



THE JEPSON GLOBE

A Newsletter from the *Friends of The Jepson Herbarium*

VOLUME 23 NUMBER 1, Spring 2013

Director's Column: Introducing the *California Moss eFlora*

By Brent D. Mishler

A new online flora of California mosses has been posted at: ucjeps.berkeley.edu/CA_moss_eflora/. It is a collaborative effort of a broad group of professional and amateur bryologists, coordinated by UC Berkeley and Cal State Northridge. The initial editorial board is Paul Wilson (lead editor) Brent D. Mishler, Richard L. Moe, Daniel H. Norris, and James R. Shevock. There is a full set of dichotomous keys, links to photographs and line drawings for many taxa, as well as distribution maps drawn from digitized specimens at UC Berkeley and California Academy of Sciences.

It is a work in progress. The initial basis for this flora derives from three print publications — two papers by Norris and Shevock in *Madroño* in 2004, and the book *California Mosses* by Malcolm, Malcolm, Shevock, and Norris (Micro-optics Press, 2009) — as well as previously unreleased full-length treatments of about 400 species by D. H. Norris. The *eFlora* includes many updates to this previous work and will continue to be updated. The *California Moss eFlora* will be a worthy companion to the *Jepson eFlora* for California vascular plants (ucjeps.berkeley.edu/IJM.html) and other eFloras in the planning stages.

We regard this as a community
(Continued on page 10)



Exciting updates from the Center for Phycological Documentation

Breaking news! The University Herbarium was recently notified that it will soon be receiving NSF funds to participate in a nationwide project, The Macroalgae Herbarium Consortium: Accessing 150 Years of Specimen Data to Understand Changes in the Marine/Aquatic Environment. The consortium will be a network of 48 U.S. institutions and, collectively, they will digitize more than one million macroalgae specimens. The analysis of this information will benefit society by having a profound effect on how aquatic resources are managed. More details on this grant will be presented in future issues of the *Globe*.

(Continued on page 8)

Herbaria Futures Meets its First Challenge!

By Brent D. Mishler

In June 2012, the University and Jepson Herbaria began an ambitious campaign, *Herbaria Futures*, to build an endowment for the Herbaria that will ensure a core foundation of support for infrastructure and care of the collections, continued primary research and its dissemination, and cultivation of the next generation of botanists, ecologists, and conservationists.

Phase one of the campaign was a huge success with gifts from 330 *Friends* in 2012! I am so thankful to each of you who supported the campaign and I also extend my deep gratitude to Rod and Cathy Park for their generous matching gift of \$50,000! We are so privileged to have such dedicated and supportive *Friends*. A new *Herbaria Futures* endowment fund has been established with a starting capital balance of \$100,000 resulting from this first phase of our campaign. The Herbaria's future is brighter because of your willingness to get involved. 🌱

ALSO IN THIS ISSUE

- 🌱 Welcome Ingrid Jordan-Thaden
- 🌱 Jepson Manual Supplements
- 🌱 Heckard Award Recipients
- 🌱 Pacific Crest Trail Guide
- 🌱 Paul Silva 90th birthday
- 🌱 Jepson Library Renovation

Cover image by Sheraz Sadiq / KQED

Welcome Ingrid Jordon-Thaden


This past fall, Dr. Ingrid Jordon-Thaden became a Research Botanist with the University and Jepson Herbaria. She holds a PhD in Biology from the University of Heidelberg, Germany, where she studied the phylogeny and phylogeography of the genus *Draba* (Brassicaceae) under the guidance of Prof. Dr. Marcus A. Koch and co-advised by Dr. Ihsan Al-Shehbaz from the Missouri Botanical Garden.

Before arriving at Cal, Ingrid held a two-year post-doctoral research position at the Florida Museum for Natural History and Department of Biology at the University of Florida under the supervision of Drs. Pam and Doug Soltis. Her work in Florida focused on the evolution of polyploidy in *Tragopogon* (Asteraceae).

Ingrid has extensive greenhouse, field, and lab experience with plants and considers herself a holistic plant systematist. Her research career began in her home state, Nebraska, at the University of Nebraska-Lincoln, where she obtained a BS in Horticultural Science, a BS in Chemistry (chemotaxonomy), and a MS in Biology (proteomics of corn mitochondria), studying plants under Drs. Robert Kaul, Chuck Butterfield, and Tom Elthon.

