

Friends of the Herbarium

Biological Sciences Herbarium

California State University, Chico

Newsletter

Vol. 6 Nos. 1 & 2

October 2000

Friends of the Biological Sciences Herbarium

Annual Meeting

4:00 pm Saturday

November 4, 2000

Holt Hall Room 129

~ ~ ~

Grand Opening of the newly remodeled
Herbarium expansion into Room 129!!

~ ~ ~

Reception at 3:00 pm

~ ~ ~

Jim Jokerst Field Botany Award
and presentation by award recipient Leah Mahan

~ ~ ~

Special Presentation
"Origin and relationships of California tarweeds
and Hawaiian silverswords"

by **Bruce Baldwin**

Curator of the Jepson Herbarium

~ ~ ~

Distinguished Service Award
presented to Michael Abruzzo
by Friends of the Biological Sciences Herbarium

~ ~ ~

Dinner

Join us as the Friends of the Herbarium
take Dr. Abruzzo out to dinner
immediately following the Annual Meeting

MESSAGE FROM THE BOARD

These are exciting times for the herbarium! Databasing of the herbarium collection is in full swing. Funds from the National Science Foundation (NSF) have arrived and the Curator is now working more time, overseeing and participating in the databasing of the herbarium collection as well as the usual curatorial duties and herbarium correspondence. Also thanks to NSF, two students are working ten hours per week doing data entry and occasional other herbarium duties, in addition to one Work-Study student also working ten hours per week with the database (Michelle Cederborg, Leilani Heath, and Stephanie Lopez). There are also two volunteers putting in a few hours each week to the database: Bill Carlson (who is also on the herbarium database committee

Continued on page 2





Friends of the Herbarium

The **Friends of the Biological Sciences Herbarium**, California State University, Chico, was formed to help maintain the high quality of work that has been known to be associated with the herbarium. The primary purpose of the group is to provide community support for the herbarium. This includes raising funds for items that are not covered under the University budget. Scientific and academic pursuits are the focus of the group. The Friends also offers low cost workshops and classes on various botanical topics.

The Friends of the Biological Sciences Herbarium operates under auspices of the California State University, Chico, and enjoys non-profit status and has access to the use of University classrooms and equipment.

Memberships are renewed on May 1 of each year.

BOARD OF DIRECTORS

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Herbarium Director
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Newsletter

Volume 6 Numbers 1 & 2

The Newsletter is published three times a year by the **Friends of the Biological Sciences Herbarium**, California State University, Chico. Subscription is free with membership. Submissions on herbarium related topics are welcome.

— 2000 WINNER —

Jim Jokerst Field Botany Award

Congratulations to the *Jim Jokerst Field Botany Award* winner. The year 2000 award was given to **Leah Mahan** for her studies of the growth and reproduction of *Hemizonia fitchii*. A summary of this project is presented on page 2. Leah will be giving a short update of her research to the Friends of the Herbarium Annual Meeting on November 4.

At least two awards are offered each spring, and each winner receives a cash award of \$250. Watch for the announcement for the 2001 award in the next newsletter. Because there was only one award winner for 2000, there will be three awards offered in 2001. LJ

Continued from page 1

Message from the Board

along with Barbara Castro and the Curator) and Susan Bazell (who is also helping to catch up curation of the bryophyte collection). Plus, Ann Willyard has been helping with technical details of database management. If you would like to volunteer some time to help this databasing effort please give the herbarium a call.

The remodel of room 129 for the herbarium expansion is complete and is now a fully functional part of the herbarium. The general workspace is now in room 129 and most of the herbarium library is also being moved there. Room 129 is now the general entrance to the herbarium. Two Friends of the Herbarium workshops have already taken place there – Introduction to Keying Grasses on September 9 had the room completely filled! – and the Grand Opening is planned there for the Friends of the Herbarium Annual Meeting on November 4! The

Distinguished Service Award for 2000 will go to Dr. Michael Abruzzo who, as Dean of the Department of Biological Sciences, was instrumental in keeping the remodel of room 129 moving along towards completion despite the myriad of complications, some of them almost fatal to the project!

