



THE JEPSON GLOBE

A Newsletter from the *Friends of The Jepson Herbarium*

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Curator's Column: Revisiting Origins of California Flora

By Bruce G. Baldwin

I was recently invited to author a chapter for the *Annual Review of Ecology, Evolution, and Systematics* (2014) on "Origins of Plant Diversity in the California Floristic Province." A vast literature on that topic had accumulated since Raven and Axelrod published their book-length masterpiece "Origins and Relationships of the California Flora" in the *University of California Publications in Botany* in 1978. Reviewing that literature allowed for an updated perspective on evolution and assembly of our unusually diverse flora. Three of the general conclusions from the paper are discussed below.

(1) Recent studies of floristic diversity and endemism have reinforced the importance of areas of high topographic and edaphic (substrate or soil) complexity as reservoirs of Californian plant biodiversity. Two studies are especially noteworthy as pertinent to understanding the basis for that pattern. In 2013, Lancaster and Kay (in *Evolution*), after estimating components of diversification rates of California plants and their closest relatives, concluded that lower extinction rates rather than accelerated speciation may explain the high taxonomic diversity within various California plant groups. They suggested in part that steep environmental gradients, as found in montane areas, may have allowed Californian plants to adjust their ranges in response to climate change and thereby avoid extinction. In 2014,

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Richard Beidleman: From the Field to the Archives

By Amy Kasameyer, Herbaria Archivist

Dr. Richard G. "Dick" Beidleman lost his battle with cancer on August 7, 2014. Most members of the *Friends* knew Dick from the "50 Families in the Field" workshop he taught with his wife Linda. More than 200 California botanists took their first Jepson Workshop (or even keyed their first plant) with Dick and Linda. Many commented on his sense of humor, but his depth of knowledge and vast experience teaching natural history informed his relaxed and welcoming spirit in the field.

Fewer may be aware of Dick's invaluable contribution to the University and Jepson Herbaria archives, which he called the finest he had ever seen. Dick was a dedicated volunteer at the archives, beginning in the early 1990s. He prepared the first detailed inventory of the archives in 1993, which was used as the foundation of a grant-funded project to catalog the archives beginning in 2009. He cataloged and arranged the collections of notable botanists including Willis Linn Jepson, John Gill and

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The Jepson Manual: Vascular Plants of California, Second Edition: Supplement II

By Thomas J. Rosatti, Scientific Editor, Jepson Flora Project

When last we met here (*The Jepson Globe* 23(1):3-5, 2013), I discussed most of reasons why treatments in floras in general need to be revised, giving specific examples from Supplement I. For Supplement II (released in December, 2014 and posted online), we focused our efforts on getting taxa new to the state incorporated, whether as taxa completely new to science, or as taxa new only to California, as either natives or naturalized aliens.

Taxa that are completely new to science comprise two main kinds: those for which no collections were known, and those for which collections existed but were previously identified as belonging to an existing species. The latter is the case for *Lagophylla diabolensis* B. G. Baldwin, which was recently described from the southern Diablo Range by Bruce Baldwin, Curator of the Jepson Herbarium (*Madroño* 60(3):249-254, 2013). Plants that had been assigned to *L. dichotoma* Benth. *sensu* Keck (1959,

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ALSO IN THIS ISSUE

- ◆ Andrew Doran in Panama
- ◆ California Naturalists Program
- ◆ NSF grants for fungal collections
- ◆ Consortium at 2 million specimens
- ◆ Chile collaboration
- ◆ New Mishler Lab members
- ◆ Members' Night



Botanists from around the globe convened in Panama to discuss the sustainability of the Global Plants project. Photo by Alfonso Jaén Fotografía, Panama.

Documenting our most important specimens

Andrew Doran, Assistant Director for Collections, travelled to Panama in September 2014 to present the new database of UC/JEPS (CollectionSpace) and workflow to attendees of the 7th Global Plants meeting and show interested parties how we are handling the migration of data from type specimens to the JStor Global Plants website, which links the literature (where they were first published) to the specimens. This project is part of our 3rd grant from the Andrew W. Mellon Foundation for funding to document type specimens, some of the most valuable specimens in the Herbaria.


At UC/JEPS, we have been digi-

tizing type specimens for over 7 years and are currently digitizing Central American type specimens (*The Jepson Globe* 19(1):3. 2008). Type specimens (types) are the standard reference for the identification and naming of new species. Since the early 1990s, over 300 new species have been discovered in California; this includes a number of mosses and cacti just last year and all of these names have types, many of which are housed in herbaria in California and beyond. These types serve as critical reference points for botanists who work on the flora of California and the California Floristic Province.

Currently, we have almost 15,000 digitized types in our new public portal (*The Jepson Globe* 24(2):2. 2014) but still many thousands exist in the

main collection as isotypes (duplicate types) that are possible replacements in case the holotypes (principle types) are destroyed or lost which has happened a number of times at botanical institutions.