Some of her recent publications deal with using new technologies of Next Generation Sequencing (NGS). She is a strong advocate of embracing new approaches to molecular phylogenetics and population genomics, and tying them to phenotypical observations. She has been part of a group of researchers who are developing *Tragopogon* (Goat's Beard-Asteraceae) as a non-model system to study evolution in plants (see American Journal of Botany Vol. 99 No. 2 for an entire issue dedicated to NGS in plant biology: www.amjbot.org/content/99/2.toc; and specifically Buggs et al. 2012 for the article on *Tragopogon*: www.amjbot.org/content/99/2/372.full). Additionally, Dr. Jordon-Thaden was involved in the large collaborative project to sequence the transcriptome of 1,000 plant species (www.onekp.org) (see following methodology pub-

lication: www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0050226), where she contributed RNA extraction method development for woody and aquatic plants. Her most recent collaborative publication is the result of a special symposium attended by the Soltis Lab held on NGS for plant systematics and ecology in October 2011 in Edinburgh, Scotland. This manuscript is part of a special issue from that symposium and can be found at www.tandfonline.com/doi/abs/10.1080/17550874.2012.745909 with a University of California library subscription, and is available upon request by calling the Herbarium (510) 643-7008. This last manuscript, published in Plant Ecology and Diversity (formally known as the *Botanical Journal of Scotland*), is directed to plant biologists who are facing the challenges of deciding on the experimental design for using NGS for phylogenetics and marker development.

In the summer of 2012, Ingrid's focus turned back to *Draba* and she began fieldwork on *Draba oligosperma* in the mountains of Wyoming, Montana, Idaho, and Utah, one of the many interesting *Draba* systems to study. More information about Dr. Jordon-Thaden's research may be found at ucjeps.berkeley.edu/people/ijordonthaden. 



Photos, top, Dr. Ingrid Jordon-Thaden, bottom (photo by Gary Monroe) *Draba oligosperma*.

A New Molecular Method That is Transforming Phylogenetic Studies

Next Generation Sequencing (NGS) is an inclusive term that describes a multitude of newer methods and platforms for DNA sequencing, but does not include traditional Sanger sequencing. These methods differ from the latter by reading thousands or millions of sequences in parallel; Sanger sequencing reads one piece of DNA at a time. With NGS, you can get many more sequences to work with, and at a lower cost than acquiring data one gene at a time. Researchers can obtain sequences on a genomic-scale with NGS, affording the potential for powerful evolutionary comparisons using large-scale data sets. Previously, the hurdle with NGS, at least in many labs, was the preparation of DNA libraries (e.g., pieces of DNA representing an organismal genome), which required significant laboratory time and was very expensive. However, the cost of library construction is decreasing, as is the cost of the sequencing. NGS is now affordable to most laboratories (especially with collaborations), and most researchers already have the lab skills to carry out the work. Moreover, newer barcoding methods allow for tagging of individual samples with a molecular identifier, allowing for pooling of many samples into a single multiplexed sequencing run. Multiplexing makes NGS an economical option because it spreads the total costs for sequencing over a larger number of individual samples. Ultimately, researchers can get larger amounts of data at a fraction of the costs required for traditional Sanger sequencing approaches.

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

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

As I was unpacking my copy of *The Jepson Manual: Vascular Plants of California, Second Edition* (TJM2; UC Press, 2012), I was distracted by the thought that it was already out-of-date. To help remedy this, the Jepson Flora Project has adopted a strategy that includes two important elements: 1) updating the Jepson eFlora; and 2) the printing of supplements, for use with the printed book, that will include sets of these revisions.

The need for such a strategy was evident even as we were in the final stages of preparing the TJM2 manuscript for publication. During this time, papers appeared in the primary literature that required inclusion of the phrase “revised taxonomy, too late for full treatment here” three times in TJM2, in notes under *Navarretia*, *Thysanocarpus*, and *Atriplex*. Revisions of these genera will be among the first to appear in the Jepson eFlora, and will be included in Supplement I (to be published in mid-April 2013).

In some cases, a revised taxonomy had been published in time to have been incorporated into the treatment for TJM2, but for various reasons the more conservative taxonomy of TJM (1993) was retained. Thus, for example, under *Euphorbia* in TJM2, there is the indication that that genus forms “a monophyletic

group with *Chamaesyce*”, despite the fact that *Chamaesyce* and *Euphorbia* nevertheless are recognized as separate genera in TJM2. *Dodecatheon*, though itself monophyletic, is part of a similar example, in that *Primula* is monophyletic only if it includes *Dodecatheon*, yet both genera are recognized in TJM2. Reconsideration has led to new taxonomic treatments of *Euphorbia* (to include *Chamaesyce*) and *Primula* (to include *Dodecatheon*) that are more in line with the philosophy of the Jepson Flora Project, and that will appear in Supplement I.

