seaweeds. GaHun will generate DNA sequence datasets from archival and contemporary specimens to answer long-standing taxonomic questions about California taxa in the Gelidiales and other orders that have not been studied with molecular methods. He expects that he will discover new species or genera in this rich flora. He is also interested in phylogeography, the geographic mapping of genetic data from populations of selected species to identify genetic continuity and/or discontinuity within California or between California and neighboring regions, including the northwest Pacific. These results may identify cryptic species, speciation events, and dispersal pathways for Californian seaweeds. GaHun Boo's email address is [ghboo@berkeley.edu](mailto:ghboo@berkeley.edu).



GaHun Boo (left) and Kathy Ann Miller (right) at Agate Beach, California, 2008. Photo by Sung Min Boo.

### DON'T FORGET TO RE-NEW YOUR MEMBERSHIP!

Current *Friends of the Jepson Herbarium* receive a one week window of priority registration when the weekend workshop schedule is announced:

To renew, see the form on page 9, or renew online here: [give.berkeley.edu/fund/?f=FU0840000](http://give.berkeley.edu/fund/?f=FU0840000)

## Coordinator, Public Programs

Allyson Ayalon is a self-described herbarium junkie with a love for all things vintage and photosynthetic. She took an interest in plants in high school while scouring thrift stores for botanical illustrations of plants adorned with their Latin name. Little did she know that when her interest took an academic turn she would discover herbaria and instantly fall in love with their vestiges of botany's past and unique role in the scientific community. In 2011, she started working at the UC Davis Herbarium as an undergraduate NSF REU (Research Experience for Undergraduates) scholar just in time to help implement the nomenclatural changes made in the second edition of *The Jepson Manual*. Under the mentorship of the curator, Dr. Ellen Dean, Allyson worked on a variety of projects in the years since: including curating the collections of the late Dr. Ledyard Stebbins and the late June McCaskill, and thereafter using their collections to design public exhibits for the annual Botanical Tea and Picnic Day displays. Her most creative exhibit focused not on the plants themselves but rather on a collection of herbarium newspapers from the last century that highlighted historically significant cultural topics

and societal trends.

Working at the UC Davis Center for Plant Diversity helped Allyson discover her love for plant collections and curatorial science as an outreach tool. In 2014 she began school at UC Davis once again as a graduate student in Horticulture and Agronomy, specializing in public horticulture and curatorial science. She received the 2015 American Public Gardens Association Hope Goddard Iselin Fellowship in Public Horticulture to support her Master's project: a curatorial study and improvement plan for the Mary Wattis Brown

Garden of California Native Plants at the UC Davis Arboretum and Public Garden. Allyson loves to share her love of plants with others and did so as a teaching assistant for classes such as Trees of the Urban Forest, where she led students on bicycles tours of the street trees of Davis, and California Floristics, the beloved advanced botany class not for the faint of heart!

Allyson is honored to be the new Jepson Workshop Coordinator. With a love for showing people the beauty of the California flora, she could not have imagined a better job to suit her. 🌿



Allyson and her exhibit entitled, "A Hundred Years of Headlines Hidden in Herbaria" at the 2016 Botanical Tea at the UC Davis Center for Plant Diversity. Photo by Daniel McNair.

## Award from the Institute of Museum and Library Services



The University Herbarium will rehouse the library and archives of the Silva Center for Phycological Documentation that is currently at risk due to improper shelving and inadequate storage. The Silva Center hosts a nomenclature database, a library of rare literature, and the archives of three influential phycologists (botanists specializing in algae). Following the recommendations from the university's 2015 preservation needs assessment, the project will install compact shelving; reconfigure the center to provide space for the entire library, archives, and three administrative offices; rehouse library and archival materials; create an online finding aid for the archives; and develop a preservation plan for future collections. The project will result in improved care, security, and access for the phycological library and archives and will ensure that generations of botanists, researchers, and students have access to these extensive and important publications.

## THE JEPSON GLOBE NOW AVAILABLE ELECTRONICALLY

Current *Friends of the Jepson Herbarium* can elect to receive the *Globe* newsletter by email only instead of a paper version. Call 510-643-7008, or email Staci Markos: [smarkos@berkeley.edu](mailto:smarkos@berkeley.edu).

