



THE JEPSON GLOBE

A Newsletter from the *Friends of The Jepson Herbarium*

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Director's Column

by Brent D. Mishler

Recent Herbaria Retiree's Continue Research Efforts

Dr. Alan R. Smith and Dr. Barbara Ertter, two of the herbaria's dedicated curators, have recently retired. Fortunately, each will remain active in their research endeavors. Dr. Smith came to Berkeley in 1969 as a research botanist specializing in Pteridophytes. He was curator of this major group and also worked closely with graduate students, leading monthly "forays" to explore the collection. Barbara Ertter came to Berkeley in 1985, was Curator of Western North American Flora, and served as Administrative Curator until 2006. She also participated in the American-Iranian Botanical program. Below, each describes a handful of their ongoing projects.

Dr. Smith: In January 2007, soon after teaching a 10-day fern workshop on the North Island of New Zealand, I retired. It was a great field trip and wonderful experience with kindred spirits (See New Zealand Ferns article, this issue), but it was time, I wanted to pursue other activities in addition to continuing research in fern systematics. I continue working in the herbarium three or four days a week, to work on ongoing and long-deferred projects. Often, the research is collaborative with individuals at other institutions, for example, the ferns of Bolivia (with a German colleague), or those of

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Mehrabadi, Share Doust, Doran, Mishler, Rahmani, and Tahbaz

Visiting Iranian officials seek to enhance scientific exchange with UC botanists

by Staci Markos

High-level Iranian officials made a rare visit to the University and Jepson Herbaria in late December, 2007. Three distinguished visitors, Dr. Mostafa Rahmani, (Director of Interest Section of the Islamic Republic of Iran's office at the Pakistan Embassy in Washington D.C.), Dr. Abolfazl Mehrabadi, (Deputy Director of Interest Section of the Islamic Republic of Iran at D.C.), and Dr. Ali Asghar Share Doust, (Professor & General Secretary of the Iranian Counsel Abroad, President's Office), came to discuss the American-Iranian Botanical program that was initiated in 1999 at the University Herbarium by Dr. Fosiee Tahbaz. The ongoing scholarly collaboration between scientists and students from Iran, UC Berkeley, and other U.S. institutions has resulted in three expe-

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New Zealand Ferns - A Jepson Herbarium Workshop

Text and Photos by Joan Eiger
Gottlieb

You know you're in fern heaven when you land in New Zealand and see silver fern logos on everything from sport shirts to the sides of inter-island ferries. This global hot spot for ferns is home to about 200 species scattered through coastal, forest, low montane, and even alpine habitats. About 40% are endemic – a result of the long geographic isolation of this 3-island nation (the size of California) following its separation from the Gondwana supercontinent about 80 million years ago. Since then, its flora and fauna have been shaped by tectonic plate collisions, mountain uplifts, volcanic activity, sea level fluctuations, a series of Pleistocene ice ages, and biotic exchanges across the Tasman and South Pacific waters. Spores disperse especially easily; about 13% of New Zealand's fern species are shared with Tasmania and Australia, ~1,500 km (930 miles) to the west. There have been extinctions and adaptations as both original and migrant species

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ALSO IN THIS ISSUE



Univ. Herbarium Research



C. Perrine moves to SLO



Donald Kaplan, In Memoriam

Venezuela, each of which contains more than a thousand fern species. Undescribed taxa and taxonomic problems abound in the wet tropics, and there are no modern fern treatments for most neotropical countries. I continue to collaborate on phylogenetic work (evolutionary relationships), especially on the family Polypodiaceae, with colleagues in Europe and South America. Occasionally, I look at Californian and western North American ferns, for instance as a contributor to the second edition of *The Jepson Manual*.

Last March, a new opportunity arose – a McBryde Fellowship at the National Tropical Botanical Garden in Kauai, Hawai'i. I spent four weeks annotating specimens in the herbarium, mainly from Pacific islands, going in the field with colleagues, and involving myself in projects already underway there: ferns of the Marquesas Islands, and from Rapa in the Austral Islands, Polynesia. New species, problematic genera, and phytogeographic relationships are the central focus of my interest in ferns of these areas.

One of my passions over the years has been fern identification, especially in the Neotropics; this is a niche served by fewer than a handful of individuals around the world. Lately, I have expanded my interests in identification to such exotic localities as the islands of Sulawesi (Indonesia), Pohnpei, the Society Islands (Moorea), New Caledonia, and Madagascar, and to fern-rich areas of Vietnam. In any given year, the number of specimens I identify exceeds 5,000, and this also involves the curation of these specimens into the collections at Berkeley. Most recently, a shipment of nearly 500 specimens arrived for identification from the richest areas of southern China, in Yunnan Province.

Diversity in life is a good thing, both in helping maintain my interest in ferns, and as I reach those "Golden Years." I plan to stay active as long as the spark is there, and each new dis-

covery prompts new questions, suggests a new avenue of research, or involves me with colleagues.



