

STUDENT GRANTS UPDATE

Due to changes in our newsletter format and publication time, we have not yet reported the outcome of our 2001 student grant competition.

Four graduate students in three graduate groups were selected in Spring 2001 to receive Davis Botanical Society Student Research Grants.

Leslie Allen, Ecology Graduate Group, is the first masters degree student to receive a research grant. Her study of pollination ecology and genetic identity of *Chryothamnus nauseosus*, rabbit brush, on the western slope of the Sierra Nevada received the E. Eric Grissell Award. She works with Art Shapiro.

Esteban Bortiri of the Plant Biology Graduate Group was named to the first Larry Mitich award for field studies of the seven native species of *Prunus* in California. Esteban works with Dan Potter.

Elizabeth Leger of the Ecology Graduate Group won the DBS award. She will study the invasion of Califor-

nia poppies in Chile and subsequent morphological changes in the species.

Jon Price was awarded the G. Ledyard Stebbins Award for his dissertation research testing potential factors relating to biodiversity in the Hawaiian flora. Jon has collected data from herbaria and plants in situ and has added much information about species he has found in degraded and threatened locales. Jon is a member of the Geography Graduate Group, working with Debbie Elliott-Fisk.

While we are reporting on the recipients of the Society's 2000-2001 grants, it is also timely to announce the imminent competition for next year. In 2001-2002 four awards of \$500 each will be available, thanks to generous donors and the newly endowed grant in memory of Prof. Jack Major announced elsewhere in this issue. Application information is available at the Herbarium; deadline for submission is mid-March.

K. Mawdsley

LASTHENIA

LASTHENIA, the Newsletter of the Davis Botanical Society, is published by the Society in collaboration with the staff of the UC Davis Herbarium and Botanical Conservatory.

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LASTHENIA

NEWSLETTER OF THE DAVIS BOTANICAL SOCIETY

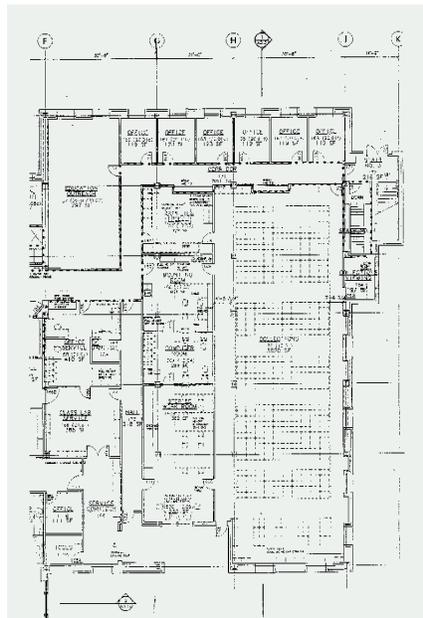
NATIONAL SCIENCE FOUNDATION FUNDS HERBARIUM EQUIPMENT, JACK MAJOR STUDENT GRANT ENDOWED

We happy to announce that the UC Davis Herbarium has received a \$350,000 grant from the National Science Foundation to fund the purchase of herbarium cases, library shelving, and a movable aisle storage system. The equipment will be installed in the Herbarium's new collections area in the Sciences Laboratory Building in 2004, and move-in is planned for the fall of that year. The Herbarium's specimen capacity will expand by about 30 percent, which will both allow the collections to grow and help protect the specimens from damage due to compression.

Site clearance for the Sciences Laboratory Building began in December, and ground-breaking will occur in May. The Sciences Laboratory Building is expected to be the most modern sciences teaching facility in California, and the new herbarium will be an important resource for students and faculty, the agricultural community, and the general public.

The campaign to raise private support for the new Herbarium ended the year with almost \$500,000 in gifts and pledges towards the \$2.5 million goal. As part of this effort, friends and colleagues of June McCaskill have donated nearly \$80,000 towards the \$150,000 needed to name the new plant identification room in her honor.

In another fund-raising area of great interest to DBS members, a year-end gift of more than \$7,000 from an anonymous donor helped establish the Jack Major Memorial Endowment to support student field research in botany,



Floor Plan of New Herbarium Space in the Science Laboratory Building.

especially in the areas of plant ecology, plant systematics or plant geography. Income from a founding endowment of \$10,000 will support a new Jack Major Award as one of the annual student grants awarded by the Davis Botanical Society. Fund raising continues for this effort, which has a goal of \$25,000.