To search our types online, go to our home page and at the top menu bar, select DATABASES and UC/JEPS SPECIMEN PORTAL and restrict your search by checking on the box "include only type specimens".

After our grant ends in June, we will still scan and database type specimens on request, but we also will look for other sources to sustain this effort. We are still exploring other funding options and would welcome input from *Friends*. 

Volunteers at the Jepson Herbarium

Discovering a diversity of "buried treasures" is just one experience you might have during a volunteer Saturday. Volunteers are needed to mount, sort, and file specimens and to assist with related projects. No previous herbarium experience is necessary!

Volunteer Saturday begins at 10 a.m. and finishes by 4 p.m. (participants need not stay the full time). Upcoming dates include April 18th (Cal Day) and May 9th. We also welcome individual volunteers who can come in during our regular hours (M-F 8-5). We will try to match your unique interests, abilities, and schedule to one of the numerous curatorial projects that are available to work on.

For more information about volunteer opportunities, please call Ana Penny (510) 642-2465.

Ana Penny, Volunteer Coordinator, David Margolies, David Gowen, and Elizabeth Brusati mounting specimens during a recent volunteer Saturday.



First Ever Graduates of the Jepson Herbarium's California Naturalist Certification Talk about Their Motivation

By Diana Rohini LaVigne

What do a former environmental lawyer, belly dancer, high school teacher, marathoner, choir singer, theater professional, journalist, surveyor, webmaster, wildlife biologist, Peace Corps alumna, filmmaker, microbiologist, and an actor have in common? They were all members of the California Naturalist training program, sponsored by the Jepson Herbarium.

The Jepson Herbarium at UC Berkeley held its first course for the new UC California Naturalist training that officially granted certification to 20 naturalists on November 6, 2014. The UC California Naturalist Program promotes environmental literacy and stewardship through discovery and action. The Jepson Herbarium's California Naturalist classes met weekly at UC Berkeley and hosted several field trips both during class and on the weekend.

Aspiring Naturalists applied for admission into the program that entailed a 40-hour course that combined classroom and field experience in science, problem solving, communication training, and community service to explore the unique ecology and natural history of the Bay Area. In addition to the coursework, California Naturalists participated in 40 hours of volunteer service in one of four areas: program support, interpretation/education, restoration/conservation, and/or citizen

science. UC academic credits were available to all students in the class.

Graduates of the program had a wide variety of reasons to join the course; all had one common thread. They all aspire to motivate, impact, and educate others in life sciences, citizen science, and their role within nature in the San Francisco Bay Area. It was their personal stories that told the real story of this diverse and fascinating group of people that came together to celebrate, study, and experience nature's greatest gifts.

"I want to help my students to develop their own environmental consciousness." Amber Lancaster, San Francisco, High School Science Teacher, June Jordan School for Equity

"I want to share an appreciation of nature with children and visitors to Devil's Slide Trail Park." Kathy Gesley, Palo Alto, Trail Ambassador

"I want to inspire youth to carry on the task of protecting the earth's living creatures." Diana Rohini LaVigne, San Francisco, Chief Communications Officer, Life Chiropractic College West

"I want to help others discover the value of natural spaces and

inspire interest in their conservation." Melissa Hong, Alameda, User Experience Designer

"I want to help people appreciate the world in a whole new way." Adrian Cotter, Oakland, Co-curator San Francisco Natural History Series

"I want to do a better job as a docent at the botanic gardens where I volunteer and perhaps branch out a bit beyond botany." Barbara Steuart, Berkeley, Volunteer Docent, UC Berkeley Botanic Garden, East Bay Regional Parks, Tilden Botanic Garden


"I want to create engaging, fun, and interactive digital multimedia that uses the best of storytelling, science, and outdoor exploration to spark a new generation of nature stewards." Catherine Lynn Butler, Richmond Heights, Chief Storyteller, Greenexus LLC

"I want to continue with citizen science projects, future bio-blitzes, and, perhaps, bring CA Naturalist activities to the school where I currently volunteer." Patricia Denn, Oakland, happily retired Clinical Microbiologist

"I want to help others to realize and embrace our integral relation to the natural environment, inspiring environmental consciousness and stewardship." Shawna Casebier, San Francisco, California native, Aspiring Life & Soul Alignment Coach



Participants of the 2014 California Naturalist Training sponsored by the Jepson Herbarium. Photo by Preston Merchant.

Applications for the 2015 training will be available in May. For more information, please visit ucjeps.berkeley.edu/workshops/2015/CalNat/. 