Drs. Smith and Ertter, January 2008.

Photos by Bridget Wessa



Dr. Ertter: After 22 years at UC Berkeley, I opted for early retirement in September 2007, after passing administrative responsibilities into the capable hands of Andrew Doran. This was coupled with moving my primary residence back to my roots in Boise, Idaho, where most of my relatives still live and where I could have easy access to vast mountains, remote deserts, and the amenities of a vibrant small city.

By no means am I retiring from botanical research, which remains my lifelong passion, nor am I abandoning my ties to the University and Jepson Herbaria. Indeed, thanks to Mary L. Bowerman's generous gift to

the herbaria, I will be rehired on 20% time to continue as Curator of Western North American Flora. This will allow me to prepare updated versions of my *Annotated Checklist of the East Bay Flora* and *The Flowering Plants and Ferns of Mount Diablo*, and to work with UC entomologists Gordon Frankie and Robbin Thorp on a UC Press field guide to urban bees and their preferred plants. I will also continue my work on the history of California botany, my interest in *Juncus*, and my involvement in the American-Iranian Botanical Program coordinated by Dr. Fosiee Tahbaz.

My immediate focus is to complete treatments needed for volume 9 of *Flora of North America North of Mexico*, as well as the second edition of *The Jepson Manual*. In collaboration with Reidar Elven, Jim Reveal, and David Murray, I am responsible for genera in tribe Potentilleae, notably *Potentilla s.l.*, *Ivesia*, and *Horkelia*. I am also assisting Walter Lewis in the treatment of *Rosa*. The last continent-wide treatments of *Potentilla* and *Rosa* were in the early 1900's, and numerous changes have accumulated since then with no consensus existing across regional floras. As an essential preliminary to the treatment itself, I have produced ten publications during the last year containing nearly a dozen new species and varieties, numerous new combinations, several lectotypifications, and other important clarifications of the species and genera to be treated. Far from wrapping up my research on Potentilleae and *Rosa* once volume 9 is completed, I am already making plans to address multiple questions that remain unanswered, which will not only involve field work throughout western North America but also collaborators in Alaska, the Czech Republic, Sweden, and Germany.

While I look forward to increased opportunity for foreign collaboration and travel, my primary focus remains western North America, with its wealth of uncatalogued biodiversity, complex biogeography, and awesome

Ertter, continued on page 7.

New Research at the University Herbarium

Bryophyte collecting in Costa Rica

by Dan Norris, Research Botanist

From 3-17 July, 2007, I was a guest at Nectandra Gardens, about 80 km northwest of San Jose, Costa Rica. I was sponsored by the Nectandra Institute (a non-profit organization based in Alameda, California). Nectandra Gardens is open to the public and is part of the Nectandra Cloud Forest Preserve, a parcel of about 130 hectares of cloud forest, owned by David and Evelyne Lennette since 1999. They are developing an ecological education and conference center there, and they co-founded the Nectandra Institute.

My role in the project was to develop a list of species of bryophytes and lichens found in the reserve. About 648 separate collections were made during my two weeks of field studies. The collections were received at the herbarium in Berkeley in November and are now being analyzed. Some of the species found were epiphylls (lichens, liverworts, and a few mosses growing on the leaves of various vascular plant taxa). A typical leaf may have 10-15 different epiphytic species growing on it! The fraction of leafy liverworts is high, amounting to about 85% of all bryophytes collected.

Nectandra Gardens and the Nectandra cloud forest preserve are located only 15 km from the town of San Ramon. Nectandra Gardens is an ideal destination for biologically interested individuals. Five miles of trails circle



through the pristine cloud forest with placards identifying a large number of the woody species on the property. The trails are in superb condition and can be used even by physically limited individuals.

www.nectandra.org

Professor Paul Wilson of Cal State Northridge is visiting the herbarium on sabbatical. He has done research on pollination in *Penstemon*, *Calochortus*, and several other wildflower groups, but this year he is studying mosses. Already he has brought in *Oligotrichum parallelum* and *Warnstorfia pseudostraminea* from the Sierra Nevada, which are range extensions with the nearest previous records from Washington. He is collaborating with UC botanists on a comparison of the moss florulas of 14 natural areas around California.



Bryolawtonia vancouveriensis

Don R. Reynolds, Research Botanist

In November 2007, I made a trip to the Singapore Botanical Garden (SBG), with the sponsorship of Dr. Benito Tan. My interest is twofold: epifoliar fungi and Mycomycetes. I have been collecting these groups since 1963 in the neo- and paleotropics and particularly in the SE Asian area, and undertaking taxonomic studies on ascomycetes that occur in the tropical forest canopy as well as Myxomycetes in general. On this recent trip, I focused on the collections housed at the SBG and made collections from there as well as adjacent forests in the Singapore vicinity. Newly collected specimens will be incorporated in the UC Herbarium and utilized in ongoing monographic and biodiversity studies.