Past Globes are available online here:  
[ucjeps.berkeley.edu/jeps/globe/](http://ucjeps.berkeley.edu/jeps/globe/)



## *Calscape.org facilitates the use of native plants in drought-tolerant landscaping and small-scale restoration projects*

The California Native Plant Society (CNPS) and the Jepson Herbarium are collaborating on a new project, [Calscape.org](http://Calscape.org), which aims to facilitate the use of native plants in landscaping and small-scale restoration projects.

[Calscape.org](http://Calscape.org) users can type in any California address, city, GPS location, or any other location that can be understood by Google Maps, and see the complete list of plants that are native to that local area. Most plant species are cross-referenced against Calscape’s database of nursery plant lists, locally native plants that are easiest to buy and easiest to grow, and are most highly recommended. Each plant record includes plant photos and information that allow users to choose which plants they want for different applications and site types, where to buy them, and how to grow them. This new resource is especially relevant for Californians as the drought persists and there is a continued shortfall of water in the state. We hope that the user-friendly interface that will inspire more Californians to include native plants in their gardens and make it easy to choose and purchase native plants from local nurseries. By doing so, we will be *restoring nature one garden at a time* because local native plants are the foundation for nature restoration. They attract birds, reptiles, amphibians, small mammals, insects and other pollinators that evolved with those plants, and over time create a working natural ecosystem, without pesticides, and without artificial fertilizers. In a true natural garden, the bird life in particular is often spectacular. With the right plants, it’s not hard for homeowners to create small patches of nature throughout even the developed areas of the state. 🌿

Calscape Restore nature one garden at a time
Search for California native plants

Enter a California address to see plants native to that location

Plants native to California

 <a href="#">All Plants</a> ( 6985 )	 <a href="#">Trees</a> ( 203 )	 <a href="#">Shrubs</a> ( 910 )	 <a href="#">Perennials</a> ( 3516 )
 <a href="#">Annuals</a> ( 2194 )	 <a href="#">Grasses</a> ( 590 )	 <a href="#">Succulents</a> ( 186 )	 <a href="#">Vines</a> ( 56 )
 <a href="#">Sun</a> ( 2092 )	 <a href="#">Shade</a> ( 291 )	 <a href="#">Part Shade</a> ( 1569 )	 <a href="#">Groundcovers</a> ( 165 )
 <a href="#">Drought Tolerant</a> ( 3641 )	 <a href="#">Riparian</a> ( 1439 )	 <a href="#">Very Easy</a> ( 235 )	 <a href="#">My Plant Lists</a> ( 0 )

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## Karuk Tribal Herbaria Opening

This summer, as part of a project led by Jennifer Sowerwine, Curator of Food Plants at UC/IEPS, the Karuk Department of Natural Resources (KDNR) opened the Karuk Tribal Herbaria. The project was funded by the US Department of Agriculture as part of a broad Klamath Basin food security initiative.

“The Karuk Tribal Herbaria provide a good representative sample of culturally significant food, fiber, and medicinal resources collected from our Karuk homelands. With this resource our staff can build upon a cumulative body of traditional ecological knowledge through shared learning with the next generation who will manage our natural resources,” said KDNR Deputy Director Bill Tripp. “While plants of importance to tribes are often collected by others, tribal herbaria are relatively rare. As one of the first herbaria created and managed by an indigenous people this effort represents a valuable contribution to Tribal sovereignty.” These collections of native plant specimens currently include over 100 culturally

and regionally significant plants, photographs, and related data. In developing this collection, the Tribe aims to increase people’s ability to recognize, locate, and consume food plants while building their knowledge about the importance of these plants for nutrition, health, and cultural preservation. The collections will be housed at the Karuk Office of Historic Preservation and the Karuk People’s Center in Orleans and Happy Camp, California respectively.