For details on how you can support the herbarium or the conservatory with a gift, please contact Jackie Schad at (530) 754-9254 or jjschad@ucdavis.edu.

J. Schad and E. Dean

BOTANICAL SOCIETY NETS A PRESIDENT

We have a butterfly expert leading the Botanical Society this year—what's going on? Well, if you were lucky enough to attend Art Shapiro's Botanical Society talk on butterflies in botanical art (Fall, 2000), you will have realized that Art isn't just an expert on butterflies. He is a true Renaissance man with an avid interest in almost any topic, especially natural history and biogeography. Art has been at UCD since 1971, first as faculty in the Zoology Department, and since the early 1990s in the Section of Evolution and Ecology (with a secondary affiliation in Entomology). He teaches popular courses on evolution and systematics and spends an admirable amount of time with either a coffee cup or a butterfly net in his hand. Each winter, he sponsors a contest for spotting the first cabbage butterfly of the new year—and usually wins it himself.

Art grew up on the outskirts of Philadelphia. While roaming the local woods, he developed a very early

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Herbarium

The good news in the herbarium is that our plans for a new space are continuing smoothly. We have final architectural plans, and groundbreaking for the new Laboratory Sciences Building will take place in late spring. I submitted a collections grant to the National Science Foundation in September for new cases and a compact storage system for the new herbarium facility, but we still have some fundraising to do to secure the space. If you have any ideas for our

fundraising team, please contact me or Jackie Schad (Director of Development for the Division of Biological Sciences).

We were very lucky to have long-time student employee Melissa Cheung working with us all summer. Last spring Melissa curated our oak collection, and before she left us for pharmacy school, she labeled hundreds of collections from the 1980's. In October, we hired 11 student mounters, and although it made our small space quite busy and crowded at times, we were happy to see all the specimens that were mounted. We were also fortunate to have Kate Carpenter

(one of our NSF interns from the summer of 2000) working with us again all fall. She helped us with many different curatorial tasks.

Our volunteers continue to be of immeasurable help. We were happy to host two student interns this past fall—Rebecca Wenk and Katrina Bradley—both of whom will be continuing with us in the winter quarter. Graduate student and Arboretum staff member Mark Bibbo helped collect and identify specimens from Quail Ridge this past summer. Layne Huiet continues to curate our fern collection on weekends and her days off. Before being whisked away to a paid position in the conservatory, Eva Bayon helped us curate our lichen collections and re-label our grass cabinets. New to our volunteer force is Denny Nolet, who wandered in with an interest in conifers. He has finished curating all of our gymnosperms, and he is now refolding our angiosperms. Kook-Hyun Chung continues as a volunteer filer, and the unmatched Kate Mawdsley helps us with just about anything you can think of. We were happy to honor Kate, Layne, Eva, Kook-Hyun and Susan Gloystein, who designs *Lasthenia*, at our fall meeting, and we thank them for their dedicated service over the past year. If you are interested in volunteering in the herbarium or helping us collect specimens, please contact Ellen Dean or Jean Shepard at 530-752-1091.

E. Dean

SOCIETY PROFILES

Art Shapiro

BOTANICAL SOCIETY NETS A PRESIDENT (CONT FROM PAGE 1)

interest in the natural world, settling on insects by age 9 and butterflies by age 11. As an undergraduate at the University of Pennsylvania, he worked with the renowned ecologist/biogeographer Robert MacArthur, ending up in Arizona investigating the distribution of butterflies on altitudinal gradients. He also developed his growing interest in botany, an interest that continues to this day. During his graduate work on sympatric speciation at Cornell, Art took an excellent course in Tropical Botany, which began his life-long interest in the New World tropics. Since his arrival at UCD, he has had two main thrusts to his work. The first deals with the evolution and biogeography of New World cabbage butterflies (especially of cool temperate and high Andean regions); the second focuses on the monitoring of the butterfly fauna along an established east-west transect in Northern California. He also has had a number of projects on the role of butterfly host plants in butterfly speciation (an interest that goes back to his graduate days at Cornell).

Art has always been a keen supporter of the UC Davis Herbarium. Back in the 1970's, he began a tradition of bringing the "weed of the week" to then-Curator, June McCaskill. He specializes in finding weird range extensions—plants growing out of their normal habitats. He also has an amazing eye for weeds recently introduced from outside of California. One of his proudest weed moments was in the early 1970's, when he noticed the noxious weed "giant foxtail" (*Setaria faberi*) growing in Rocklin. He reported it, and it was quickly eradicated, saving Rocklin from at least one new weed. We have dozens of Shapiro herbarium specimens in our collections, mostly from California, but also from Chile and other areas of South America. We thank Art for his dedicated service to the Botanical Society and look forward to many other botanical contributions from him.