Mo-Mei Chen, Research Associate

In a project supported by Save-the-Redwoods League, I am continuing a project to produce a unique collected work that brings together seven previously published works on the Redwoods of the world. These works will be translated from English to Chinese for the first time and therefore, the new publication will be of worldwide scope for an English/Chinese readership and will serve to educate more than a billion people all over the globe about the importance of preserving redwoods. This project has been developed as an international collaboration between the University and Jepson Herbaria, the Beijing Botanical Institute, and the Chinese Academy of Sciences. Joint expeditions to the area in China where Dawn Redwoods occur have taken place over many years, with more than 100 botanists participating from the US and China.

From Berkeley to San Luis Obispo

by Cynthia Perrine

As announced in the last issue, Anna Larsen has taken the helm of the weekend workshops. The 2008 season is full of intriguing topics and new regions to explore (see back cover for a list of workshops). New opportunities have led my family further down California's coast, to San Luis Obispo.

We knew that what brought our family to Berkeley 4 years ago would eventually lead us away again. While I coordinated the workshop program, my husband, John, completed his Ph.D. and then a postdoctoral fellowship with the Museum of Vertebrate Zoology's Grinnell Resurvey Project. He has accepted a Conservation Biology professorship at California Polytechnic University. He started teaching in January and we look forward to continuing his mammal research throughout California.



Charlotte, Cynthia and Shannon Perrine,
near Bishop's Peak

It was an exciting summer for us! We welcomed our second daughter, Charlotte Elizabeth, on July 15th (while participants enjoyed the Flora of the Great Basin workshop in Nevada). A month later, we relocated from Berkeley to San Luis Obispo. The girls are growing fast, and we are enjoying our

new community and are becoming more familiar with the central coast's abundant outdoor opportunities. I'm thankful that we had Dr. Keil teach the Flora of San Luis Obispo County last year; come spring I might be able to name the flowers that bloom on those hillsides!

I want to take this opportunity to thank each and every workshop instructor, participant, and volunteer who helped make the past four years of weekend workshops so amazing. I'm especially grateful for interim coordinators Anna Larsen and Heather Driscoll who filled in for me during my maternity leaves. I will hold close all of the great memories I have of "20-minute" hikes, taking 12-passenger vans 4-wheeling, rare species sightings, keying by lamplight, flashlight botanizing, cooking enchiladas, and so much more. It's true that we do it for the love of plants but it's really the people who make our efforts so rewarding. 🐞

Iran, continued from page 1.

ditions to Iran and multiple visits of Iranian scholars to the U.S. Recently, Berkeley undergraduate students were hired to mount and file all of the specimens collected from Iran and then find all existing Iranian material that is already part of the University Herbarium's collection. In total, over 3,000 specimens will soon be ready for use by researchers around the world.

Dr. Tahbaz has continued to seek funding and support for this project and hence the reason for the visit in late December. During a formal reception that included dialogue in both English and Farsi, Dr. Rahmani said "Politics is going to fluctuate, but science is something that is not going to change with the president." He then added, "Animosity is not going to go away, unless these two countries enhance their interaction in peaceful arenas."

That is exactly what the Ameri-

can-Iranian Botanical program seeks to do. Brent Mishler, Director of the Herbaria, and Dr. Tahbaz have proposed a collaborative project that will investigate threats to biodiversity from development and global warming. During the meeting, Mishler said "Biodiversity transcends politics" and he received nods of agreement from everyone.

To learn more about the American-Iranian Botanical program, please visit <http://ucjeps.berkeley.edu/main/research/iran/>. Readers are also invited to attend a lecture on March 7, 2008, "A comparison of range management in Iran and the U.S." presented by Eahsan Shahriary, Research Scholar from University of Tehran and Department of Botany, Oklahoma State Uni-

versity. The lecture will be part of our "Botany Lunch" series which offers informal lectures every Friday at noon in the herbaria's meeting room. 🐞



Mishler, Rahmani, Share Doust, Tahbaz, and Mehrabadi. Photo by Cathy Cockrell, UC Berkeley Public Affairs.



Fern enthusiasts in front of Tane Mahuta Kauri tree, l to r: (back) Paul Silva, Joan Smith, Janice Forbis, Richard Beidleman, Dr. Alan R. Smith (instructor), Cynthia Perrine (coordinator), Linda Beidleman, Tara Forbis, Jan Nachlinger, (front) Milton Gottlieb, Joan Gottlieb (author), Wendy Born, Liz Parsons, Melanie Denninger

struggled to keep pace with this dynamic land.

The greatest challenge for the biota began about 1,200 years ago with Maori (Polynesian) settlers. They were followed by Europeans about 200 years ago, after the historic explorations of Abel Tasman, James Cook, and others. Burning and clearing, urban development, and alien species introductions have restricted the original flora and fauna to 10% of New Zealand's land mass. Fully half of the indigenous birds are extinct, the most dramatic being the large, flightless moas. Even the country's signature kiwis are now rare and local. Except for a couple of bat species there were no extant mammals in New Zealand until humans brought everything from rats and cats to the omnipresent sheep. Aside from humans themselves (now numbering 4+ million), the Australian possum, imported for the fur trade, has probably been the most destructive, having both the ability to climb and a voracious appetite for nearly everything green.