As already mentioned the Friends of the Herbarium Annual Meeting will take place on November 4. This gathering will celebrate the grand opening of the herbarium expansion, and will include a Special Presentation by, Dr. Bruce Baldwin, Curator of the Jepson Herbarium. Bruce's talk is titled "Origin and relationships of California tarweeds and Hawaiian silverswords (Compositae)." Bruce has this to say about his talk: "Tarweeds and silverswords (subtribe Madiinae) represent a fascinating evolutionary radiation of the sunflower family that has become ever more interesting as the pieces of the puzzle have fallen into place. I will be presenting perspectives on the diversity, origin, historical biogeography, and historical ecology of Californian and Hawaiian Madiinae based on results from recent biosystematic and phylogenetic investigations of the group. The presentation hopefully will change your view of the often-maligned tarweeds and their glamorous oceanic-island descendants." A local tarweed will also be discussed in the presentation by 2000 Jim Jokerst Field Botany Award winner. Leah Mahon will be updating us on her research into the reproductive biology of *Hemizonia fitchii*, Fitch's spikeweed. See page 3 for more information.

And of course the Friends of the Herbarium Board of Directors continues to work to ensure that the

Continued on page 5

The growth and reproduction of *Hemizonia fitchii* in the Northern Sacramento Valley of California

A project by Jim Jokerst Field Botany Award winner Leah Mahan

Background.

Hemizonia fitchii or Fitch's spikeweed (Asteraceae) is a native annual common in grassland and foothill woodland communities throughout northern California. From my own field observations in 1999, I found that its seeds germinate in the late winter and young plants develop a rosette-like form in the spring. During this time, they slowly form leaf glands and a pungent smell. The plants continue to grow in the summer, when they lose their rosette form, develop a needle-like leaf type which is also pungent, and expand into a tumbleweed form. The species blooms with many yellow inflorescences in mid and late summer, when there is little or no rainfall. Individuals complete their life cycle and die in the fall after producing seed.

Project goal.

The goal of the project is to find new information about the plant and its habits. A life table will be constructed for the populations of plants studied. Primary mode of pollination will be found. This information will lend itself to further studies on interesting aspects of the plant. The ultimate goal of the project will be the completion of a thesis for a Masters degree at CSU, Chico and publication of the project in a botanical journal.

Reason for choosing the project.

Although *Hemizonia fitchii* is a common grassland and foothill woodland plant in northern California, no studies have been published on germination requirements,

growth patterns, or reproduction for this species. These features of many other species of *Hemizonia* have been studied extensively in California and elsewhere. The only published study found focuses on the chemical properties of *H. fitchii*, and their repellence of mosquito feeding and oviposition under laboratory conditions. The lack of information in the literature, in addition to the potential future uses of this widespread plant for insecticidal purposes, make it a prime candidate for field studies.

Field work location and protocol.

Four study sites will be used to look at growth and reproduction of *H. fitchii*. Two of the sites are located at the Vina Plains Preserve in Tehama County, and are approximately 1 km apart on the preserve, one in the "Barn" pasture and one on the newly acquired tract of land just north of the Wurlitzer pasture. The other two sites will be located on Table Mountain and near the Oroville airport in Butte County. Permission has been obtained by the landowners to use these four sites.

At each site, seedling emergence and survival will be studied along a 100 m transect. Established plants from this original seedling emergence and survival transect will be marked and followed throughout the season. An additional study area will be chosen adjacent to each survival transect and measurements will be taken on fifty marked plants within this study area to determine plant features as they relate to time of season. Sites will be visited weekly throughout the entire life cycle of the

plants. Plant height, width at largest area, rosette stage, presence of detectable odor, glandularity, leaf types present, number of open inflorescences, and time of mortality will be



determined for the marked plants at each site. These data will be used to construct a life table and a survivorship curve for the plants studied at each site. Soil samples will be collected from the sites and sent to a lab for detailed analysis. The plant features measured will be compared based on soils within and between sites using ANOVA with null hypotheses of no difference between individuals or between sites. Reproductive aspects such as mode of pollination and seeds per plant will be determined for other plants at each site.

Planned completion date.

Hemizonia fitchii will be studied at the sites for two field seasons, beginning in the spring, 2000. The study will end in the fall, 2001. Completion of a thesis will occur in the fall, 2001, or the spring, 2002.

Project costs.

Although studies on *Hemizonia fitchii* will be mostly labor-intensive, there will be some costs associated with the project. Large expenses will arise from transportation to and from the project study sites, in addition to lab expenses for detailed analyses of soil samples. A camera with macro lens, also a major expense, has recently been purchased and will be used for documentation of the study and production of slides for future presentations.



