Friends of the Herbarium

Biological Sciences Herbarium

California State University, Chico

Newsletter

Vol. 11 Nos. 1 & 2 June & October 2005

!! MARK YOUR CALENDARS !!

Friends of the Biological Sciences Herbarium

Annual Meeting

November 5, 2005

Reception at 3:00 pm
Meeting at 4:00 pm

Special lecture by
James R. Shevock
"Bryogeography of California:
what can we learn from the mosses
about past and future climate change?"

Watch for more details in a separate mailing
or visit our web site at
www.csuchico.edu/biol/Herb/Friends.html

Articles in this newsletter:

MESSAGE FROM THE BOARD

Year eleven of the Friends of the Biological Sciences Herbarium sees the group continuing their extensive activities on behalf of the Biological Sciences Herbarium of California State University, Chico. A nice set of workshops is being prepared for the coming fall and winter, this informative newsletter does continue (though we missed issues two and three of last years volume), and our eleventh annual meeting is coming on November 5. As we mentioned in the last newsletter, the University is hosting the Botany 2006 conference next July 28 through August 3, which will bring more than 800 botanists from around the world to Chico for a week of scientific presentations and local field-trips. The Friends of the Herbarium is planning some exciting activities as part of Botany 2006. Stay tuned!

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 the 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.

Newsletter
Volume 11, Numbers 1 & 2

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

Accessions into CHSC during 2004

Six years ago Vern Oswald started this annual tradition in this newsletter of summarizing all of the collections accessioned into the herbarium during the preceding year by county and collector. Here is the latest set of summaries, for 2004.

The Biological Sciences Herbarium accessioned 4859 new collections during 2004. This compares to 3681, 2320, 2944, 1108, and 1862 collections during 1999, 2000, 2001, 2002, and 2003 respectively.

We continue to owe a HUGE debt of gratitude to our mounting specialist, and plant collector extraordinaire, Lowell Ahart. Aside from a few exchange sheets that came already mounted, and the bryophytes and lichens, that are accessioned into the collection in packets rather than mounted, Lowell mounted most specimens coming into the herbarium during 2004. This means that Lowell prepared about 3500 beautifully mounted specimens for the herbarium during 2004, all as volunteer! Thank you once again, Lowell, for your continuing contribution of countless hours of invaluable time and some associated expenses to further the goals of the Biological Sciences Herbarium. In addition, during 2004 Robert Fischer mounted about 670 specimens for the herbarium, including all 454 of his own collections and many of Jenny Marr's collections. Thank you Robert!

All new incoming specimens are databased before they are filed. This databasing continues to be very carefully done by our excellent herbarium assistant, Morgan LoRomer, as well as most of the filing of specimens.

Thanks also to all of the collectors for their time spent in collecting, identifying, and making labels for all of the specimens that they contributed to the herbarium during 2004. A lot of time goes into this process and I know that most, if not all, of this time is volunteer time on the part of the collectors.

The following tables summarize the plant specimens accessioned into the Biological Sciences Herbarium during 2004. LJ

SUMMARY

Lichens	143	Hornworts	2	Ferns	77
Mosses	402	Club mosses	13	Conifers	10
Liverworts	51	Horsetails	3	Flowering plants	4158

California accessions, 3227 total (counties with 30 or more):

Butte	718	Modoc	111	Siskiyou	184
Colusa	198	Mono	57	Sutter	66
Glenn	189	Nevada	141	Tehama	559
Lake	47	Plumas	250	Trinity	35
Lassen	65	Shasta	288	Tulare	57

Contributions of local collectors (with 10 or more):

Lowell Ahart	789	Herman Gray	16	Jenny Marr	551
Barbara Castro	115	Linnea Hanson	72	Paul Maslin	36
Colin Dillingham	33	Christine Hantelman	31	Vernon Oswald	72
John Dittes	199	Lawrence Janeway	624	Arnie Peterson	36
Robert Fischer	454	Martin Lenz	12	Pat Sater	52

Coronilla varia (Fabaceae), a new addition to the Butte County flora

by Lawrence Janeway

On 14 August 2004 Lowell Ahart sent me the following note explaining how he had found a species new to the Butte County flora. However, at the time he did not know what species it was, just that it was new to the flora. Following Lowell's note, I continue with the story of how we found out it is *Coronilla varia* and other notes about its identification and potential threat.