E. Dean



Dr. Art Shapiro, insect net in hand.

Conservatory

Our dream of labeling the collection with photo-engraved black anodized aluminum labels, which are much easier to read, less obtrusive, and more permanent than flimsy white plastic labels, is on its way to realization. We have never had adequate funds for the labels, engraving charges, or staffing to do the needed collection-wide specimen-by-specimen name verification. Thanks to a combination of a Genetic Resources Conservation Program grant for \$2,300, a record-breaking return from the Plant Faire (over \$12,000) and the availability of Dr. Eva Bayon, this project is currently under production. Dr. Bayon has accepted the challenge of researching and verifying current and accurate names for our several thousand plants and forty years of

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SPRINGTIME FLORAL EXUBERANCE

Two articles in this issue initiate an occasional feature sharing favorite botanical locations and outings with DBS members. Look for Prof. Art Shapiro's enticing description of the challenges and rewards of Mendocino Pass, the destination for the Society's late Spring field trip. The other suggestion, the walk along the Hite's Cove Trail in Merced County, is well known and remarkable for lavish displays of foothill wildflowers from March to May, depending on the vagaries of the weather. It comes at the end of a long drive, although it uses familiar major highways, and makes a pleasant stop on a trip to or from Yosemite Valley.

Hite's Cove Trail is a gently sloping 3.5 mile dirt trail paralleling the south fork of the Merced River from Highway 140 to the site of a former hotel. The trail, along the north side of the river, has steep slopes above and below it which are densely covered with flowers in a good year. On my most recent visit, in mid-March 2001, I found carpets of poppies (*Eschscholtzia cespitosa*), lacepod (*Thysanocarpus cruvipes*), and popcorn flower (*Plagiobothrys nothofulvus*) with blue dicks (*Dichelostemma capitatum*) as a vivid

accent. Red maids (*Calandrinia ciliata*), cream cups (*Platystemon californicus*), several Phacelias, tomcat clover (*Trifolium willdenovii*) and bird's eye gilia (*Gilia tricolor*) also added color. Evident but not yet blooming were soap plant, several lupines, a *Linanthus*, a fritillary, fiesta flower (*Pholistoma auritum*), and probably dozens of others I didn't recognize from leaves alone. While much of the trail is in full sun (bring a hat, water and sun screen), there are a couple of shaded, wetter areas, one of which sparkled with star-like waterfall buttercup (*Kumlienya hystricula*). Side trails descend to rocks along the river at a couple of points, a good location for snacks or a picnic. I should admit that I've never gone all the way to the end of the trail; a couple of miles have usually sated my appetite for spring color and consumed the available time.

The trailhead for the Hite's Cove Trail is at Savage's Trading Post, a store now specializing in art and jewelry, 23 miles east of Mariposa on Highway 140. There are good signs along the highway for the trading post, and the trailhead is easily visible to the left of the building. Parking is along the highway, where

there are portable toilets for hikers and river rafters. Highway 140 is a clearly signaled exit from US99 at Merced. The main route into Yosemite National Park, it is heavily traveled on week-ends.

A useful illustrated guide to the flora of the trail was published in 1985 by the Merced Canyon Committee, a group advocating protection of the South Fork of the Merced River. *Wildflowers of the Hite's Cove Trail* by Steven J. Botti and Ann Mendershausen contains keys, illustrations and descriptions of over 40 species, and a comprehensive plant list. Terminology, of course, follows Munz rather than the 1993 *Jepson Manual*. I bought my copy at Savage's. Norman Weeden's *Sierra Nevada Flora*, 4th ed., 1996, Wilderness Press is also helpful, widely available, and a portable alternative to the *Jepson Manual*.

If traffic along 140 going east past Mariposa is slow, there's a compensation. Sharp vertical ridges on both sides of the road were vibrant, almost fluorescent with poppies last March. What a spectacle!

K. Mawdsley

FOREST HEALTH IN CALIFORNIA AND SUDDEN OAK DEATH SYNDROME AN EXCERPT FROM OUR FALL SEMINAR

There are many impacts and pressures on the forests of California. These range from development pressures of urbanization and agriculture to the impacts of logging and fire suppression. In addition, there are numerous diseases that impact the health of California forests. These diseases include those caused by native pathogens as well as exotic pathogens.