At the beginning of December, 2006, fourteen of us met in Auckland for a Jepson Herbarium workshop "Ferns of New Zealand," expertly led by Dr. Alan R. Smith. Our route followed the Tasman Coast north to

Waipoua Kauri Forest, then east to Kerikeri on the Pacific's Bay of Islands, where we were joined by Dr. Barbara Parris, a local fern researcher. From there, we headed southeast to Te Aroha at the base of the Coromandel Peninsula, south again and a bit inland to Rotorua in the Taupo Volcanic Zone, and then west to the Pureora Forest en route to New Plymouth – gateway city to Mt. Taranaki (Mt. Egmont) National Park. Finally, we were southbound to the hilly capital of Wellington, with its Karori Wildlife Sanctuary, the Otari-Wilton Bush, and a superb, behind-the-scenes program at Te Papa Museum and Herbarium.

During the Wellington segment, we met Patrick Brownsey¹, and John Dawson², authors of the reference books that were our trip "bibles."

For this report there is only enough space to touch on a few of New Zealand's fascinating ferns and lycopods. They are grouped here into patterns of scientific and/or aesthetic interest. The first such grouping would be the "oldies," those from families at the bottom of phylogenetic clades³, dating back 300 million years or more. That would put *Psilotum* (whisk fern) and *Tmesipteris* (fork fern) in first place. They are the sole remaining genera of what was recently thought to be the earth's oldest vascular plant family – the Psilotaceae.

The entire sporophyte body of these amazing plants consists of unbranched or dichotomously branched stems (both subterranean and aerial) and veinless or single-veined, vestigial "leaves" with synangia (fused sporangia) in their axils. There are no roots, and brown, underground rhizomes are virtually indistinguishable from the mycorrhizal gametophytes (except for gametangia on the latter). They bring the "alternation of generations" debate

to a whole new level. *Psilotum nudum* grows out of sheltered rock crevices in North Island thermal areas. Four species of *Tmesipteris* are in NZ, one of which – *T. tannensis* – is endemic. All are epiphytic, dangling from old leaf bases of tree ferns, especially dicksonias. We saw three of the four species and there was no forest that was lacking a fork fern or two. We even found excellent specimens in Whakarewarewa Forest in Rotorua, a strange place planted almost exclusively with North American conifers like California REDWOOD! Despite the floristic disconnect, lots of native NZ ferns, including tree ferns and epiphytes, thrive under the alien canopy.

NZ is home to other ancient pteridophyte families. The Ophioglossaceae (recently assigned to the same order and class as the Psilotaceae) is represented by three species of *Botrychium* and two of *Ophioglossum*, including the tiny, easily overlooked *O. coriaceum* that was seen on a New Zealand foray to the South Island a decade ago.

Marattia salicina is the stunning, sole representative of the Marattiaceae in NZ. Its huge, twice-pinnate fronds bear synangia that edge its pinnules like a perfectly stitched hem.

The endemic "mangemange," *Lygodium articulatum* (Lygodiaceae), is a common climbing fern in lowland forests. Along open areas on many "bush" trails one of the tangle or umbrella ferns (Gleicheniaceae) is sure to show. *Gleichenia microphylla*, *Sticherus flabellatus*, and the endemic *S. cunninghamii* spread their forking rachises and stunning symmetries in eye-catching arrays, despite their thicket-like growth habit. The Osmundaceae is represented by 3 genera. *Todea barbara* is a large, impressive, clump-former that generates tall, leathery, bi-pinnate fronds from massive, fibrous bases. Naked sporangia

cover the rachis ends of lower pinnules on the basal pinnae. *Osmunda regalis* has been introduced to NZ and is naturalizing in some areas. *Leptopteris* has two endemic species in NZ, one of which gets the prize as “most beautiful” fern of the trip. That would be *Leptopteris superba*, aptly named for the furry feel of its elegant, tapered fronds, segments of which project upward at a 90° angle from the plane of the leaf – a 3-D sensation.