A California Flora) from the Diablo Range differ from plants elsewhere in the range of that species in a number of vegetative as well as reproductive characters, while phylogenetic analyses of DNA sequence data from both nuclei and chloroplasts have provided evidence that *L. dichotoma sensu* Keck from the Diablo Range is more closely related to *L. ramosissima* Nutt. than to *L. dichotoma sensu* Keck from the San Joaquin Valley and Sierran foothills. Examination of some of the type specimens involved indicate that the species recognized now by Baldwin for the Great Central Valley and Sierra Nevada foothills should go by the name *L. dichotoma* Benth., and that for the plants of the southern Diablo Range a new name (and formal description) was needed; Baldwin selected *L. diabolensis* B. G. Baldwin to convey the idea that the new species occurs in (and apparently is restricted to) the Diablo Range.

Regarding one of the two categories of taxa that are new only to California, naturalized aliens, there was a note under the genus in TJM2 (p. 160) that *Viburnum rigidum* Vent. is possibly naturalized in Tilden Park (SnFrB), which is not far from where I sit as I write this. A little research revealed that Barbara Ertter, whose collection no. 17810 (UC1789196, collected 29 October 2001) is the probable source of that note, considers the taxon to be “at least marginally naturalized” there. Indeed, statements on the collection label of Ertter 17810, including “understory of mixed forest” and “Occasional lax shrub,” strongly suggest that, but no such plants were seen by me in a 2-hour search of the area (“along the Sibley Trail between Lake Anza and the spot where the trail climbs up into the *Eucalyptus* near the one-way road below the Brazilian Room” according to an e-mail of 23 July 2014 from David B. Wake, who first reported the occurrence of the plant in Tilden to Ertter) on 23 July 2014; in fact, the search revealed no plants whatsoever with opposite simple leaves! A search of the same area on 29 October 2014, just about exactly 13

years after the Ertter collection, during the flowering period of the plants, with John L. Strother of the University Herbarium, again revealed no plants. However, some were found in an area much closer to where Ertter 17810 is mapped in Berkeley Mapper, east-northeast of the first area searched, on both sides of an evidently unnamed trail approximately 100 m up-slope from a point where it departs from Lake Anza Trail, in numbers exceeding what would be suggested by “occasional,” although in habit they could be described as lax; that they were not in flower (or fruit) during a time they were in flower previously could have been due to climatic variables. Essentially, we decided to treat these plants as naturalized because they occur in natural conditions and because they not only have survived there for at least 13 years but evidently have increased their numbers there as well.

In addition to getting taxa new to the state incorporated, one of the revisions involved the moving of taxa from one genus to another (from *Cheilanthes* to *Myriopteris*), in response to new understanding about their relationships, with of course the attendant name changes. In some cases, names were changed for various other reasons. For example, *Hydrophyllum capitatum* Douglas ex Benth. var. *alpinum* S. Watson is treated in Supplement II as a distinct species, which at that taxonomic rank must be called *Hydrophyllum alpestre* A. Nelson & P. B. Kenn. The change in epithet from “alpinum” to “alpestre” was required in this case because at the rank of species, *Hydrophyllum alpestre* A. Nelson & P. B. Kenn., published in 1908, has priority over *Hydrophyllum alpinum* (S. Watson) Greene ex Brand, published in 1913, even though the latter was based on *Hydrophyllum capitatum* Douglas ex Benth. var. *alpinum* S. Watson, published in 1871, because, according to the International Code of Botanical Nomenclature (Melbourne Code), Art. 11.2, “A name has no priority outside the rank in which it is published”. In another case involving a name change,

Mark Hershkovitz had presented data in 2006 (*Gayana Bot.* 63:13-74) that showed that what had been called *Calandrinia ciliata* (Ruiz & Pav.) DC. in western North America (and TJM2) is phylogenetically distinct (although not very morphologically divergent) from *Calandrinia ciliata* in Central America and South America, where the type for the name was collected, and that whereas the North American plants are closely related to *Calandrinia breweri* S. Watson of California and northern Baja California, plants belonging to *Calandrinia ciliata* from Central America and South America are closely related to *Calandrinia compressa* Schrad. ex DC., also of Central America and South America, and that *Calandrinia menziesii* (Hook.) Torr. & A. Gray is available and should be used for the North American plants.

A summary of all of the changes that comprise Supplement II follows. Comparing it to the growing list of revisions yet to be developed shows the rapid pace of basic botanical research that underlies all floristics. Support from the *Friends*, which has helped get us this far and is very much appreciated, has never been more important to furthering our efforts. 



Type specimen of *Lagophylla diabolensis*, a new species from the southern Diablo Range, California.