In addition to the clarification of relationships that molecular and phylogenetic research provides, revisions of floristic treatments also become necessary as a result of the discovery of new taxa. Sometimes, it’s a taxon completely new to science (e.g., *Euphorbia jaegeri*; *Navarretia paradoxinota*, *N. paradoxiclara*), while in other cases, it is merely a taxon new to the area covered by a flora, either

a native that had been overlooked (no examples in Supplement I) or, much more frequently, unfortunately, yet another non-native taxon that has become naturalized (i.e., that has escaped cultivation and is reproducing in some way) in the area covered (e.g., *Gamochaeta argyrinea*, *Sphaeropteris cooperi*). In the case of naturalized taxa that have become so successful in the area covered that they are problematic, there is urgency to get them incorporated into floristic works so that they may be more readily and accurately identified, located, and monitored. For this reason, not only naturalized taxa, but plants that have escaped cultivation without yet demonstrating that they have become naturalized also are treated (e.g., *Euphorbia myrsinites*, *E. rigida*; thank you, Dean Kelch), albeit only partially (i.e., included in keys in Supplement I, with the full descriptive paragraph only online, in the eFlora).

Conversely, it sometimes becomes necessary to remove a taxon from a floristic treatment. In some cases, it is because a troublesome alien has been eradicated, while in others it involves a native that was only mistakenly indicated for the area of coverage in the first place. *Asclepias linaria* was included in floristic accounts of California, as a native, beginning with *The Jepson Manual* (TJM, 1993), and



Euphorbia jaegeri. Photo by Aaron Schusteff



Primula hendersonii, formerly *Dodecatheon hendersonii*. Photo by Leigh Johnson



Primula suffrutescens. Photo by Neal Kramer

(Continued on page 4)

(Supplement, cont. from page 3)

it was retained, unchallenged, in the account for TJM2. However, soon after TJM2 hit the shelves, a discerning user (thank you, Tom Chester) in fact wrote to the Jepson Interchange, challenging whether or not the species is present in the state, and pointing out that it had not been indicated for California in floristic accounts of the state or any part thereof prior to TJM (1993). A bit of detective work revealed that the species had been added to the treatment for TJM (1993) based on the fact that it had been indicated for California in the most recent, comprehensive monograph of the genus (published in 1954 by the great milkweed expert, Robert E. Woodson, Jr., of the Missouri Botanical Garden), in which it was represented by one dot on the distribution map, with the text reading “California: San Diego County”. It turned out that the specimen on which that report was based (also housed at the Missouri Botanical Garden and examined there for this purpose by yet another great milkweed expert, Warren Douglas Stevens), included a label that stated, “C R Orcutt San Diego California”. The fact that the collector, Orcutt, lived in San Diego, and that a San Diego locality would have been significantly outside the range of this species, and that the collection number fits well into a sequence Orcutt collected in Mexico, solidly within the known



Navarretia paradoxinota. Photo by Leigh Johnson

range of the species, together strongly suggested that the original report was in error and that the species does not occur in California. Had this specimen been examined during preparation of the treatment of *Asclepias* for TJM (1993), *Asclepias linaria* would not have been included, and the revision included in Supplement I, in which it has been removed, would not have been necessary. Of course, part of the problem in all this is that, based on TJM (1993) and TJM2, word has spread, erroneously, that the species occurs in the state. With that trouble-making cat out of the bag, off, and running, it should not be difficult to understand why it is official policy of the Jepson Flora Project to include only taxa for which there is at least one good, reliable vouchering specimen — that has been seen and thoroughly verified by the author (even if that author happens to be the Scientific Editor of the Jepson Flora Project!).

In some cases, a revision becomes necessary despite the fact that no changes have occurred in the facts bearing on relationships, or even in the interpretation of those facts. In November of 2012 we were alerted via e-mail (by John Strother of the University Herbarium) that a paper had been published in which it was established that the genus name *Leucosyris* was published over a century earlier than *Arida*, which was used for the plants involved in TJM2, and therefore had to be used instead, according to the international rules of plant nomenclature. Because of yet other nomenclatural rules, not only the genus name, but in one case the species epithet as well, had to be changed. A check of the summary on the next page shows just how much of the book was affected by this one relatively simple correction: several changes in the key to genera, as well as to the names heading



Howellanthus dalesianus, formerly *Phacelia dalesiana*. Photo by Genevieve Walden

each description.