Epiphytic and climbing ferns constitute another interesting and significant group in NZ. The filmy ferns, Hymenophyllaceae, dominate the epiphytic niche, with 27 species in NZ, and also qualify as another of New Zealand’s ancient fern lineages. *Cardiomanes reniforme* (endemic) is well-named for its large, kidney-shaped fronds. Far-creeping rhizomes can form spreading mats on the ground or up on branches and stumps. Its delicate, translucent look belies its remarkable resurrection capability. Drought resistance is clearly important to epiphytes since they cannot grow down to deeper water sources. Thus, *Hymenophyllum ferrugineum* is covered densely with stellate hairs, the endemic *H. flexuosum* has a seersucker surface all the way to the base of each frond, and *H. pulcherrimum*, also endemic, is crinkly-leafed. *Trichomanes venosum*, with the classic, tubular indusia that mark the genus, looks like strips of pale-green, tissue paper hugging moist tree trunks. Other epiphytic/epipetric NZ ferns include *Adiantum cunninghamii* (endemic), *Asplenium flaccidum*, *A. polyodon*, and the grammitids (Polypodiaceae) *Anarthropteris lanceolata* (an endemic genus), *Ctenopteris heterophylla*, *Grammitis billardieri*, *G. ciliata* (endemic), and *G. pseudociliata*. The dryopterid *Rumohra adiantiformis* (cultivated for long-lasting fronds used in flower arrangements) and the lycopod *Huperzia varia* also thrive on arboreal perches in NZ. And, of course, all species of *Tmesipteris* are epiphytic. Dr. Smith noted that conifers are generally free of epiphytes (something to do with their bark or resins?).

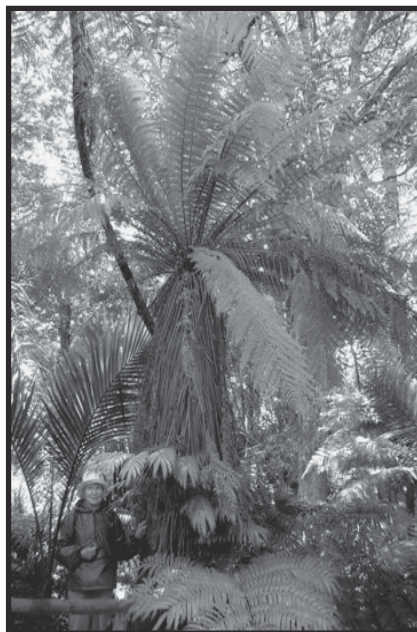
The NZ flora is notable for several true climbing ferns. These are unrelated genera that begin life on the ground, often in juvenile form with small, simple, strap-shaped leaves. They reach maturity as their long-creeping rhizomes make their way up a support. Included in this group are *Arthropteris tenella* (Tectariaceae), *Blechnum filiforme*, *Lygodium articulatum* (endemic), *Microsorium scandens*, and *Pyrrosia eleagnifolia* (endemic).

Other marvels of NZ pteridology are the majestic tree ferns that dot the landscape and are such significant parts of the forest understory. DNA technology is finally clarifying the relationships within this group of eight related families, only some of which have species that could be described as “trees”. All NZ tree ferns are in the families Cyatheaceae and Dicksoniaceae. Most of the NZ species are endemic and can reach impressive heights of 20 m (65’). Their colossal fronds can be 5 m (16’) long and form dense skirts that characterize the dicksonias. The genus *Cyathea* is found in the New World tropics

and NZ species listed under this name are more accurately placed in the pantropical genus *Alsophila* (including the famed silver fern *A. dealbata*) or in the Old World genus *Sphaeropteris* (e.g., black ponga *S. medullaris* with sleek, dark stipes)³. Not all “tree” ferns are especially tall. *A. colensoi* is accurately dubbed the “creeping” tree fern. It seldom gets more than 1 m (3.3’) tall, normally growing somewhat prostrate.

There was a lot of interest in the composition of tree fern trunks because they are commonly lashed together in NZ to make decorative fences, new plants often sprouting from axillary buds. Cross-sections confirm that tree ferns are not “woody” in the sense of cambium-generated secondary xylem tissue. Rather, the bulk of their girth is composed of fibrous frond bases and adventitious roots. Primary vascular bundles and pith occupy a small, central area. It is a WOW moment when one realizes that arborescent ferns arise from fertilization events on the same types of tiny, ephemeral gametophytes that generate gammitids!

The three endemic fern genera in NZ are worthy of special note. They are *Anarthropteris* (Polypodiaceae), *Leptolepia* (Dennstaedtiaceae), and *Loxoma* (Loxomataceae). *Anarthropteris lanceolata* is a gammitid fern and a relatively common forest epiphyte, growing at or below eye level on trunks or rocks. It looks like short straps hanging limply from their supports. Bulging, round sori seem oversized on the small fronds. As with most NZ ferns, the sori have no protective indusia. *Leptolepia novae-zelandiae*, which Dr. Smith saw often on the South Island, may also have been seen during our Te Aroha trek. It favors stable, dark forest (unusual for a dennstaedtioid) and has jagged-edged, triangular indusia that open at the pinna margins. Broad, deltate fronds are very



Article author Joan Gottlieb poses next to New Zealand’s national symbol, the silver tree fern.



finely dissected and have conspicuously reduced basal, basiscopic pinnules. This field image is important, because *Leptolepia* resembles the dryopterid genus *Lastreopsis*, whose three NZ species have reniform indusia and greatly exaggerated basal and basiscopic pinnules. Last, but hardly least, is *Loxoma cunninghamii*, a magnificent, sizable fern of clearings, open forests and banks, thriving in poor, heavy soils. Distinctive, tubular indusia fully cup their contained sporangia and project outward, like narrow thimbles, from notches at pinnule margins. *Loxoma* is a Northland fern, still abundant on the Coromandel Peninsula, but its wider range is giving way to development. We saw it at The Fernery, a glass-roofed greenhouse complex set into an excavated hillside in Pukekura Park, New Plymouth.