Summary of changes made in Revision 2 of the *Jepson eFlora*, December 2014

PTERIDACEAE

- Cheilanthes cooperae* D. C. Eaton changed to *Myriopteris cooperae* (D. C. Eaton) Grusz & Windham, as native
- Cheilanthes covillei* Maxon changed to *Myriopteris covillei* (Maxon) Á. Löve & D. Löve, as native
- Cheilanthes feei* T. Moore changed to *Myriopteris gracilis* Fée, as native
- Cheilanthes gracillima* D. C. Eaton changed to *Myriopteris gracillima* (D. C. Eaton) J. Sm., as native
- Cheilanthes intertexta* (Maxon) Maxon changed to *Myriopteris intertexta* (Maxon) Grusz & Windham, as native
- Cheilanthes newberryi* (D. C. Eaton) Domin changed to *Myriopteris newberryi* (D. C. Eaton) Grusz & Windham, as native
- Cheilanthes parryi* (D. C. Eaton) Domin changed to *Myriopteris parryi* (D. C. Eaton) Grusz & Windham, as native
- Cheilanthes viscida* Davenp. changed to *Myriopteris viscida* (Davenp.) Grusz & Windham, as native
- Cheilanthes wootonii* Maxon changed to *Myriopteris wootonii* (Maxon) Grusz & Windham, as native

ADOXACEAE

- Viburnum opulus* L. added, as naturalized, replacing *Viburnum edule* (Michx.) Raf.
- Viburnum rigidum* Vent. added, as naturalized

ASTERACEAE

- Dittrichia viscosa* (L.) Greuter added, as naturalized
- Lagophylla diabolensis* B. G. Baldwin added, as native
- Pallenis maritima* (L.) Greuter added, as naturalized
- Volutaria canariensis* Wagenitz added, as naturalized

BORAGINACEAE

- Hydrophyllum capitatum* Douglas ex Benth. var. *alpinum* S. Watson changed to *Hydrophyllum alpestre* A. Nelson & P. B. Kenn.
- Wigandia urens* (Ruiz & Pav.) Kunth added, as naturalized

CACTACEAE

- Cylindropuntia acanthocarpa* (Engelm. & J. M. Bigelow) F. M. Knuth var. *acanthocarpa* becomes the accepted name for *Cylindropuntia acanthocarpa* (Engelm. & J. M. Bigelow) F. M. Knuth var. *coloradensis* (L. D. Benson) Pinkava, with the latter as a synonym
- Cylindropuntia chuckwallensis* M. A. Baker & M. A. Cloud-Hughes newly described, added, as native
- Cylindropuntia xfosbergii* (C. B. Wolf) Rebman, M. A. changed to *Cylindropuntia fosbergii* (C. B. Wolf) Rebman, M. A. Baker & Pinkava

ERICACEAE

- Pyrola aphylla* Sm. added, as native
- Pyrola crypta* Jolles newly described, added, as native
- Pyrola dentata* Sm. added, as native

FAGACEAE

- Quercus robur* L. added, as waif

MONTIACEAE

- Calandrinia ciliata* (Ruiz & Pav.) DC. replaced by *Calandrinia menziesii* (Hook.) Torr. & A. Gray, added, as native
- Calyptidium parryi* A. Gray var. *arizonicum* J. T. Howell changed to *Calyptidium arizonicum* (J. T. Howell) M. G. Simpson, M. Silveira, & Guillems, as native

MYRSINACEAE

- Anagallis arvensis* L. changed to *Lysimachia arvensis* (L.) U. Manns & Anderb., as naturalized
- Anagallis minima* (L.) E. H. L. Krause changed to *Lysimachia minima* (L.) U. Manns & Anderb., as native
- Anagallis monelli* L. changed to *Lysimachia monelli* (L.) U. Manns & Anderb., as waif
- Glaux maritima* L. changed to *Lysimachia maritima* (L.) Galasso, Banfi, & Soldano, as native
- Trientalis europaea* L. changed to *Lysimachia europaea* (L.) U. Manns & Anderb., as native
- Trientalis latifolia* Hook. changed to *Lysimachia latifolia* (Hook.) Cholewa, as native

POLEMONIACEAE

- Polemonium eddyense* Stubbs newly described, added, as native
- Polemonium occidentale* Greene subsp. *occidentale* no longer recognized, treated as synonym of *Polemonium occidentale* Greene
- Polemonium pulcherrimum* Hook. var. *shastense* (Eastw.) Stubbs recognized, added, as native

POLYGONACEAE

- Chorizanthe minutiflora* R. Morgan, Styer, & Reveal newly described, added, as native

ROSACEAE

- Rosa woodsii* Lindl. var. *glabrata* (Parish) D. Cole added, as native, and as belonging to *Rosa woodsii* Lindl. subsp. *gratissima* (Greene) W. H. Lewis & Ertter
- Rosa woodsii* Lindl. var. *gratissima* (Greene) D. Cole added, as native, and as belonging to *Rosa woodsii* Lindl. subsp. *gratissima* (Greene) W. H. Lewis & Ertter

CYPERACEAE

- Calliscirpus brachythrix* C. N. Gilmour, J. R. Starr, & Naczi newly described, added, as native
- Eriophorum crinigerum* (A. Gray) Beetle changed to *Calliscirpus criniger* (A. Gray) C.N. Gilmour, J.R. Starr, & Naczi, as native

POACEAE

- Agrostis lacuna-vernalis* P. M. Peterson & Soreng newly described, added, as native

Two new NSF grants for fungal collections at UC

By Brent Mishler

The fungi are critical components of all terrestrial ecosystems, where they play important roles as mutualists, parasites, and commensals in both plants and animals. Most of the world's important plant pathogens, such as chestnut blight, Dutch elm disease, oak wilt, and white pine blister rust are fungi. In addition, fungi are the primary decomposers responsible for recycling organic matter such as fallen leaves and downed trees. In this latter role, they directly impact the global carbon cycle even on a geological time scale.