Forest health in western conifer forests has become a significant concern as large-scale mortality has increased in the last decade. While there are many definitions of forest health, most mention that unhealthy forests have pest and mortality levels outside the range of historical variability. Historically, pest mortality of individual or small groups of overstory trees may have been a significant influence on the fine-scale species composition characteristic of mixed-conifer forest. However, with fire suppression pests may now be the most

common form of disturbance in these forests driving both understory and overstory mortality, increasing forest gap size and mortality of large, old-growth overstory trees. A number of studies have suggested that increases in stem density and reduction of tree species diversity with fire suppression increase the scale and severity of pest mortality.

Yosemite Valley serves as a good example of how a native pathogen has "emerged" in recent years by interacting with human caused changes to the landscape. Root disease is now among the most important vegetation management considerations in Yosemite Valley. Large trees with root decay have fallen in the valley causing human fatalities and property damage. Many of the problems associated with root disease can be traced back to the history of vegetation management in Yosemite

Valley. Wildfire suppression and meadow draining were implemented during the first century of management by Euroamericans. These practices created conditions which encouraged the development of a dense conifer forest within the valley. Tree removals for vista clearance, campground and lodging construction, and bark beetle control projects created thousands of stumps. Many of these stumps have been infected with spores of *Heterobasidion annosum*, a fungal pathogen which causes root decay in conifers. The fungus has since spread from initial infection sites into the surrounding forest creating hundreds of enlarging tree mortality gaps. Park resource managers have established a program of hazard tree removal, but efforts continue to reconcile natural ecosystem processes with public safety. Gaining an understanding of the current

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RECENT GIFTS TO THE JUNE MCCASKILL MEMORIAL FUND

Frederick Addicott
Lori K. Alessio
Susanne Armstrong
Gary & Mary Breckon
John W. Brinley
Eleanor M. Buehler
M. Dale Christensen
Eric Conn
Elizabeth L. Corbin
Alva Day
Ellen Dean
Frank R. Drysdale
Bill B. Fischer
Michael D. Fleschner
Thomas & Mary Fuller
Ernest M. Gifford
Louis & Georgette Grivetti
Cole C. Hawkins
Judy Jernstedt
Ann Johnson
Franz R. Kegel
Donald & Yoshie Kyhos
Mary Cecil Major
Kate Mawdsley
William F. McCoy
Charlotte Mitich
Gene Miyao
Terence Murphy
Evelyn B. Neithercutt
Robert & Roswita Norris
Patricia L. Piper
James & Nancy Pollock
Warren G. Roberts
Frederick J. Ryan
H.A. & Maxine Schmalenberger
Arthur M. Shapiro
Jean V. Shepard
Paul Smith
Marian J. Stephenson
Roberta Stevenson
John M. Tucker
John L. Vankat
Marilyn L. Wilson
Toshimasa Yutani
Section of Plant Biology

Thank you

FOREST HEALTH IN CALIFORNIA (CONT FROM PG 3)

disturbance regime and how human management has influenced disturbance in Yosemite Valley will be important in planning restoration strategies and re-establishing the historic fire regime. Within the context of larger resource management goals in the valley, disease- and insect-initiated gaps may provide future opportunities for habitat enhancement and meadow restoration.

California forests are also impacted by several exotic pathogens. Such exotic pathogens can be particularly destructive because the host plants have not evolved any sort of resistance to the pathogen. Some of the most important exotic pathogens in California forests include: white pine blister rust (*Cronartium ribicola*) on 5-needle pines (e.g. *Pinus lambertiana*, *P. albicaulis*, *P. monticola*), pitch canker (*Fusarium circinatum*) on Monterey pine (*P. radiata*), and *Phytophthora lateralis* root disease on Port-Orford-cedar (*Chamaecyparis lawsoniana*). Each of these diseases has had a major impact on plant populations as well as on how these species are managed.

Over the past seven years, a new disease of tanoak (*Lithocarpus densiflorus*), coast live oak (*Quercus agrifolia*) and California black oak (*Q. kelloggii*) has killed tens of thousands of trees in central California. The whole crown of affected trees often appears to die rapidly, and the foliage may turn from an apparently healthy green to brown within a few weeks. Named 'Sudden Oak Death' in the popular press, the disease has been shown to be caused by a recently described pathogen, *Phytophthora ramorum*. In California, the disease has been found from Big Sur to southern Mendocino County. The furthest inland sites are in Solano County. Recently the pathogen has been found in isolated areas in southern Oregon. Initially, research on the disease concentrated on oaks. However, in December 2000, it was learned that the pathogen occurred in Germany and the Netherlands on landscape rhododendron and viburnum. Since then the host range of *P. ramorum* in California has been greatly expanded and now includes rhododendron, madrone, huckleberry, manzanita, California bay laurel, buckeye, toyon, honeysuckle and bigleaf maple. On these hosts, *P. ramorum* causes a variety of foliar and branch symptoms. Thus, what was once considered an oak problem actually may

affect entire ecosystems. In some mixed-evergreen forests nearly all woody plants can serve as host for *P. ramorum*.