One cannot leave NZ without marveling at some of its non-pteridophyte flora – especially its antipodean, broadleaf conifers. On the North Island massive kauri trees (*Agathis australis* – Araucariaceae), with their metallic-grey, resinous bark and parallel-sided trunks – 6 m (20') in diameter – can rise unbranched for 20 m (65') before spreading their crowns (actually the lower branches are shed early and the scars are sealed over). These giants can live 2000+ years and have a direct lineage going back 100 million years. Until recently, they dominated extensive forests in Northland, along with podocarps like rimu (*Dacrydium cupressinum*), totara (*Podocarpus totara*), and other “forest

primeval” species. Remnants of these remarkable “gumland” forests are now fully protected.

In the “goblin” cloud forests on Mt. Taranaki – as close to heaven as a fern lover gets – an unusual angiosperm, with a strong fern connection, grows. The smooth-barked *kamahi* (*Weinmannia racemosa* –

Cunoniaceae) starts life as an epiphyte on the fibrous base of a tree-fern trunk. Roots soon grow down into soil and multiple trunks grow up, eventually reaching 25 m (80'). This often obliterates the original fern host, but sometimes merely surrounds it – an interesting association, but generally not to the benefit of the fern.

We meditated on the importance of all these native, often unique plants in NZ while enjoying lunch in Wellington under a huge, metallic sphere with a cutout silver fern motif. It was suspended between the art museum and shops across Gallery Square. This is a country that truly appreciates its fabulous ferns, as did we, with Dr. Alan Smith's generous encouragement and expertise.

REFERENCES

Text reprinted with permission from *Fiddlehead Forum*, Volume 34, number 1

- ¹Brownsey, Patrick J. and John C. Smith-Dodsworth, 2000, *New Zealand Ferns and Allied Plants*, Auckland NZ, David Bateman Ltd
- ²Dawson, John and Rob Lucas, 2000, *Nature Guide to the New Zealand Forest*, Auckland NZ, Random House New Zealand.
- ³Smith, Alan R. et al., 2006, “A classification for extant ferns.” *Taxon* 55:705-731.

Ertter, continued from page 2.

beauty. In addition to significant field work, my goals include fostering interactions among regional herbaria, land management agencies, botanical gardens, conservation organizations, and other institutions and individuals with botanical interests. Towards this goal I have become a research associate at the Snake River Plains herbarium (SRP) of Boise State University and the Harold M. Tucker herbarium (CIC) of the College of Idaho (my alma mater), as well as the Missouri Botanical Garden herbarium (MO).

I am also very much enjoying getting a garden started at my new abode, successfully incorporating some favorites from Berkeley (including Shasta snow-wreath), while experimenting with a new palette in an area where competitive gardening has recently taken hold. I have already had the pleasure of hosting friends from California, and continue to treasure both long-established and newly formed friendships in a life-style decision that I am enjoying immensely. 🌿

**As you gear up for spring
botanizing, don't forget
to take the
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test run !**

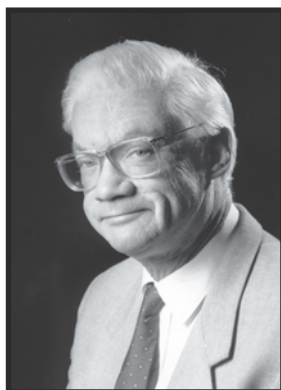
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Please forward any comments
you may have about these
treatments to the Scientific
Editor,
Dr. Thomas Rosatti
(rosatti@berkeley.edu).

In Memoriam



Donald Kaplan (1938-2007).

Faculty, staff, and students of the Herbaria will remember Dr. Kaplan as a devoted teacher, colleague, world-renowned plant morphologist, author, and railroad enthusiast. Dr. Kaplan earned many honors and awards and much has been written about him including a portrait in *The Jepson Globe* (2002, V13#2). He described himself as a “communicator for the plants” and we truly valued his ideas, research, and fellowship. We will miss him.

Dr. Kaplan is survived by his wife, two sons, and sister. A campus memorial is being planned for early 2008. To be included on the mailing list for this event, please contact Staci Markos (smarkos@berkeley.edu).