Related activities to date include plant collection, pressing, and preservation workshops for area youth and adults, and development of new Herbaria-focused lessons in the Native Food Security K-12 curriculum now being piloted in local schools. “A goal from the beginning has been to teach children about the importance of these plants to the Tribe and how to preserve them,” said Food Security Coordinator Lisa Hillman. “We’re thrilled that not only do Klamath Basin children and youth now have access to these plant specimens but also that dozens of our

tribal and non-tribal students are out learning plant identification, associated traditional ecological knowledge, and the tribal etiquette of proper collection, and in the classrooms gaining the western scientific-based skills of plant specimen mounting.” Future plans include continued expansion of the collection, ongoing community workshops, and a digital database of the plants to be housed in the new Sipnuuk Digital Library Archives and Museum ([sipnuuk.mukurtu.net](http://sipnuuk.mukurtu.net)). 




*Tribal Bio Technician Ben Saxon and Curator of Ethnobotany Tom Carlson with specimen of *Cornus nuttallii*, or uyáhaamah in Karuk. Photo by Malcolm Terence.*

*(Director’s column, continued from page 1)*

genomes of *S. caninervis* and *S. ruralis* and apply cutting-edge DNA sequencing techniques to help evaluate the results of the physiological, ecological, and evolutionary studies.

The research will examine trade-offs between asexual and sexual reproduction, and between phenotypic plasticity and canalization into specialized genotypes, by examining the mechanisms underlying traits that drive diversification, reproduction, habitat selection, and physiological trait evolution in environments with varying degrees of water stress. The overall goals are to understand the evolutionary and ecological processes that have produced and maintained functional diversity at these different levels of

organization and to promote training of postdocs and graduate students, formal teaching, and public outreach. Look for opportunities to learn more through a short-film series, a citizen science program “Citizens of the Crust,” and free public workshops, after the grant officially begins January 1, 2017. 

*Right: A close-up of *Syntrichia ruralis* when dry, showing the clusters of reddish rhizoids and groups of large, window-like cells in the basal, clasping part of each leaf, both of which function in external water conduction. Also note the long hair-points on each leaf, which likely serve in interactions with moisture in the air. Photomicrograph by Brent Mishler.*





(Lichens, continued from page 1)

and floral morphologist. She studied botany at the University of Minnesota where she received her B.S. in 1949 and her M.S. in 1951. She then received her Ph.D. in botany in 1956 from UC Davis where her dissertation was on the ontogeny of the inflorescence and the flower in *Drimys winteri* var. *chilensis*. While at UC Davis she met her late husband, Kenneth Tucker, who received his Ph.D. in Entomology from UC Davis in 1957. In 1967, she became a faculty member in the Botany Department of Louisiana State University (LSU), where she taught until her retirement in 1995. She has a broad range of research interests including floral anatomy, morphology, plant taxonomy, and lichenology. After retiring in 1995, Shirley and Ken moved to Santa Barbara where she continued her research at the Cheadle Center for Biodiversity & Ecological Restoration (UCSB) and the Santa Barbara Botanic Garden. She has published more than 140 academic papers, 35 of which were

published after her official retirement. She has collected more than 40,000 botanical specimens that are housed at the Santa Barbara Botanic Garden and the Shirley C. Tucker Herbarium at Louisiana State University, renamed in her honor in 2015.

There is no doubt that Shirley has made a strong impact on the field of botany. She served as the president of both the Botanical Society of America and the American Society of Plant Taxonomists. She is known for her innovative research methods and her willingness to mentor younger scientists. While at Louisiana State, she was one of the first women to be selected as a Boyd Professor, the university's highest honor for faculty that recognizes exceptional scholarship, service, and dedication. In 1996, the Botanical Society of America sponsored a symposium in honor of her contributions to the field of floral morphology. The University of Minnesota College of Biological Sciences awarded her the Outstanding Alumni

Achievement award in 1999.

Shirley has made many academic contributions to California lichenology and one of her great ones was her catalog of lichens, lichenicoles, and allied fungi in California (available online at [ucjeps.berkeley.edu/constancea/85/](http://ucjeps.berkeley.edu/constancea/85/)). The goal of the catalog is to account for all names that have been applied to California lichens. It is an outgrowth of a paper written by Tucker and Jordan in 1979 (published in *Wasmann Journal of Biology*). Shirley worked with Bruce Ryan on a revised and greatly expanded version, and when Ryan died prematurely, she took over the task herself. The catalog, encompassing 3,400 names applied to 1,575 taxa, was published online in *Constancea* in 2006, and brought up to date in 2014.