The award for Most Wide-Ranging Ripple Effects resulting from a treatment in Supplement I would go to *Sphaeropteris cooperi*, a member of a family of tree ferns, Cyatheaceae, not previously represented in our flora. An email of 27 September 2012 from John R. Clark, Senior Plant Biologist, Curator, Herbarium (CATA) Catalina Island Conservancy, included a manuscript (Clark & Summers, Madronõ, in press, expected to be published in the fall of 2013) about the discovery of a population on Santa Catalina Island that has reportedly become naturalized. In part because of the potential for this species to become invasive in California, developing a floristic treatment was considered a priority: it involved writing descriptions of the species, genus, and family, as well as incorporation of the Cyatheaceae into the key to families, Group 3.

These and other revisions, all summarized on the next page, will appear in Supplement I, copies of which will be sent via e-mail to the Friends of the Jepson Herbarium as soon as they are available. Keeping our products up-to-date is a challenging task that has required and will continue to require support from the *Friends* — support for which we are ever-grateful. 🍷

SUMMARY OF CHANGES THAT WILL BE INCLUDED IN SUPPLEMENT I

- Arida:** *Arida* changed to *Leucosyris*, which has nomenclatural priority; *A. carnosa* to *L. carnosa*, *A. arizonica* to *L. arida*, with *Arida* changed to *Leucosyris* in keys to genera of Asteraceae: in key to genera of Asteraceae, Group 6, *A. carnosa* changed to *L. carnosa* at 15, and the leads reversed for alphabetical order; in key to genera of Asteraceae, Group 14, *A. arizonica* changed to *L. arida* at 26, and the leads reversed for alphabetical order.
- Asclepias:** *A. linaria* deleted (previous inclusion based on faulty locality data), with removal from key to members of *Asclepias* as well.
- Atriplex:** some taxa moved to new genera *Extriplex* and *Stutzia*, some retained in *Atriplex*, with incorporation of new genera into key to genera of Chenopodiaceae.
- Cyatheaceae:** *Sphaeropteris cooperi* added to flora as naturalized, requiring treatment of Cyatheaceae as well as its placement in Family Key, Group 3.
- Dodecatheon:** *Dodecatheon* transferred to *Primula*, expanding the latter in CA from one to twelve taxa; four subsp. changed to vars.
- Euphorbiaceae:** *Chamaesyce* transferred to *Euphorbia*, with unification under the latter in key to genera of Euphorbiaceae, and incorporation of taxa treated in two separate keys to members of genera in TJM2, *Chamaesyce* and *Euphorbia*, into one key; the revision for Supplement I also includes addition of a species new to science, *E. jaegeri*, as well as partial treatment of taxa shown to occur as waifs in the state, *E. myrsinites* and *E. rigida*, that previously had not been included at all on the grounds that they were garden weeds that nevertheless had not escaped cultivation.
- Gamochaeta:** one species newly naturalized in CA, *G. argyrinea*, added to treatment, with incorporation of that species into key to species of *Gamochaeta*.
- Helianthemum:** all members of *Helianthemum* in North America, incl +/- five CA taxa, transferred to *Crocanthemum*, with change from *Helianthemum* to *Crocanthemum* in key to genera.
- Hyptis:** *Condea* segregated from *Hyptis* (*H. emoryi* becomes *C. emoryi*), leaving no *Hyptis* in CA, with change from *Hyptis* to *Condea* in key to genera of Lamiaceae.
- Navarretia:** *N. linearifolia*, *N. linearifolia* subsp. *linearifolia*, *N. linearifolia* subsp. *pinnatisecta* [*N. sinistra* subsp. *pinnatisecta*] recognized, leaving no infraspecific taxa in *N. sinistra*; *N. propinqua* [*N. intertexta* subsp. *propinqua*] recognized, leaving no infraspecific taxa in *N. intertexta*; *N. paradoxinota* and *N. paradoxiclara*, both new to science, added.
- Phacelia:** segregation of *P. dalesiana* to *Howellanthus*, as *H. dalesianus*; thorough revision of remainder of *Phacelia*.
- Phoradendron:** ruling by nomenclature committee resulted in change from *P. serotinum* and subspp. to *P. leucarpum* and subspp., with corresponding changes in key to members of *Phoradendron*.
- Thysanocarpus:** some infraspecific taxa that previously had been submerged recognized, another raised to species, under a different epithet, with incorporation of changes in key to members of *Thysanocarpus*.