Lawrence R. Heckard Fund Awards

The purpose of the Lawrence R. Heckard Fund of The Jepson Herbarium is to encourage research in the systematics of the vascular plants of California and their close relatives in North America. The Heckard Fund Committee received 10 proposals for 2007 (not including mini-grant proposals received off-cycle during the year for *The Jepson Manual* revision). Below is the list of awards made in response to our regular call for submissions this year:

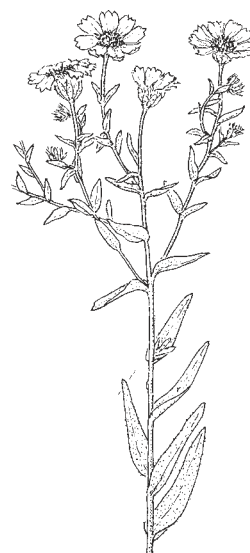
Investigator

Ackerly, David
Baldwin, Bruce
Bolmgren, Kjell
Driscoll, Heather
& Chelsea Specht
Ertter, Barbara
Moore, Abigail
Park, Michael
Shuldman, Michael
Simms, Ellen
Stuart, Stephanie

Subject of proposal

Digitization of Baker seed data
Tarweed systematics
Rhamnus/*Frangula* comparative ecology
Californian *Allium* systematics

Potentilleae floristic treatments
Grindelia systematics
Collinsia systematics
Comparative ecology of woody California endemics
Phylogenetic and population studies in *Lupinus*
Comparative studies of cold adaptation in Sierra



Layia heterotricha

The Herbarium and all of the grant recipients are very grateful to the late Larry Heckard for his generous bequest, it will continue to fund research projects such as those listed above in perpetuity.

Mark Your Calendar!

East Bay Science Cafe
meets monthly in the
evening. For details, see:
[http://bnhm.berkeley.edu/
about/sciencecafe.php](http://bnhm.berkeley.edu/about/sciencecafe.php)

CaLDAY

Saturday,
April 12th

Don't live in the
Bay Area? Visit
Sciencecafes.org
to find a cafe near you!

Support the Second Edition!

Have you been thinking about making a gift to support the second edition of *The Jepson Manual*?

Would you like to be acknowledged or honor a loved one or friend in the front pages of the new *Manual*?

If so, please consider joining our sponsorship program. All gifts of \$1,000 or more will be acknowledged in the new *Manual* (must be received in full by December 31, 2008).

With acknowledgment in the new *Manual*, your gift will serve as a lasting tribute to your dedication to the conservation and understanding of the flora.

Sponsorship opportunities are exclusive and are available on a first-come, first-served basis.

Please see our web site:

<http://ucjeps.berkeley.edu/jeps/friends/sponsored.html>
for a complete list of genera, families, and subregions that have already been sponsored.

California Native Plant Society

CNPS 2009 Conservation Conference
January 17 - 20, 2009
Sacramento Convention Center
& Sheraton Hotel

This conference provides a unique forum for California's diverse audience to learn about science and policy-based solutions for improving native plant conservation.

See www.cnps.org for details!



THE JEPSON HERBARIUM PROJECTS & RESOURCES

The Jepson Flora Project

Second Edition of *The Jepson Manual*
Online Interchange for California Floristics
Jepson Desert Manual

Online Horticultural Database

Electronic Publication of Jepson's

A Flora of California

Ecological Flora of California

Publications & Research Projects

Constancea: University of California

electronic publications in botany

DeCew's Guide to the Seaweeds

Flora of Mount Diablo

Unravelling the dynamics of mating-system evolution in tribe Collinsieae

Building the Tree of Life — A National Resource for Phyloinformatics and Computational Phylogenetics

Deep Green Plant Phylogenetics: Novel Analytical Methods for Scaling Data from Genomics to Morphology

Beyond "Deep Green": Towards an Integration of Plant Phylogenetics and Plant Genomics

Demography and Germination Ecology of the Endangered Santa Cruz Tarplant

Phylogeny and evolution of the true thistles, genus *Cirsium* (Compositae)

Niche conservatism, functional trait evolution, and the diversification of the California vernal pool flora

Educational Services & Resources

Botanical Workshops & Courses

Plant Identification

2,200,000+ Worldwide Plant Specimens

Botanical Library and Slide Collection

Administration

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

Director: Professor Brent Mishler

Curator: Professor Bruce Baldwin

Research Associate: Bridget Wessa

Jepson Flora Project Staff:

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Project Manager: Staci Markos

Database Admin.: Richard Moe

Scientific Editor: Tom Rosatti

Managing Editor: Margriet Wetherwax

Administrative Curator: Andrew Doran

Senior Museum Preparator: Ana Penny

Assistant Museum Scientist: Kim Kersh

Development Coordinator: Staci Markos

Administrative Assistant: Edith Summers

Public Programs: Anna Larsen

Globe Editors: Perrine & Markos

Volunteers Needed!

VOLUNTEER OPPORTUNITIES IN THE UNIVERSITY AND JEPSON HERBARIA

Curatorial Volunteers Needed!

Are you interested in learning more about the California flora, gaining firsthand experience with herbarium techniques, and socializing with fellow native plant enthusiasts? Then have we got a deal for you! Selected **Saturdays** of each month are **Group Volunteer Days** in the Herbaria. What better way to spend those rainy winter weekends!