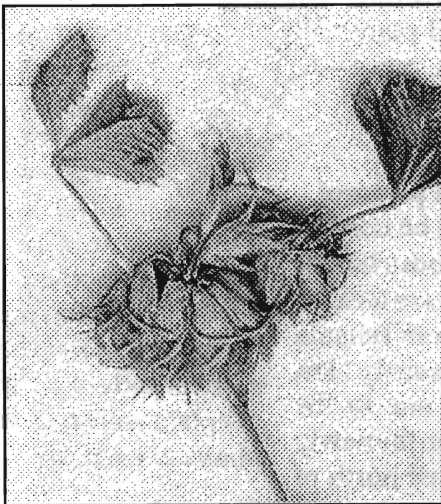
NOTEWORTHY COLLECTIONS

by Vernon H. Oswald

Trifolium cernuum Brot.

Lowell Ahart continues to find new plants for the flora of Butte County and California. On May 13th of this year, he was collecting near the boat ramp at the Thermalito Afterbay off of Larkin Road when he found a clover very similar to *Trifolium retusum* L., which we had discovered at Dales Lake Ecological Reserve,

T e h a m a County, in 1995 (Oswald & Ahart 7223, CHSC). At the time, *T. retusum* was not only new for California but apparently had not been reported previously from North



America (Michael Vincent, pers. comm.). Thus *T. retusum* in Butte County would be a significant range extension. However, when I compared Lowell's clover with the collections of *T. retusum* in the University Herbarium, it became obvious that the Thermalito Afterbay clover was different. Using the *Trifolium* key and descriptions in *Flora Europaea*, I concluded that we were dealing instead with nodding clover, *T. cernuum*. Dr. Vincent has kindly examined some duplicate material and confirms that the clover is indeed *T. cernuum*.

Neither *T. cernuum* nor *T. retusum* is in The Jepson Manual. Both are annuals lacking an involucre at the base of the head and bearing distinctive recurved calyx teeth. They can

be separated as follows:

- 1 Leaflets oblong, with a sharp tip; individual flower stalks much shorter than the calyx tube, not or only slightly deflexed in fruit *T. retusum*
- 1 Leaflets truncate or notched at the tip; individual flower stalks about as long as the calyx tube, strongly deflexed in fruit *T. cernuum*

T. cernuum and *T. retusum* are native to Europe. Lowell's discovery is a new record for Butte County. According to Dr. Vincent (pers. comm.), *T. cernuum* has been reported previously from Sonoma County (Best, C. et al. 1996. *A Flora of Sonoma County*. California Native Plant Society, Sacramento). He knows of only one other report from the United States, a waif from near a wool mill in South Carolina collected in 1958.

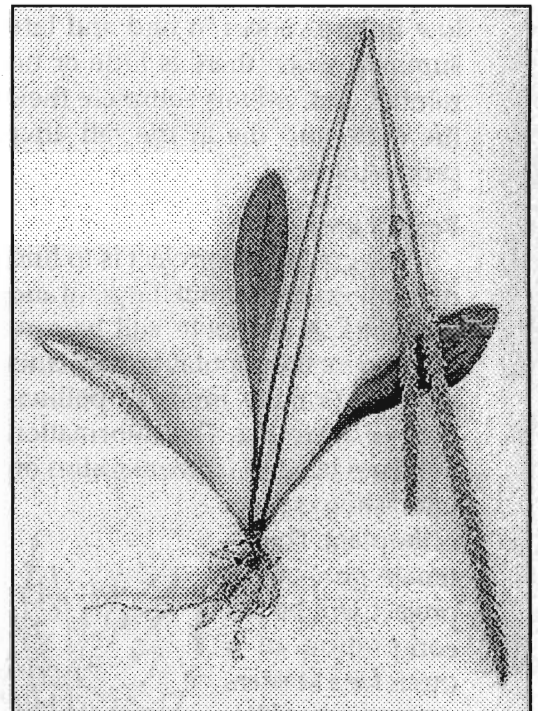
Lowell's collection of *T. cernuum* (Ahart 8343), is deposited in the California State University, Chico, Herbarium (CHSC); the W.S. Turrell Herbarium at Miami University, Oxford, Ohio (MU); the herbarium of the California Department of Food and Agriculture, Sacramento (CDA); and the herbaria at the University of California, Berkeley (UC/JEPS).

Plantago virginica L.