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HECKARD AWARDS

The Lawrence R. Heckard Fund of the Jepson Herbarium was established with a generous bequest from Larry Heckard, former Curator of the Jepson Herbarium. The program supports systematic research on vascular plants (tracheophytes) of California and their close relatives in North America. The program is open to UC Berkeley faculty, staff, students, and visitors with formal appointments. Research that contributes information pertinent to advancing Jepson's *Flora of California* and *The Jepson Manual* is considered of particular importance.



This year, the Heckard Committee was pleased to award grants to the recipients listed below.

Jeffrey Benca

Matt Guilliams

Matt Guilliams & Adam Schneider

Shih-Yi Hsiung

Ingrid Jordan-Thaden

Helen Kurkjian

Adam Schneider

Scott Simono

Genevieve Walden

Isoëtes diversity in vernal pools

Lewisia systematics

Hesperolinon systematics

California pollen collection

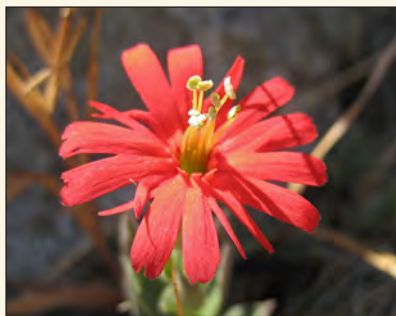
Draba systematics

Comparative study of *Lupinus* seed predation

Systematics & host relationships in CA *Orobanche*

Systematics of red-flowered *Silene* in California

Systematics of Hydrophylloideae



Photos from top left: *Lewisia cotyledon* by John Game, *Phacelia floribunda* by Genevieve Walden, *Silene californica* by Scott Simono, *Orobanche californica* subsp. *jepsonii* by John Game, *Phacelia nashiana* by Genevieve Walden, *Phacelia pedicellata* by Genevieve Walden.

PACIFIC CREST TRAIL GUIDE

Justin West, a graduate student in the Energy and Resources Group (ERG), UC Berkeley, has undertaken an ambitious challenge — to develop a naturalist guide to the Pacific Crest Trail (PCT). The 2,660-mile route from Mexico to Canada passes through desert, chaparral, montane forests, temperate rain forests, alpine peaks, wetlands, high meadows, and snow fields. To document the botanical diversity along the trail from El Campo, California, to the Canadian border, Justin spent the spring and summer of two consecutive years walking the entire route and collecting over 1,900 specimens, 18,000 photographs, and approximately 80 hours of audio notes. Using an early version of the second edition of *The Jepson Manual*, he made determinations along the way and has since followed up with botanists at UC/JEPS (John L. Strother, Margriet Wetherwax, Bruce G. Baldwin, and Alan Smith) and botanists around the state, Andy Sanders (UCR), Lawrence Janeway (CSU Chico), Debra Trock (CAS), and John Bair (riparian specialist, Humboldt Co.) to develop a draft species list of 1,450 taxa.

In order to carry out research of this kind, he had to borrow from several schools of thought. He combined his knowledge of long-distance hiking (gained in 1999 during a 5 month thru-hike of the Appalachian Trail) with his background in vegetation ecology and field botany, with more recent developments in ultra-light gear manufacturing. He had to modify some traditional field research methods in order to accommodate a 20-30 mile/day pace. Along the way he went through several iterations on a design for a lightweight field press. Likewise having the knowledge contained in the second edition of *The Jepson Manual* on his 8 ounce Kindle was absolutely crucial in cutting his pack-weight down to what ultimately amounted to about 10 lbs of core gear, 10 lbs of project/research gear, and about 12 lbs of food and water.

In order to fund this project, he raised money through the online platform Kickstarter as well as through generous gear sponsorship from several companies including Gossamer Gear and Cliff Bar.

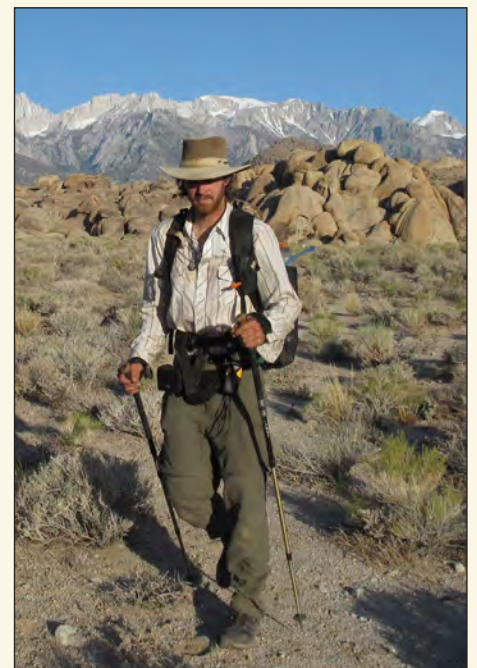
Justin's trip was shared along the way via his blog: storythewalk.wordpress.com.