Group Volunteer Saturdays begin at 10 am and finish up by 5 PM (participants need not stay the full time). 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 and abilities.



2008 Volunteer Saturdays

February 9

March 8

April 5

May 10



For more information, please call or write to Ana Penny (510) 642-2465, apenny@berkeley.edu

California Botanical Society

Annual Banquet

February 23 - UC Santa Cruz Arboretum, Santa Cruz, CA - Speaker: John N. Thompson, Department of Ecology and Evolutionary Biology, UC Santa Cruz

“An Ecologist’s View of How to Build a Plant.”

Annual Banquet Requires Purchase of Advance Registration, see web site for details

Free Lectures - 2063 Valley Life Sciences Building, UC Berkeley - 7:00 PM.

March 20 - Science-Based Policy of Genetically Engineered Organisms at the Environmental Protection Agency - Richard Whitkus, Department of Biology, Sonoma State University, www.sonoma.edu/users/w/whitkus/

April 17 - California Alliums: Insights into a Biogeographic Radiation and Edaphic Evolution, Chelsea Specht, Plant and Microbial Biology, University of California, Berkeley, pmb.berkeley.edu/~specht

Refreshments will be served before (6:45 PM) and after the seminars.
For additional information please call (510) 643-7008 or visit www.calbotsoc.org



FRIENDS OF THE JEPSON HERBARIUM

CATEGORIES OF GIVING

Name(s) _____

Address _____

City, State Zip _____

Telephone / email _____

- ☐ I would like to join the *Friends* / renew my membership (contribution to the annual fund).
- ☐ I would like to support the Second Edition of *The Jepson Manual* with my gift of _____.
- ☐ Enclosed is _____ of a total pledge of _____ to be paid over _____ years.
- ☐ Please acknowledge me as a sponsor of _____ (indicate genus name, e.g., *Lilium*, family name, e.g., Poaceae, or other category) by printing my name in *The Jepson Manual* (for gifts of \$1,000 or more, see side bar).
- ☐ Please acknowledge my gift as anonymous.
- ☐ My or my spouse's employer will match this gift. (Please enclose company form)
- ☐ This gift is _____ in honor of _____ in memory of _____

Please make your check payable to UC Regents
or charge your gift.

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Account # _____

Exp. Date _____

Signature _____

MAIL TO:

The Jepson Herbarium
1001 VLSB #2465
University of California
Berkeley, CA 94720-2465

The information you provide will be used for University business and will not be released unless required by law. A portion of all gifts is used to defray the costs of administering the funds.
All gifts are tax deductible as prescribed by law.



GIFTS TO SUPPORT THE SECOND EDITION

- \$25,000 Honor the contributions and founding principles of W. L. Jepson, former Jepson Trustees Lincoln Constance and Robert Ornduff, and former Jepson Curators Rimo Bacigalupi and Lawrence R. Heckard
- \$10,000 Support taxonomic efforts in an organizing unit of the *Manual* Ferns, Gymnosperms, Dicots, or Monocots
- \$5,000 Support floristic effort for a particular bioregion (Twenty-four listed in the *Manual*)
- \$2,500 Support taxonomic work in a particular family
See the Herbarium web site for an up-to-date, complete list
- \$1,000 Show enthusiasm for your favorite genus
(pledge \$200 / 5 years)

ANNUAL SUPPORT

- \$500 Contribute to the illustration of a new species
- \$250 Help accession specimens from the backlog
- \$100 Support taxonomic research at the species level
- \$35/\$50 Basic membership in *Friends of the Jepson Herbarium*

SPONSORSHIP OPPORTUNITIES are exclusive and will be available on a first-come, first-served basis. With approval from the donor, gifts at the \$1,000 level and above will be acknowledged in the front pages of *The Jepson Manual* (gifts must be received by December 31, 2008).



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University of California, Berkeley
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Workshops remaining in the 2008 series

March

Intro to Bryophytes

March 1-2

Morphology and ID

March 8-9

Bryo Inventory

March 15-16

South Diablo Range

March 27-30

Fifty Families *wait list only

March 29-30 & April 5-6

April

Fifty-one Families *wait list only

April 5-6 & 12-13

Plant ID ~ San Diego Co.

April 10 -13

Santa Cruz Island *wait list only

April 17-20

Desert Mountains

April 24-27

April, continued

Compositae

April 26-27

May

Shasta-Trinity Forest

May 1-4

Poaceae *wait list only

May 10-11

Medicinal Plants

May 17-18

Sierra Valley

May 29-June 1

June

Bee Pollination

June 6-8

Paleobotany

June 14

July

Juncaceae

July 18-20

September

Climate Change

September 10-14

October

Insects & Coevolution

October 18

November

Lithocarpus densiflorus

November 23

Please visit our web site at: <http://ucjeps.berkeley.edu/workshops> for full descriptions and registration information,
or contact Anna Larsen, (email preferred) alarsen@berkeley.edu or (510) 643-7008