The origin of *P. ramorum* is unknown, although preliminary data support the idea that it is an exotic in California forests. Exotic species of *Phytophthora* have been considered responsible for extensive tree mortality and negative ecological impact in forests of Australia, Europe and North America. *Phytophthora cinnamomi* has devastated the jarrah forests of western Australia, killing over 50 % of all plant species over several hundred thousand acres. The broad host range of *P. ramorum* that we have discovered in California forests suggests that this pathogen has the potential to cause similar, long-term landscape level changes in these forests. Loss of oaks and other overstory trees and shrubs will have cascading effects on these ecosystems including increased fire hazards, soil erosion, and loss of habitat for wildlife. Developing restoration plans for these ecosystems will represent a significant future challenge for forest managers. Prevention of spread of the pathogen to areas outside the known range will also be a challenge and has brought together numerous state and federal agencies. Canada and South Korea have already implemented quarantines.

Whether exotic or native, each of the diseases discussed here (and many more not discussed) points to the importance of humans in changing host-pathogen interactions. This change could be a human-mediated change of the environment (e.g., fire suppression) leading to the emergence of a native pathogen or humans bringing a new pathogen in contact with a susceptible host through global movement of ornamental plants. While plant diseases have received considerable attention in agricultural situations, they have less often been considered in natural ecosystems. If we are to address issues of forest health in coming years, we will need to examine the role pathogens will play in any sort of management schemes.

D. Rizzo

Ed. Note: We thank Professor Rizzo for preparing this resume of his talk at the Society's Fall program meeting.

MENDOCINO PASS FOR BEGINNERS

One of the most amazing—and least known—botanical and ecological transects one can do in northern California in a car in one day is the trip from the Central Valley across the high North Coast Range to Covelo on the combination of Highway 162 and USFS road FH7. DBS will do it as an organized field trip on Saturday, June 29, 2002. Unless, that is, the road is still blocked by snow.

Most of us tend to think of the Coast Range in low-elevation terms—oak woodland and chaparral. But from northern Colusa County northward, the crest rises ever higher and the ecological zones become ever more boreal. By Goat Mountain, on the

Colusa-Lake County line, one encounters dense White Fir forest. At Mendocino Pass one finds old-growth Shasta Red Fir, with elevations over 2000m and a winter snow pack that often exceeds four meters and persists locally into early summer.

Most of us also think of the Inner Coast Range as appallingly dry in summer—so it comes as a revelation that the Mendocino Pass area possesses a series of boggy montane meadows to rival anything at comparable elevation in the Sierra for the diversity and flamboyance of their wildflower displays. And at the high point on the road is a remarkable edaphic barren that simulates a Sierran tree-line, not only in

aspect, but in flora as well. Here occur the only Coast Range colonies of the subalpine sagebrush, *Artemisia arbuscula*, and *Orthocarpus copelandii*, a purple-and-white flowered owl's clover with a pagoda-like appearance.

Slightly further west, there is an isolated colony of daggerpod, *Phoenicaulis cheiranthoides*, a striking subalpine mustard with pink phlox-like flowers, which, like the other species mentioned, is familiar to hikers on the volcanic mudflows of the central and eastern High Sierra. But what is it doing here?

Beyond the barrens are the Bald Hills, a remarkable combination of

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OAKS OF THE COAST RANGE FOCUS OF FALL TRIP

The society's fall field trip, a day focused on identification of oaks of the North Coast Ranges, was not to be missed. The trip was led by the fine team of Dr. John Tucker, emeritus professor of botany, and Dr. Pam Muick, Director of the Solano Land Trust and co-author of *Oaks of California*.