The Herbaria are grateful for Shirley's enduring investment in California lichenology, a legacy that will extend her influence for many generations to come. 🍄



Above: *Umbilicaria phaea*. Common name is *Emery rock tripe*. This is the rare, red variety, from near Yreka, CA. Right: *Peltigera aphthosa*. Common names are *common freckle pelt* or *felt lichen*. Photos by Stephen Sharnoff.



Left: *Caloplaca ignea*. Common name is *flame fire-dot lichen*. Below: *Evernia prunastri*. Common names are *oakmoss lichen*, *antler lichen*, or *staghorn lichen*. Photos by Stephen Sharnoff. See *A Field Guide to California Lichens*, by Stephen Sharnoff.





Baldwin, continued from page 1)

like silverswords found on the high volcanic slopes of Maui and Hawai'i Island. Other genera of the silversword alliance (*Dubautia* and *Wilkesia*) well represented or endemic to Kaua'i are believed to have descended from an ancestor of the silversword alliance that

was carried to Kaua'i some five million years ago. Bruce's investigations into California-Hawai'i-based adaptive radiation began when he was a graduate student and have continued to the present.

One dramatic example of the distance that seeds can be dispersed is illustrated by the findings of Bruce and NTBG staff of a rare monotypic genus called *Apostates*, endemic to the remote island of Rapa in French Polynesia, descended from an ancestor native to North America's desert southwest. The findings of this research will be published in the journal *Taxon* in October 2016.



*Apostates rapae*. The ancestor of *Apostates* is extinct but its closest relatives appear to be a clade of southwestern North American taxa of the genus *Bahia*. Photo by Ken Wood.



Isotype of *Apostates rapae* (at UC); the only reproductive collection known, from 1921.

### SUPPORT THE JEPSON HERBARIUM

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U0840

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Demonstrate your dedication and commitment to the Jepson Herbarium with a lifetime membership. Gain recognition for your support in *The Jepson Globe* and the *Jepson eFlora*. Share your ideas with the Director and Curator at special, invitation-only events.
- I prefer to receive my copy of *The Jepson Globe* electronically (no paper copy).
- This gift is \_\_\_ in honor of / \_\_\_ in memory of \_\_\_\_\_
- My or my spouse's employer will match this gift. (Please enclose company form.)
- Please send me information about including the Herbarium in my will.

Please make your check payable to the **UC Regents**, charge your gift, or give online at:  
[give.berkeley.edu/fund/?f=FU0840000](http://give.berkeley.edu/fund/?f=FU0840000)

Jepson Herbarium, 1001 Valley Life Sciences Building #2465, University of California, Berkeley, CA 94720-2465

Thank you for supporting the Herbarium and its programs!



## 2016 WORKSHOP YEAR IN REVIEW



Thanks to our instructors and participants for another great workshop season! This year's highlights included (clockwise from top left): looking for endemics on Santa Catalina Island; an undescribed monkey flower growing in granite rocks near Yosemite National Park; *Styrax redivivus* seen while exploring the southeastern Klamath range; Ihsan Al-Shehbaz showing details to Brassicaceae students; fields of *Phacelia ciliata* blooming at Tejon Ranch (photo by Steve Matson); and Peter Zika describing the shape of a perigynium to *Carex* enthusiasts (photo by Staci Markos).

Photos by Jeanne Marie Acceturo except where noted.



## Honoring Jeanne Marie's many years of excellent service

Jeanne Marie Acceturo served as the Public Programs Manager from 2010 to 2016, a total of six years! Her high level of commitment and ingenuity helped forward the mission of the weekend workshop program and the Herbaria as a whole. She significantly expanded the public programs by increasing the depth of programming, elevating the program to



Jeanne Marie Acceturo looking for trogons in the Chiricahua Mountains. Photo by Larry Sward.