Virginia plantain is native to the eastern and central United States. In The Jepson Manual, it is reported from the Cascade Range Foothills of Shasta County and from along the south coast of California. The late Lauramay Dempster, who wrote The Jepson Manual treatment of *Plantago*, was unaware of several collections

of Virginia plantain from the Police Pistol Range in Upper Bidwell Park made in May, 1983 (Oswald 421 & 470, CHSC).

Lowell Ahart has now found several large populations of *Plantago virginica* on the marshy edges of Thermalito Afterbay (Ahart 8348 near the boat ramp off of Larkin Road on 13 May 2000; Ahart 8366 on the north-east side of Hwy 162 Causeway on 17 May 2000). The Upper Bidwell Park population consisted of both staminate and pistillate plants. The populations along the Thermalito Afterbay are apparently cleistogamous — after an extensive search, only pistillate plants were seen. Lowell's collections of *Plantago*



virginica are deposited in CHSC, CDA, and UC/JEPS.

Aristida dichotoma Michx.

This summer Lowell has been concentrating on collecting spike-rushes for Dr. Galen Smith, who is writing the treatment of *Eleocharis* for the Flora of North America

Continued on page 5

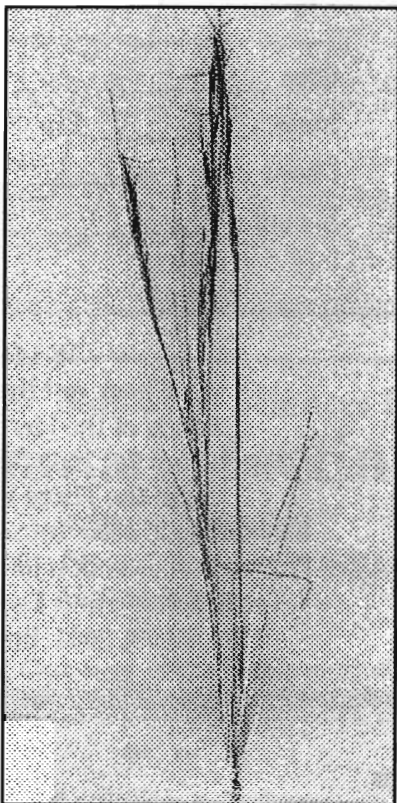
Continued from page 4
Noteworthy Collections

project. On June 27th, he visited Big Bald Rock, a large granitic outcrop located south of Brush Creek in Butte County. Although unsuccessful in finding spike-rushes, he did collect a small grass from thin soil along a crevice in a depression on the outcrop. Upon closer inspection of his specimens, he correctly identified them as an annual species in the three-awn genus *Aristida*. Since we have only a single annual species of *Aristida* in Northern California, he decided that the grass was *Aristida oligantha*, even though it didn't look typical.

When I was filing his collection in the University Herbarium, I saw that it was a most unusual *Aristida* that did not key properly in The Jepson Manual. In checking several other floras, I found that it was a perfect match for *A. dichotoma* listed in The Flora of the Great Plains. It also compared favorably with several exchange sheets of *A. dichotoma* from the eastern United States that we have in the University Herbarium. Dr. Kelly Allred, who wrote the treatment of *Aristida* in The Jepson Manual, has kindly examined some duplicate specimens and confirms that Lowell's grass is *A. dichotoma*.

A. dichotoma is native to the East and Midwest, ranging from Maine to Wisconsin and Kansas, then southward into Florida and Texas. It grows in dry waste areas, often in sandy soil. Because of its preference for sterile places, it has been called pov-

erty-grass (Gray's Manual of Botany) or churchmouse three-awn (Flora of the Great Plains). It apparently has not changed its preferences in California since Big Bald Rock can be a very dry and sterile place on a hot, summer day!



erty-grass on the granite, Lowell spotted additional churchmouse three-awn in sandy soil above the seep. The grass is very inconspicuous — perhaps a well-trained eye and systematic survey of other granite outcrops in Butte and Plumas counties might extend the range of *A. dichotoma* in Northern California.

How did a grass from east of the Rocky Mountains come to be in the hinterlands of Butte County? Dr. Allred wrote that "this is an interesting distribution, but somewhat similar to that of *A. oligantha*, which spreads across the Midwest, skips the Intermountain Area (more or less), and pops up again in quite good numbers in Northern Califor-

nia. I have a guess that the occurrence of these two is related to early pioneer migrations along the Oregon Trail and then south into California. Would this make any sense to you...?" Well, perhaps — we will probably never know.