John, Pam and Herbarium Director Ellen Dean had prepared a wonderful handout including an overview of oak subgenera, descriptions of species, maps of geographic ranges, drawings and keys for the species we would see, including a glossary. When we arrived at our first stop our leaders began by going over the characteristics of the two major divisions within the oaks, the white oak and red oak groups. These groups have their own distinctive leaves, acorns, bark and wood. White oaks have warty acorn cups, while red oaks have flat, imbricated scales on the acorn caps. The inside of the mature acorn is woolly for the red oaks, while the whites are glabrous. Leaf lobes, lobe shape and margins differ too, and this is where it becomes difficult for the beginner. We also learned that there is a third group, the intermediate oaks, which share characters of both the red and white groups. Surprisingly, we learned that the oaks do have limits to their wanton ways and only hybridize within their subgenera.

Our first stop was a special site where serpentine and sedimentary rock are adjacent. Here we were introduced



Pam Muick and John Tucker measure a valley oak during our fall field trip.

to two oak species that look similar but differ in their substrate specificity. *Quercus berberidifolia* is a tall shrub, widespread, usually on sedimentary rock, while *Quercus durata* looks similar but is found on serpentine. Both are white oaks. Also at this site we were introduced to the interior live oak, *Quercus wislizeni* (red oak group), often confused with the previous two species and sometimes with the coastal live oak, *Quercus agrifolia*, although they don't usually grow together. And another species at this site was *Quercus x morehus*, the oracle oak, a fertile hybrid between *Quercus kelloggii* and *wislizeni*.

After the first stop we headed back to Solano County and up Mix Canyon

Road for a lunch stop on the ridge and some delicious *Quercus XX* acorn bread made by Evelyn Healy. Here we again found *Quercus durata*, but it wasn't on obvious serpentine. Also present was our first *Quercus kelloggii*, the California black oak. We were able to find both first year and second year acorns on some of these trees. Black oak acorns were traded by Indians throughout the state. Our location provided views of the Sierras to the west; to the east we could see across Solano and Napa counties to San Pablo Bay. Definitely worth a return trip in the spring!

On our way down from the ridge we made a stop for another *Quercus wislizeni* and a beautiful canyon live oak, *Quercus chrysolepis*, the only intermediate oak that we would see. Interestingly we learned that this oak has the widest distribution of any of the California oaks.

The finale of the trip was definitely impressive. We visited a site on private property with a valley oak approximately seven feet in diameter (measured at the time by Pam). According to Pam this is the second largest *Quercus lobata* in Solano County. In addition we saw our first blue oak, *Quercus douglasii*, up close. What a great day to learn more about this wonderful but sometimes confounding group we all struggle with identifying. Thanks to John, Pam and Ellen for a memorable outing.

L. Huiet

MENDOCINO PASS FOR BEGINNERS (CONT FROM PG 5)

pygmy Oregon Oak-bunchgrass-rabbitbrush-*Ericameria* savanna with a bizarre admixture of montane and "High Sierran" wildflowers, with occasional boggy seeps filled with *Lupinus polyphyllus* and almost pure native fescue grassland...and...and say, was that Monument Plant, *Frasera speciosa*?

How about knee-high pink shooting stars with (usually) only four petals, that key out to *Dodecatheon jeffreyi* but probably are something new?

The ecology of the Bald Hills was described by Harold Clark in 1937 (*Ecology* vol. 18: 214-229). A great deal of both vegetational and floristic information can be gleaned from Gladys L. Smith and Clare R. Wheeler, 1991, *A Flora of the Vascular Plants of Mendocino County, California*, even though much of the area isn't in Mendocino County. Papers by Heckard and Hickman on the nearby Snow Mountain flora (1984, *Madrone* 31:30-47; 1985 *Wasmann Journal of Biology* 43:1-42) are also very useful.

To access the area, take I-5 to Willows. Turn west on 162 to just north of Elk Creek. 162 jogs right, then abruptly left. It remains paved and in excellent condition several km past Grindstone Lookout and into mixed conifer forest. The pavement ends abruptly and the road thereafter is more or less recently graded dirt. Follow the "FH7" signs throughout. The road will eventually take you to Covelo, where you can hook up with paved 162 again and go home on Highway 101, if so inclined. Beware! Between Elk Creek and Covelo are about 80 km of road with no services and no people, except the occasional logging truck. One thing you should definitely expect in summer is a thick coating of dust—on you, your car, your lunch....

The area is on pages 65 and 66 of the DeLorme Northern California Atlas and Gazetteer. The high country is snowed shut much of the winter. Camping is available at Plaskett Meadows in season; inquire via the Mendocino National Forest headquarters at Willows (530/934-3316), or feel free to contact me (530/752-2176).