Justin West using *The Jepson Manual* on his Kindle to key out a *Penstemon* while surrounded by *Arctostaphylos patula* on the PCT in the Southern Cascades of northern California (above), and hiking off the PCT near Independence, California, to get to a town to resupply food (right). Photos by L Phoa




Map of Pacific Crest Trail from pcta.org.



Paul Silva's 90th!



Symposium attendees in the courtyard of the Valley Life Science Building.

In October 2012, the Herbaria held a special event — the celebration of Paul C. Silva's 90th birthday and his legacy, The Center for Phycological Documentation. The symposium and birthday party were a huge success, with a room full of guests and four distinguished speakers: Max Hommersand (University of North Carolina), Robert Andersen (University of Washington), Sandra Lindstrom (University of British Columbia), and Charles Delwiche (University of Maryland). To document the event, many photos were taken and those are now posted on the Herbaria's Facebook page. Since the celebration, the Center has continued to develop and, with a new web site, tracking progress of seaweed research at UC is easy! ucjeps.berkeley.edu/CPD/algal_research.html 




Kathy Ann Miller and Paul Silva at his 90th birthday celebration.

Photos by Ana Penny

(Macroalgae updates cont. from page 1.)

In addition to this upcoming grant, the algae collection at UC has been receiving a lot of positive press. In February 2013, a heartwarming KQED Quest Science news story and web video was released featuring the seaweed digitization project and Kathy Ann Miller. We invite our *Friends* to watch it: science.kqed.org/quest/video/science-on-the-spot-preserving-the-forest-of-the-sea/

Additionally, in October 2012, the U.S. Department of the Interior awarded the Multi-Agency Rocky Intertidal Network (MARINE) a Partners in Conservation Award in recognition of outstanding conservation achievements attained through collaboration and partnership with others. Kathy Ann Miller (UC Herbarium), has been contributing to MARINE's long-term monitoring program for over 12 years by serving as a taxonomic consultant on surveys of rocky intertidal species at over 140 sites on the east and west coasts. We congratulate her and the leaders of MARINE for receiving this prestigious award. Read more (www.marine.gov). 



Sheraz Sadiq (KQED) talking to Kathy Ann Miller during filming of "Preserving the Forest of the Sea."

Photo by Staci Markos

Moving Ahead With New Facilities for the Jepson Library and Archives

By Amy Kasameyer

As reported in the last issue of the *Globe*, the Jepson Library and archives received a grant from the Institute of Museum and Library Services (IMLS) to install compact shelving, lockable cabinets for rare books, and special archive shelves to fully accommodate the Jepson library and archival collections. The project began this past winter. The first step was moving everything out of the library. This process began on December 10, when All-Star Rents delivered thirty wooden carts, each capable of storing between 24 and 30 linear feet of books. We carefully moved the books from each shelf to the carts. To keep the books in order during the move we put multiple labels on each cart and created a spreadsheet with the call numbers of the books on each cart, just in case researchers needed to access any of the books during our move. After we filled each cart, Andrew Doran, Administrative Curator, wheeled the very heavy carts to two locked



Secure storage for our books. Photo by Andrew Doran

unused spaces in the building. Library furniture was moved to various closets and offices around the Herbaria. Some of the furniture found new homes, such as the desk of the former Chair of the Botany Department, Dr. Alva Raymond “Sailor” Davis, which is now at the front of the Herbaria and the home of the Herbaria Visitor Log book.

Once the library was empty, we



Laying the false floor. Photo by Andrew Doran

were ready for Ross MacDonald, the company we contracted to install the shelves, to do their work, which took place the week before the Herbaria closed for the holidays, and continued for a few days after we re-opened in 2013. First, they disassembled the existing stationary library shelves. Next, they poured concrete to create a level surface for installing the compactor rails. This was the lengthiest part of the process and took up most of the week. Once they had the rails in, they built a false floor on top of the existing floor to accommodate the height of the rails. After this false floor was covered in matching floor tiles, they made quick work of installing the compactor carriages and shelves, beginning with the 5 banks of archives storage shelves at the back of the library and then reinstalling library shelves on the compactor carriages at the front of the library.