The University Herbarium (UC) has been expanding its mycological collections to meet the demands for better understanding of fungi in California and across North America. The current fungal collection housed at UC has roughly 215,000 specimens, and contains over 2,000 fungal type collections, and many other collections of historical

value. Funding from a new grant will primarily be used to provide safe storage (compactors and cases) in our main herbarium space for fungal collections that are now housed inadequately in a condemned building.

A second grant for mycology is similar to several others held by the University and Jepson Herbaria dealing with macroalgae, macrofungi, lichens, and bryophytes. The new Microfungi Collections Consortium (MiCC) is a nation wide collaboration that aims to fill a critical gap in the national digitization effort through the digitization of over 1.2 million North American specimens of microfungi. The Consortium is a collaborative effort among 38 institutions in 31 states that includes a variety of small to large university herbaria, natural history museums, and botanical gardens. The MiCC project will also incorporate existing digitized microfungal specimen data, comprising over 1 million databased records and ~53,100 specimen images of microfungi. An integrated dataset of

~2.3 million microfungi specimens will be compiled and searchable through the MyCoPortal, which also holds the results of the complementary Macrofungi Collections Consortium (MaCC) project. The combination of MiCC and MaCC will result in the digitization of nearly all existing specimen documentation (~4 million records) for North American fungi held by US institutions.



Specimen image of Scorias spongiosa, which feeds on honeydew excreted by insects. This specimen was collected from the campus of the University of Georgia on the twigs of a beech tree.

(Curator's Column, continued from page 1)

Anacker and Strauss (in *Proceedings of the Royal Society B: Biological Sciences*) concluded from examining the geographic and ecological distributions of Californian plant species in light of their phylogenetic relationships that habitat and soil heterogeneity on a regional scale were most strongly associated with diversification. Ongoing work in the University and Jepson Herbaria on the phylodiversity and phyloendemism project discussed in the last *Jepson Globe* is aimed at gaining more understanding of the spatial distribution of California plants in a phylogenetic context.

(2) The evident importance of regional-scale diversification in the California Floristic Province (CA-FP) is mirrored at a higher level by evidence that North America, and especially western North America, has been a cradle for more extensive flowering plant radiations than earlier believed and that most Californian plant groups

with endemic diversity in the CA-FP descended from North American ancestors. Although deep ancestry for much of our flora can be traced back to Eurasian or southern sources, the most immediate ancestry of various groups long thought to have their closest relatives in the Old World, or that were of uncertain relationship until recently, is closer to home, within more extensive North America clades. That pattern is evident, for example, for major clades within a diversity of tribes of Asterales and Fabaceae and for other clades spanning multiple genera of Apiaceae, Campanulaceae, and Lamiaceae. Those findings are in line with results of work in multiple labs indicating that western North American plants with disjunct relatives in both Eurasia and eastern North America are usually most closely related to their eastern North America counterparts and appear to stem from North American ancestors.

(3) As for the age of our flora, most Californian clades with endemic

species diversity for which divergence times have been estimated appear to have undergone diversification in the CA-FP since mid-Miocene (~15 million years ago), when the transition toward the summer-dry climate that characterizes much of the CA-FP was underway. Phylogenetic studies also have been helpful in corroborating more ancient divergence of iconic paleoendemic conifers, such as bristlecone fir (*Abies bracteata*) and Brewer spruce (*Picea breweriana*), as well as various xeric-adapted (or preadapted) evergreen or drought-deciduous woody eudicot lineages, such as those represented by California buckeye (*Aesculus californica*), chaparral-pea (*Pickeringia*), tree-anemone (*Carpenteria*), and laurel sumac (*Malosma*).

If you are interested in reading more, the review chapter can be freely downloaded at the "Read it online" link at the following site: ucjeps.berkeley.edu/cgi-bin/searchpub.pl?Baldwin.

The Consortium of California Herbaria now serving 2 million specimen records

By David Baxter

This February, the CCH reached a landmark: with the addition of its 33rd participant, the Sweeney Granite Mountains Desert Research Center (GMDRC), the CCH is now serving over 2 million plant specimen records, all through a single interface. The



Density map of specimens served by the CCH. Only records with coordinates are mapped (over 70% of total). Map courtesy of GBIF, www.gbif.org

wealth and availability of plant specimen data allows researchers to use this information for large-scale comparative studies that would not be possible otherwise.