On August 5th, Lowell and I returned to Big Bald Rock so that I could see the grass in place. After some diligent searching, the spot was relocated, and I was able to take some photographs. Later we drove several miles to a seep on a granite outcrop adjacent to Bean Creek Road southeast of Little Bald Rock. After examining some inter-

esting plants on the granite, Lowell spotted additional churchmouse three-awn in sandy soil above the seep. The grass is very inconspicuous — perhaps a well-trained eye and systematic survey of other granite outcrops in Butte and Plumas counties might extend the range of *A. dichotoma* in Northern California.

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***Cyperus iria* L.**

Lowell's original collection of *A. dichotoma* (Ahart 8519), is deposited in CHSC and UC/JEPS. Additional vouchers of *A. dichotoma* from Big Bald Rock (Ahart & Oswald 8623) and from Bean Creek Road (Ahart & Oswald 8624) are deposited in CHSC, CDA, UC/JEPS, and the Herbarium of New Mexico State University (NMC).

In the February 2000 issue of the Newsletter (Vol. 5 No. 3), Lowell reported on the discovery of a sedge, *Cyperus iria*, from the edge of Woodruff Lane in the rice-growing region of Yuba County. This discovery added a new species to the California flora. On August 12th, I was walking along a track in the Oroville Wildlife Area leading to the large dredge pond on the west side of the Feather River between Palm and Vance avenues. In wet mud along the track, I noticed a sedge that looked familiar. It was *C. iria*, a new record for Butte County and apparently only the second documented occurrence in California. A voucher (Oswald 9949), is deposited in CHSC, with duplicates in CDA and UC/JEPS.



Continued from page 1
Message from the Board

Herbarium continues to be a viable, functioning institution. Come to the Annual Meeting to help us celebrate, and to connect with other Friends of the Herbarium and various herbariophiles. LJ

Yes! I would like to join!

____ Student\$5.00
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This is a renewal for 2000

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Come to the
Annual Meeting
– November 4 –

Workshops

Check out these upcoming

Friends of the Herbarium workshops

November 18, 2000 Identification of Mosses
from the Three West Coast States

December 2, 2000 Introduction to Keying *Carex*

April 7, 2001 Introduction fo Flowering Plant Identification,
Terminology, and Techniques for Beginners

April 28, 2001 Botanical Illustration

Friends of the Biological Sciences Herbarium

California State University, Chico

Chico, CA 95929-0515

(530) 898-5381

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UPCOMING WORKSHOPS
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CALIFORNIA STATE UNIVERSITY, CHICO

IDENTIFICATION OF MOSSES FROM THE THREE WEST COAST STATES. Dan Norris.
November 18, 2000, Saturday.

INTRODUCTION TO KEYING *CAREX*. Lawrence Janeway.
December 2, 2000, Saturday.

INTRODUCTION TO FLOWERING PLANT IDENTIFICATION, TERMINOLOGY, AND TECHNIQUES FOR BEGINNERS. John Dittes.
April 7, 2001, Saturday.

BOTANICAL ILLUSTRATION. Judy McCrary.
April 28, 2001, Saturday.

TO REGISTER FOR WORKSHOPS:

Please make checks payable to:
"Friends of the Biological Sciences Herbarium"

include your name, address, and phone number and mail to:

Friends of the Biological Sciences Herbarium
California State University, Chico
Chico, CA 95929-0515

IDENTIFICATION OF MOSSES FROM THE THREE WEST COAST STATES.
November 18, 2000, Saturday.

Dan Norris has finally finished the long-awaited final edition of his keys to the mosses of California, Oregon, and Washington. These keys are unique among moss keys from almost any place in the world. They emphasize gametophytic characters to such an extent that every local moss can be identified to genus without the presence of sporophytes. Fewer than ten species require examination of sporophytes for determination. The reason for such emphasis is obvious: sporophytes are not always present. The handicap is that rather obscure microscopic features must sometimes be used. Introduction to the Norris keys may best be done in a classroom setting. This Chico workshop may be the first of several presented around the area. IF THERE IS ENOUGH ADVANCE INTEREST, THE FOLLOWING DAY WILL INCLUDE A FIELD TRIP INTO THE LOCAL FOOTHILLS.

Participants should bring fine-point forceps, dissection needles, microscope slides and coverslips, and single-edge razor blades.

The workshop will meet on Saturday, November 18, 2000, from 9:00 a.m. to 5:00 p.m. in Holt Hall room 129 at CSU, Chico. The registration fee is \$45.00 (\$35.00 for members). Please register in advance; class size is limited to 16 participants (class cancelled without a minimum of 5 participants). For information about registration or directions please call the Herbarium at (530) 898-5381.