Once the dust had settled and been vacuumed up with our HEPA vacuum, we were ready to start loading the shelves. Moving the collection back into the library took much longer than moving it out because as we re-shelved the collection, we carefully vacuumed items with our HEPA vacuum on the

low suction setting and hand dusted fragile items with a special cleaning cloth called a dust bunny. Items that need special attention, such as those with fragile bindings, broken spines, or other conservation issues, were set aside and will receive treatment such as being placed in an enclosure or custom designed box. Sections such as the British Floras that we had previously not had space to shelve were finally placed in their proper locations. Not only did all the books fit in the new space, we have plenty of room on each shelf for expansion. We were finally able to put our bookends to use after years of having no space to shelve new books!

We also took advantage of the move to rearrange some sections of the library. Those of you who have visited the library in the past may remember the hundreds of green reprint boxes



Archives complete! Photo by Andrew Doran

that lined the walls of the library. These reprints are less frequently used than other parts of our library collection, so we moved them to the end of the library compactor shelves, freeing up this high visibility shelf space for more in-demand items such as our extensive collections of Californian and North American floras and botanical monographs.

(Continued on page 10)

MICROSCOPE DONORS —THANK YOU!

From December 2010 to January 2012, thirty *Friends of the Jepson Herbarium* generously donated seventeen new Leica EZ4 zoom microscopes and their traveling cases. We are proud to show them here, in use at our first on-campus workshop of the 2013 season, Mastering the second edition of *The Jepson Manual*.


The microscopes are an important tool because workshop participants are able to see small characters such as stomata, pubescence, glands, style branches, florets, and perigynia. For some groups, examining small characters is absolutely essential to correctly identify taxa and without good magnification, the characters cannot be properly evaluated. There is the additional benefit of looking closely at all structures and appreciating their innate beauty. Try looking at a fern sorus or a petal at 30×!



Photo by Genevieve Walden

(Director's Column, cont. from page 1.)


project and welcome anyone who wants to help improve it. We will make minor editorial updates from time to time; we also plan to present new peer-reviewed versions of generic treatments done by experts based on examination of specimens. Volunteers are welcome to join in this effort; please contact Paul Wilson: paul.wilson@csun.edu.

Please check back now and then to watch our progress! 

(Library Renovation, cont. from page 9)

We were able to return the rented carts on February 15. We are still working on moving all of our archive collections into the library and creating new signs for the library now that many items have moved.

The library is non-circulating but is open to the public and available for use by all visitors to the Herbaria. Our collection includes hundreds of floras from around the world, and extensive journal collection, biographies of botanists, key botanical works, foreign language dictionaries, horticultural books, and much more. We invite visitors to browse the library collection during Herbaria open hours. Our archives contain a wealth of primary source materials documenting the history of western botany and beyond. The archives include field notes, photographs, correspondence, research notes, and manuscripts from more than 100 botanists. Our archives are available by appointment as this allows us to retrieve items from storage and fully accommodate researchers in our reading room. Please contact me (librarian and archivist, Amy Kasameyer) for more information or to plan your visit.

We invite you to come and visit our redesigned library the next time you are at the Herbaria. Some of our archival material is also available online ([see ucjeps.berkeley.edu/main/archives/index.html](http://ucjeps.berkeley.edu/main/archives/index.html)). 

East
Bay
Science
Cafe



WELCOME TO THE EAST BAY SCIENCE CAFE

Held the first Wednesday of every month in the La Peña Lounge adjacent to Cafe Valparaiso at La Peña Cultural Center from 7 to 9 pm. 3105 Shattuck Avenue, Berkeley.

The East Bay Science Cafe is an informal forum for discussing interesting and relevant scientific issues. The goal is to encourage public engagement with science by inviting members of the scientific community to present topics for a casual evening of conversation. Cafes may vary in length and format depending upon the speaker and the topic. Audience questions are encouraged both during and after!

Upcoming Talks

Wednesday, April 3, 2013 Brent D. Mishler, Director of the University and Jepson Herbaria and Professor in the Department of Integrative Biology at UC Berkeley: "New phylogenetic methods for measuring biodiversity and their conservation applications."

Wednesday, May 1, 2013 Brad Balukjian, "Plant bugs and biogeography in French Polynesia."



ANNOUNCEMENTS



California Botanical Society Centennial Celebration

Founded in 1913 by Willis Linn Jepson, the California Botanical Society is celebrating their milestone anniversary on April 13 with a *Centennial Symposium, Botanical Frontiers: Past and Future*.