These 2 million records are diverse in many respects, covering wide ranges in time, geography, and plant diversity. The CCH is able to serve a diversity of specimen records thanks to its diverse roster of participant herbaria. Large herbaria serve specimens collected throughout the state, while smaller herbaria have stronger local focus and fill in botanical gaps not covered by larger herbaria. Furthermore, herbaria of managed lands such as National Park Service and Bureau of Land Management have specimens from areas that are otherwise very difficult to collect from. The CCH also has some out-of-state participants such as the Harvard University Herbaria, which contain thousands of California type specimens and other historically important collections.

The CCH began in 2003 as a project supported by the California Digital Library and hosted at UC/JEPS to database botanical specimens held in University of California herbaria. In the following 12 years, it has grown into

a truly collaborative effort to provide California plant biodiversity data to the world. The CCH database has been accessed by users in 148 countries and has been cited in over 90 scholarly publications in local, national, and international journals (Google Scholar page: ucjeps.berkeley.edu/consortium/citations/).

To learn more about the CCH and participating institutions, as well as access the main search interface, please visit: ucjeps.berkeley.edu/consortium/.



Locations of California herbaria participating in the CCH. Map by David Baxter.

Herbarium Botanists Visit Chile for Collaborative Studies With Chilean Scientists

Brent Mishler, Bruce Baldwin, and David Ackerly traveled to Chile Nov. 11-20, 2014, to begin a research collaboration on comparative studies of the Mediterranean-climate regions of California and Chile with colleagues at the University of Chile: Rosita Scherson, Paulette Naulin, and Pato Plissock. They also gave a two-day workshop on phylogenetic approaches to biodiversity studies to a group of enthusiastic students from across Chile.

A highlight of the visit was a field trip that made a transect from the Andean alpine down through the coast ranges, and finally to the coastal prairie. The physiognomy of the vegetation was surprisingly familiar to a Californian, until one looked close! A number of amphitropical disjuncts were seen, but many more convergently similar plants were seen.



Brent Mishler and Bruce Baldwin looking at *Quillaja* (the sole genus in *Quillajaceae*) in matorral, a shrubland community type characteristic of central Chile. Photo by Rosita Scherson.



WELCOME NEW MEMBERS OF THE MISHLER LAB


Andrew Thornhill

Andrew Thornhill is an Australian who joined the Mishler Lab as a postdoc at the start of February. He grew up in Melbourne in the southern Australian state of Victoria, where he attended Monash University for his undergraduate degree and for a Masters degree project on carnivorous pitcher plants. He moved to Canberra, ACT, to undertake his PhD at the Australian

National University. His project investigated the pollen morphology of the Myrtaceae family using a combination of microscopy and morphological and phylogenetic techniques.

After finishing his PhD, Andrew began work as a postdoc for Joe Miller at the Australian National Herbarium based in CSIRO, Canberra. He worked on building large species level phylogenies of Australian *Acacia* and *Eucalyptus* as well as many other projects on smaller groups such as Bryophytes, Palms, and Gymnosperms. After two years Andrew began his second postdoc for Darren Crayn at the Australian Tropical Herbarium based out of Cairns in Far North Queensland. He continued working on making large phylogenies with a focus more on species within a geographical region rather than

a taxonomic group such as the plant phylogeny of the Daintree Rainforest.

After eighteen months in Cairns, Andrew and his wife Naomi drove over 3,000 miles to get back to Canberra and then Melbourne and Sydney to then fly here to California to join the University and Jepson Herbaria. Andrew's work is supported by an NSF grant awarded to Brent Mishler, Bruce Baldwin, and David Ackerly (*Jepson Globe* 24(1):1-6.) to study phylogenetic diversity and phylogenetic endemism in the California flora. Andrew will construct a phylogeny of the Californian vascular plant flora and combine it with spatial data available from the Consortium of California Herbaria. He has already begun sampling plants from UC/JEPS to complete the phylogeny and is looking forward to getting out into botanic gardens in Berkeley and further afield to find additional specimens for the project. If you would like to get in contact with Andrew, his email address is Andrew.Thornhill@berkeley.edu. 




Andrew Thornhill at Thala Beach Lodge, Oak Beach, (Far North) Queensland. Photo by Naomi Brydon.

Caleb Caswell-Levy

Caleb Caswell-Levy is a new graduate student in the Mishler Lab interested in the ecology and evolution of California bryophytes. Originally from Los Angeles, as an undergraduate

at UC Santa Cruz, Caleb became interested oak communities, the ecology of invasive species, and natural history of the bryophytes, lichens, and vascular plants of California.