INTRODUCTION TO KEYING *CAREX*.
December 2, 2000, Saturday.

The genus *Carex* (Cyperaceae) is by far the largest genus in California, with about 135 species in California and more than 1,000 species worldwide! This workshop, led by Lawrence Janeway, is an introduction to keying *Carex* using *The Jepson Manual*. Material of several species of *Carex*, mostly from northern California, will be provided for use by all members of the class keying together, each person with their own specimen; herbarium labels will be provided for those participants who would like to take home their sample material for later reference. Terminology for this notoriously difficult group will be explained and illustrated as it is encountered during the keying process.

Please bring forceps (tweezers – the sharper, the better), dissecting needle, 6" millimeter ruler, and a copy of *The Jepson Manual*.

The workshop will meet on Saturday, December 2, 2000, from 9:00 a.m. to 5:00 p.m. in Holt Hall room 129 at CSU, Chico. The registration fee is \$45.00 (\$35.00 for members). Please register in advance; class size is limited to 16 participants (class cancelled without a minimum of 5 participants). For more information about workshop content please contact Lawrence Janeway at <lpjaneway@compuserve.com> or (530) 899-7434. For information about registration or directions please call the Herbarium at (530) 898-5381.

INTRODUCTION TO FLOWERING PLANT IDENTIFICATION, TERMINOLOGY, AND TECHNIQUES FOR BEGINNERS.

April 7, 2001, Saturday.

California has over 5,800 species of flowering plants, roughly 30% of all North American plant species (north of Mexico). How do you accurately figure out the name of a plant without thumbing through incomplete picture books? How do botanists go to a totally new area and make an accurate and complete plant list? This workshop will answer those questions and get you started identifying plants by yourself.

The workshop is designed to introduce beginners in plant identification to the terminology and techniques essential to identifying flowering plants using *The Jepson Manual*. Students will work with fresh plant material that illustrates the terminology used in plant identification, they will be introduced to using and writing plant "keys" (a central concept to identifying plants), and they will learn how to dissect flowers with a dissecting microscope and a hand lens. Emphasis during group instruction will be in the use of keys available in *The Jepson Manual*. The workshop, led by local botanical consultant John Dittes, is always very popular and educational.

Some of the basic equipment is available to loan to workshop participants, but if you have any of the following items please bring them: hand lens, forceps (tweezers), dissecting needle, 6" millimeter ruler, and *The Jepson Manual* (please let us know what you need to borrow).

The workshop will meet Saturday, April 7, 2001, from 9:00 a.m. to 4:30 p.m. in Holt Hall room 129 at CSU Chico. The registration fee is \$40.00 (\$30.00 for members); please register in advance. The class is limited to 16 participants (class cancelled without a minimum of 5 participants). For more information about workshop content, please contact John Dittes at (530) 895-0349 or <jcdittes@cs.com>. For more information about registration or directions please call the Herbarium at (530) 898-5381.

BOTANICAL ILLUSTRATION.

April 28, 2001, Saturday.

Want to draw plants and flowers? Here's your chance! Local illustrator and teacher, Judy McCrary, will lead this one day workshop on botanical illustration. The workshop will concentrate on pencil and ink techniques, although other media may be explored depending on the interests of the participants.

Please bring an HB pencil and ink pens, nibs, and black ink if you have them on hand – these and other basic materials, including paper, will be available for purchase at the class. Let's all bring plant cuttings and flowers to draw and share. Please also bring a lunch.

The workshop will meet on Saturday, April 28, 2001, from 10:00 a.m. to 4:00 p.m. in Holt Hall room 129 at CSU Chico. Registration for the workshop is \$40.00 (\$30.00 for members); please register in advance. Class size is limited to 16 participants (class cancelled without a minimum of 5 participants); older children are welcome to register. For more information about workshop content please contact Judy McCrary at (530) 589-1418. For information about registration or directions please call the Herbarium at (530) 898-5381.

FRIENDS OF THE BIOLOGICAL SCIENCES HERBARIUM

CALIFORNIA STATE UNIVERSITY, CHICO
(530) 898-5381

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The Friends of the Biological Sciences Herbarium operates under auspices of the California State University, Chico, and enjoys non-profit status and has access to the use of University classrooms and equipment.

At least half of workshop registration fees go to help support the Friends activities on behalf of the Herbarium.