Invited speakers include: Bruce Baldwin, Ragan Callaway, Carla D'Antonio, Richard Hobbs, Anna Jacobsen, Brandon Pratt, Todd Keeler-Wolf, Aaron Liston, and David Peterson.

The Centennial Banquet will be held on April 13th at the Hotel Shattuck Plaza with a keynote by Kent Holsinger. The Graduate Student meeting on April 14 will feature presentations from more than fifty student speakers. More information at calbotsoc.org.



10 YEARS OF *THE GLOBE*

The Jepson Globe, 2003 to 2012, is now available as online PDFs. You can read about the spectacular wildflower bloom in spring of 2003, see the development of the Consortium of California Herbaria, follow the moves and changes that have happened over the years, and much more at ucjeps.berkeley.edu/jeps/globe/.



CAL DAY

University and Jepson Herbaria Open House

April 20, 2013, 9:00 am-4:00 pm
1001 Valley Life Sciences Building, UC Berkeley

See the famed collections of preserved plants, algae, and fungi from around the world. Talk to our researchers about the wildflower display and observe plants under the microscope. Guided tours begin on the hour from 10 am to 2 pm. Children can choose a plant specimen to identify and take home as a souvenir, and get Science@Cal Passports stamped.



For Herbarium Updates:

Follow us on Facebook: www.facebook.com/ucjeps

THE JEPSON HERBARIUM PROJECTS & RESOURCES

The Jepson Flora Project

The Jepson eFlora

Online Interchange for California Floristics

Educational Services & Resources

Botanical Workshops & Courses

Plant Identification

2,200,000+ Worldwide Plant Specimens

Botanical Library & Archives

Publications & Research Projects

Constancea: UC Publications in Botany

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).

Administrative Curator: Andrew Doran

Cultivated plants, UK flora

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 & *Flora of the East Bay*,
North American Potentilleae

Trustees: Vice Chancellor Emeritus Roderic Park, Chairman; Vice Chancellor Emeritus Beth Burnside; UC Botanical Garden Director Paul Licht; Professors John Taylor and Brent D. Mishler (ex officio)

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JEPSON HERBARIUM PUBLIC PROGRAMS

The workshop program has spaces available in two very special workshops this fall. Register by July 1 to ensure your spot!

Photo: TripAdvisor



Grasses of the Chiricahua Mountains

September 5-8, join Travis Columbus for an exciting exploration of both warm- and cool-season grasses in the Chiricahua Mountains, one of several “sky islands” surrounded by vast grasslands. Covering 607 square miles, the mountains reach a maximum elevation of 9,795 feet and contain floral elements from four major ecosystems: The Sonoran and Chihuahuan deserts, the Rocky Mountains, and Mexico’s Sierra Madre. Our home base (the American Museum of Natural History’s Southwestern Research Station in Portal, Arizona) has been described as “the best field station in the world” and is a fabulous site for plants, birds, mammals, insects, and reptiles alike.

Trees of the Smoky Mountains

September 19-22, Dean Kelch will lead a once-in-a-lifetime tour in the Smoky Mountains; the greatest living expression of the temperate hardwood forest outside of China. Although these forests differ profoundly from those of the western United States, someone with experience in western forests will encounter many familiar genera. We will visit eastern Riparian Forest, the rich Cove Hardwood Forest, dappled Hemlock Forest, ridge top Pine-Oak Forest, Beech-Maple Forest, and high elevation Spruce-Fir Forests. About 25% of Great Smoky Mountains National Park is cataloged as Old Growth Forest, so participants should expect to see some trees that are among the largest of their kind.

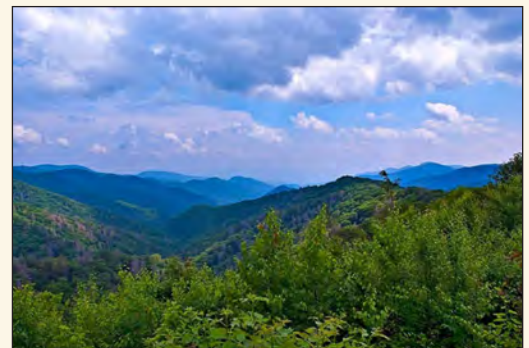


Photo by David Sung via flickr

For more details, and a link to registration information, please go to: [uc \[jeps.berkeley.edu/workshops/2013/index.html\]\(http://ucjeps.berkeley.edu/workshops/2013/index.html\)](http://ucjeps.berkeley.edu/workshops/2013/index.html)

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