After graduating from UC Santa Cruz in 2009, Caleb pursued a variety of hobbies including playing and teaching bluegrass music, hiking, surfing, and skiing, before returning to botany. He worked in Southern California on a tidal salt marsh restoration project, and spent several years as a field botanist with the National Park Service in Point Reyes National Seashore and Pinnacles National Park. He then

became interested in the implications of poikilohydry and dessication tolerance, two fundamental aspects of the bryophyte lifestyle that affect their ecology and biogeography, which he hopes to research further here at Berkeley. 



Caleb Caswell-Levy on a backpacking trip in Denali NP on the Toklat River. Photo by Madison Allen.



Syntrichia ruralis, a common desiccation-tolerant moss in California. Photo by John Game.

(Beidleman, continued from page 1)

Sara Plummer Lemmon, and Kate and T. S. Brandegee. Dick transcribed hundreds if not thousands of letters, diary entries, and writings from those collections. On June 3, 2013, we dedicated the renovated archives stacks to him in honor of his years of volunteer service and his 90th birthday.

His research in the archives resulted in more than 20 published works including articles such as “Willis Linn Jepson and the 1899 Unalaska Caper,” “Rowboat botanizing with Willis Jepson on the Colorado River, 1912,” and “John Charles Fremont and his floral forays into Oregon,” and his well-received book, *California's Frontier Naturalists* (UC Press, 2006). I highly recommend *California's Frontier Naturalists* to anyone interested in the history of botany in California. As a reviewer for *Bay Nature* magazine wrote: “The book treats California's natural world with such wonder, curiosity, and respect, it will leave you reluctant to return to the real world.”

Dick enjoyed answering reference questions about the archives, no matter what the topic, and never failed to be generous with his knowledge and time. Our visitors always enjoyed chatting with him about their research, and many made sure to schedule their return visits at times when he would be at the Herbaria so they could see him again.

He was incredibly detailed in his own research. For example, as he came across information in the Jepson or Lemmon collections regarding specific dates, he transferred that information to a detailed chronology notebook, allowing us to see exactly what Jepson was doing on a specific day. He also maintained lists of names he came across in the archives, and often went to other archives and historical societies to learn more about people who corresponded with Jepson and the Lemmons.

He had a knack for connecting with people who could help him track

down bits of information. While researching John Gill Lemmon's time in Sierra Valley, he contacted the Sierraville postmistress who turned out to be the town historian. She sent him a large packet of information about the Lemmons, including a photograph of the cabin where Lemmon lived with his brother and a photograph she thinks is Lemmon with his students at the town school.

I can't imagine doing this job without Dick and the volumes of background material about our archives that he compiled and readily shared. I felt so fortunate to not have had to start from scratch when I began working with the archives. From my very first day, he was here to show me the ropes and fill me in on all the idiosyncrasies of the botanists represented in our collections. Whenever I'm asked a reference question for our archives, I turn first to the material Dick created while he was here, as usually he had already answered a similar question, transcribed a pertinent letter, or written an article on the topic. With his notebooks, transcriptions, and research files, he has left a rich and enduring legacy to the archives. We miss him and fondly remember his love of research, history, and nature, and especially how he loved to share his enthusiasm with others.

To learn more about Dick's amazing life and career before he joined the Herbaria, please read his obituary in the Pacific Grove Cedar Street times; a link is available in the “News” section of ucjeps.berkeley.edu.



The cabin where John Lemmon lived in Sierra Valley.

THE JEPSON HERBARIUM PROJECTS & RESOURCES

2,200,000+ Worldwide Plant Specimens

Director: Brent D. Mishler

Deep Moss: Reconstructing the early evolution of mosses from comparative genomics

Moorea Biocode Project (a complete inventory of an island ecosystem)

Systematics and ecology of *Syntrichia*

Curator: Bruce G. Baldwin

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 Monocots: Chelsea D. Specht
Evolution and biogeography of Calif. monocots (including *Allium*, *Nolina*)

Systematics and evolution of Heliconiaceae, Costaceae, and Zingiberaceae

Floral developmental evolution in the tropical gingers (Zingiberales)

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

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Asst. Director for Collections: Andrew Doran, Cultivated plants, UK flora

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

Biodiversity Informatics Manager: David Baxter

Collections Staff & Plant Identification:

Kim Kersh, Clare Loughran, Ana Penny, and Margriet Wetherwax

Jepson eFlora & Online Interchange for California Floristics

Scientific Editor: Tom Rosatti

Constancea: UC Publications in Botany (online)

Archivist and Librarian: Amy Kasameyer, Botanical Library and Archives

Public Programs: Jeanne Marie Acceturo

Membership, workshop enrollment, and

***Globe* design:** Edith Summers

Staff Research Associate: Bridget Wessa



Peter H. Raven with Brent D. Mishler, Director, University and Jepson Herbaria. Photo by Ana Penny

On September 12, 2014, the Jepson Herbarium hosted a Members' Night. Over 100 guests attended a lively reception and book sale followed by a presentation by Dr. Peter Raven titled, "Plant Conservation: Developing a Strategy." The full audio version is online thanks to a generous Friend who made the recording! You can find a link to the audio file on the Friends membership page.