A typical view of Jeanne Marie seen during workshops. Photo by Tim Lukaszewski.

the digital age, broadening the audience of participants, and increasing the number of outreach events where the Herbaria were represented. She also implemented a new program, the California Naturalist training. In a demanding position, Jeanne Marie maintained a high standard of excellence and for that and much more, we are grateful and wish her the best in her future pursuits. 🌱

### Curatorial Volunteers Needed at the University and Jepson Herbaria!

Please help us in the collection with mounting, databasing, and filing herbarium specimens! There are also opportunities in the library repairing books and working with our slide collection.

We have group volunteer days listed below and also welcome volunteers during regular business hours. Weekday volunteers help with routine tasks and specialist projects such as working on specific collections or taxa.

#### 2016-2017 Group Volunteer Schedule

November	7
December	10
February	11
March	11
April	22 (Cal Day)
May	13

For more information about our volunteer opportunities or to be added to the reminder list, please contact Ana Penny 510-642-2465, [apenny@berkeley.edu](mailto:apenny@berkeley.edu). No previous curatorial experience necessary.

### JEPSON HERBARIUM RESOURCES & PROJECTS RELATED TO THE CALIFORNIA FLORA

Approximately 400,000 plant specimens from California

**Director:** Brent D. Mishler  
California Phylodiversity Project  
Systematics and ecology of *Syntrichia*

**Jepson Curator:** Bruce G. Baldwin  
*Jepson eFlora*  
Systematics and evolution of Calif. tarweeds and relatives (tribe Madieae, Compositae), *Chaenactis* (Chaenactidiaceae, Compositae), and *Collinsia* (Plantaginaceae).

**Curator of Ecology:** David Ackerly  
Ecology and evolution of California flora  
Climate change impacts and conservation strategies

**Curator of Ferns and Lycophytes:** Carl Rothfels  
Divergence and hybridization in Californian ferns and lycophytes (especially *Notholaena*, *Cystopteris*, *Isoetes*).

**Curator of Monocots:** Chelsea D. Specht  
Evolution and biogeography of Calif. monocots (including *Allium*, *Nolina*)  
Population structure and floral color pattern diversity in the *Calochortus venustus* complex

**Curator of W. N. Am. Botany:** Barbara Ertter, *Flora of Mount Diablo* and flora of the East Bay,  
North American Potentilleae

**Asst. Director for Collections and Curator of Cultivated plants:** Andrew Doran

**Asst. Director for Development & Outreach:** Staci Markos, *Jepson eFlora*, CCH & *Globe* editor

**Biodiversity Informatics Manager:** Jason Alexander

**Collections Staff & Plant Identification:** Kim Kersh, Ana Penny, and Margriet Wetherwax

**Archivist and Librarian:** Amy Kasameyer

**Public Programs:** Allyson Ayalon

**Membership, workshop enrollment, and *Globe* design:** Edith Summers

**Staff Research Associate:** Bridget Wessa

#### Trustees:

Vice Chancellor Emeritus Beth Burnside; Professor Emeritus Russell Jones; Professor Emeritus Paul Licht; Professors John Taylor and Brent D. Mishler (ex officio)

**Constancea:** UC Publications in Botany (online)



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## Highlights for Fall 2016 Botany Lunch

*Botany Lunch meets Fridays at noon during the academic year.  
Talks are free to the public and are presented in 1002 Valley Life Sciences Building  
(entrance in small corridor by north entrance on ground floor).*

Nov. 4 Tommy Stoughton, Associate Faculty in the Center for the Environment at Plymouth State University. "Evolution and Systematics of *Claytonia lanceolata* sensu lato (Montiaceae)."

Nov. 18 Gary Martin, Founder and Director of the Global Diversity Foundation. "High Atlas Amazigh (Berber) Folk Classification of Plants."

Dec. 2 Kevin Simonin, Asst. Professor, Department of Biology, San Francisco State University. "Cell size, genome size and the dominance of Angiosperms."

Dec. 9 Kate Waselkov, Assistant Professor, Department of Biology, California State University, Fresno. "Perplexing polyploidy in the Polemoniaceae: patterns in Phlox phylogenies."

Dec. 16 Tim Gregory, Visiting Scientist, University of California Botanical Garden at Berkeley. "*Ceratozamia*."