A. Shapiro

YOLO COUNTY BOOKSHELVES

CALIFORNIA BOTANICAL TREASURES: THE SAGA CONTINUES

2001 has been a very good year for California botany. In addition to the two new books reviewed below, this year has also seen the publication of the Sixth edition of the California Native Plant Society's *Inventory of Rare and Endangered Plants of California*, Elizabeth McClintock's *Trees of Golden Gate Park and San Francisco*, and the sumptuous *Illustrated Flora of Yosemite National Park*. These will be reviewed in later issues.

Trees and Shrubs of California.

By John D. Stuart and John O. Sawyer. California Natural History Guide 62. University of California Press, Berkeley. 467 pp. 2001. \$22.50.

This attractive book is a true field guide, somewhat in the format of such woody plant guides as the Golden Book *Trees of North America* published by Frank Brockman in 1968 (still in print). It is in closer lineal relationship to Jepson's *Trees of California* (1923) and Howard McMinn's *An Illustrated Manual of California Shrubs* (1939), but in size and binding is more truly a field manual that can be carried in the pocket. The flexible binding appears likely to be resistant to the challenges of transport via canoe, horseback, or rappelling up Half Dome.

With the exception of the books by Jepson and McMinn, books on California trees and shrubs have covered only parts of the state. Many of these "partial" floras have also been published in the *California Natural History Guide* series: *Native Trees of the San Francisco Bay Region* by Woodbridge Metcalf (no. 4; 1959); *Native Trees of Southern California* by Victor Peterson (no. 14, 1966); *Native Shrubs of Southern California* by Peter Raven (no. 15, 1966); *Native Shrubs of the San Francisco Bay Region* by Roxana Ferris (1968); and *Native Shrubs of the Sierra Nevada* by John Thomas and Dennis Parnell (no. 34. 1974).

Compared with earlier field guides such as *The Complete Trees of North America* by Tom Elias (1980), the new

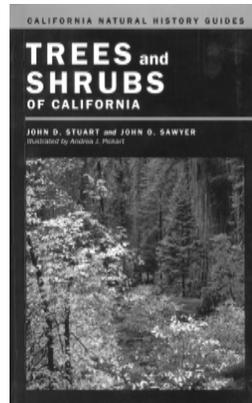
book by Stuart and Sawyer shows both similarities and differences, both of a positive and negative nature. For example, a comparison of the treatments of the Pacific Dogwood (*Cornus nuttallii*) in the two works is instructive. The distribution map in Stuart and Sawyer shows the dogwood occurring throughout most of California outside of the deserts, in contrast to that of Elias, where it occurs mainly in the Klamath and Sierra, with spotted disjuncts elsewhere. The map of Elias clearly comes closer to reflecting where the dogwood actually grows in California. The "cosmopolitan" distribution in Stuart and Sawyer would give the uninitiated reader the impression that mountain dogwoods flourish among the vernal pools of the Central Valley, which

of course the authors know is not the case. It is clear from their discussion in the introductory section that Stuart and Sawyer are indicating in their maps the "bioregions" in California where each species occurs, even though the plant populations may occupy only a fraction of the area that is shaded. The advantage of the mapping system in *Trees and Shrubs of*

California is that it links the geographic distribution to the ecological zones and areas in California, but in my opinion the trade-offs involved make adoption of the new system questionable.

The description of *Cornus nuttallii* in Stuart and Sawyer is more concise than that of Elias, but is peculiar in concluding with features of twigs, after the flowers and fruits, contrary to usual botanical practice. On the other hand, economic uses and ecological information given by Stuart and Sawyer are useful, even though brief. The keys to dicot genera are rather unusual in being overwhelmingly reliant on vegetative characters, flowers and fruits being mentioned only occasionally and incidentally. This has the advantage that trees and shrubs can be readily identified at all seasons of the year, but it may be puzzling to many users, who may expect at least mention of flower colors.

It is evident that Stuart and Sawyer



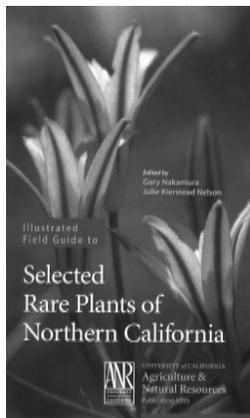
have written their book with the amateur, not the professional botanist, in mind. The alphabetical arrangement of genera is a feature reflecting this. It will probably irritate some botanists at a more advanced level, who would prefer to have genera in the same family together. However, this is not much of a problem in the conifers, and for the flowering plants it is mitigated by the systematic synopsis in Appendix B. The colored photographic plates are attractive, and give varying effective pictures of the plants involved. The line drawings of Andrea Pickart are excellent, and greatly increase the value of the book for identification.