Andrew Doran, Assistant Director for Collections, leading a tour. Photo by Ana Penny

MEMORIALS AND SPECIAL GIFTS

The Jepson Herbarium is pleased to offer thanks to those who chose to honor or remember others with gifts to the herbarium.

In memory of Dr. L.V. Bardunov
Yelena Kosovich-Anderson

In memory of Wallace Beck
Kathryn Beck

In memory of Mary Bowerman
Alfred & Barbara Sattler

In memory of Brenda Butner
Jean & David Struthers

In memory of Annetta Carter and Lincoln Constance
Claudia R. Lindsay

In honor of Walter Cecatto
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In memory of Lincoln Constance
Dale E. & Marie Johnson

In memory of Lewis A. Coveler
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Hazel Gordon

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Susan Cochrane Levitsky
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Carole S. Hickman
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In honor of Job Kuijt
Alan I. Kaplan

In honor of Paul Licht
Ramona Davis

In memory of Robert Lloyd
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In honor of Staci Markos
Betsy Ringrose & Edward Adasiak
Karen Markos

In honor of Richard Moe
Diana Hickson

In memory of Rod Park
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In memory of Marian and Roger Reeve
Paul & Diane Reeve

In memory of Jean Ann (Seely) Rosatti and Edward James Rosatti, Jr.
Thomas Rosatti

In memory of John Sawyer
Jane Cole

In memory of Paul Silva
Nancy R. Morin

In memory of Robert Soost
Jean Soost

In memory of May Stekel
Peter Stekel

In honor of John L. Strother
Dale E. & Marie Johnson

In memory of Chancellor Tien
Mo-Mei Chen

In honor of Yulan Tong
Philip Reed

In memory of Bob and Pat West
J. Fraser & Helen Muirhead

In memory of May Stekel
Peter Stekel

Special Gifts:

Over 55 books from
Tim Lukaszewski and Paul Preston

30 books from the
Milo Baker Chapter
of the California Native Plant Society



You can shape the future: Planned giving for a lasting impact

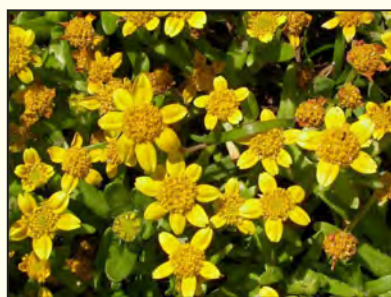
Donors who establish endowment funds with gifts from their estate are visionaries who know the value of planned gifts. Endowment funds ensure that the work that is important to them is continued in perpetuity. The endowment funds of the University and Jepson Herbaria have provided support for existing programs and created new ones. Without them, the herbaria would not be what they are today—world-renowned research collections at a public university.

Making a bequest can be as simple as including a few sentences in your will.

"I give \$ ____ (or ____ % of the residue of my estate) to the University of California, Berkeley Foundation, a California non-profit public benefit corporation, to be added to The Herbaria Futures Endowment Fund (R14891000) to support the University and Jepson Herbaria at the Berkeley campus of the University of California."

Bequests of any amount are welcomed and appreciated. Gifts over \$50,000 may be used to establish a new endowment to support work that is of particular interest to the donor.

Below, we have highlighted two endowment funds that support graduate students. In 2015, representatives from the Herbaria will be talking with our *Friends* about programs they would like to support with an estate gift. For more information, please contact Staci Markos (smarkos@berkeley.edu) or the Office of Planned Giving (opg@berkeley.edu; 510-642-6300).



Lasthenia californica.

The Robert Ornduff Fellowship of the University and Jepson Herbaria

Robert Ornduff (1932-2001) was a long-time Botany and Integrative Biology Professor, expert on plant evolution, and supporter of the Herbaria as well as the UC Botanical Garden. This fellowship supports UC Berkeley students who travel to professional meetings to give an oral presentation on his or her study of plant systematics, evolution, or ecology.



Castilleja wightii.

Photos by Neal Kramer.

The Lawrence R. Heckard Fund of the Jepson Herbarium

A biosystematist and taxonomist, Larry Heckard (1923-1991) was Curator of the Jepson Herbarium for over 20 years. This endowment awards grants and encourages research in the systematics of vascular plants of California and their close relatives in North America.

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☐ My or my spouse's employer will match this gift. (Please enclose company form.)

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☐ 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

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December 11-13**

For details go to:
ucjeps.berkeley.edu/workshops/2015/index.html

Photo by Jeanne Marie Acceturo