Overall, the coverage of California taxa appears appropriate, outside of the desert areas in the southeast. The authors note in the preface that desert scrub is less well covered than other areas. The four species of *Yucca*, which are common, are included, and the three species of *Agave* are omitted, perhaps because of their succulent habit. For the woody plants in the arid areas, Ronald Taylor's *Desert Wildflowers of North America*, which includes desert trees and shrubs, is more helpful. Only one glaring omission was noted: *Lyonothamnus*, one of the most striking of the Californian endemic genera, is completely omitted from the text. Since the introduction states that all native tree species are included, this omission is inexplicable. However, the treatments of the taxa that are included appear well-designed and informative.

Trees and Shrubs of California is a commendable volume of the California Natural History Guide series. A well-designed and illustrated, durable book, it will be very useful for anyone travelling around California to become acquainted (or reacquainted) with the diverse woody flora of California. It could also be profitably consulted by naturalists in adjacent parts of Oregon and Nevada.

Illustrated Field Guide to Selected Rare Plants of Northern California. By Gary Nakamura and Julie Kierstead Nelson (eds.). University of California Agriculture & Natural Resources Publication 3395. Oakland, CA. 370 pp. 2001. \$36.00 .

This attractive volume joins a considerable throng of field guides to California plants, but is different from all the



others in its focus on endangered species. It is a remarkable hybrid work: on one hand, it is an interesting offshoot of the six editions of the *Inventory of Rare and Endangered Vascular Plants of California* (1974-2000). At the same time, it is a field guide to identifying wildflowers on the model of *A Field Guide to Pacific States Wildflowers* by Niehaus and Ripper (1976).

The introductory section has a succinct overview of the state and federal programs for documenting the status of rare and endangered plant species. This is made intelligible to the reader by three very informative tables that list the legal endangered status of each species treated, and its occurrence in geographic and vegetational regions of northern California. For each species, a descriptive treatment includes Latin and common names (with synonyms), geographical and ecological data, diagnostic features, a line drawing, a distribution map, and paired photographs of the habitat and habit of the plant. Genera are arranged alphabetically, and in addition to the general index there is also a systematic index in which species are listed under the appropriate families. There are no keys to taxa, as *Selected Rare Plants of Northern California* is designed to be used in coordination with statewide identification manuals such as *The Jepson Manual* or local ones such as *Flora of the Trinity Alps*.

The layout of the book is attractive, especially for the generally excellent photographs; the line drawings are taken from a variety of sources and vary in quality. The ring binding makes it easy to rapidly flip pages in search of a particular species. The cardboard covers, however, are probably not waterproof, so the book should probably be carried in a plastic bag or envelope.

An unusual aspect of *Selected Rare Plants of Northern California* is its authorship by a consortium of botanists from a variety of government agencies. Ellen Dean is the sole academic botanist credited as co-author, so although Yolo County is not included within the geographical scope of the book, the Davis Herbarium was involved in its preparation. The book reflects great credit on the authors and on the University of California Division of Agriculture & Natural Resources. I hope that in the coming years it will be joined by complementary volumes that will treat the threatened and endangered plant species in the other regions of California.

G. L. Webster

DIRECTORS' CORNER (CONT FROM PAGE 2)

sometimes ambiguous records. We look forward to reporting to you when these labels are installed.

For squirming grammar and middle school students on outreach tours we have found limiting group size to eight or less to be essential for good communication and interaction. Because we had staff and docents available, Ernesto suggested subdividing the Plant Biology 1 and Biological Science 1C lab tours this year into 3 groups of 10 instead of 2 groups of 15. The lab review tours have always been well received and effective, but working with 8-10 rather than 12-15 students at a time has greatly increased our ability to engage those on the margins of our tight aisles and to respond to more individual questions.

The Conservatory interns' projects Fall quarter were very practical for both them and us. Meghan McGinty, in preparation for spending six months with Education Abroad in Costa Rica, assembled an English-Spanish, Spanish-English glossary of botanical terms. Huong Kim Ding, who is applying for pharmacy school, compiled an extensive report on toxicologically safe and toxic plants for use in the home interior and exterior landscape. Along with the report she included a summary of symptoms and treatments for exposure to those plants' toxins.

T. Metcalf