A New Plant for Butte County by Lowell Ahart

On 26 May 2004, I received a letter from Lawrence Janeway, curator of the Herbarium at California State University, Chico. The letter contained two notes and a list of bromes.

One note was from Kristina Schierenbeck who was on sabbatical in France. She asked if Lawrence could collect some bromes for a colleague of hers in France, Malika Ainouche, and send them to France.

The wanted bromes were *Bromus vulgaris, B. pseudolaevipes, B. laevipes, B. orcuttianus, B. anomalus, B. grandis, B. ciliatus, B. arenarius, B. arizonicus,* and *B. carinatus*.

The second note was from Lawrence asking if I was interested in collecting any of the above bromes, getting a voucher specimen and some mature panicles of each species to send to France.

I wrote Lawrence that I would try and collect the bromes I knew, or that are found in *Selected Plants of Northern California and Adjacent Nevada* by Vernon Oswald. I had never collected *Bromus vulgaris*. By consulting the Butte County Flora by Oswald, I learned it was collected along the Butte Creek Trail and around Paradise Lake.

On 22 June 2004, I went through Paradise and on past De Sabla to Doe Mill Road where I took Doe Mill Road down towards Butte Creek. The road got rough and I had to go slow in my little car. As I drove along avoiding high rocks and deep holes I noticed a showy plant on the west side of the road. "What is that?" I thought. I will have to check it out on my return. I made it down to Butte Creek, parked, found the trail and walked down it about one-half mile. I did not see any bromes. I noticed a road above the trail and went up to it. Here I found a brome which I collected. I then returned to my car.

Having collected a number of plants, I put them in my plant press. I then botanized and collected back up Doe Mill Road. I stopped and collected the plant I had noticed on the way down. It has clusters of showy pink flowers, some kind of Fabaceae, maybe a *Lotus*.

At home I tried to key the plant. I ended up at *Lotus* in *The Jepson Manual*. I could not find a species though, since the keys in *Lotus* were confusing for the plant I had collected.

In frustration I consulted my *A California Flora* by P. Munz. The genera key led me to *Ornithopus*. What in the world is this!? Munz has it as an introduced annual, but this is most certainly not what I collected. I returned to *The Jepson Manual*. Yes indeed, *Ornithopus* is listed. There are two species listed but neither is what I collected. So, I have found a new plant for Butte County, but I don't know its name!

Oh, yes, the brome! It turned out to be *Bromus laevipes*, so on another day, I went to Paradise Lake where I found and collected some *Bromus vulgaris* after considerable effort.

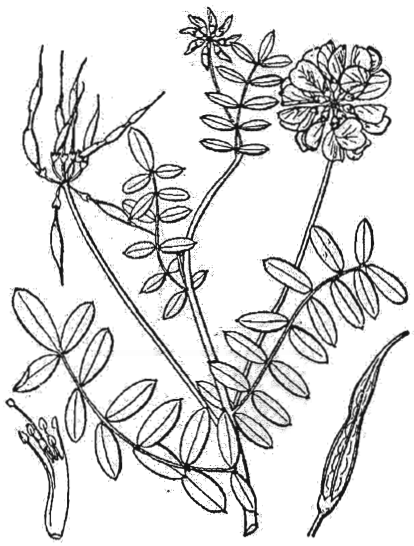


Diagram of *Coronilla varia* (crown vetch) from Britton and Brown, Illustrated flora of the northern states and Canada, Vol. 2, 1913.

On 7 January 2005 Barbara Ertter, Administrative Curator of the University and Jepson Herbaria at UC Berkeley, sent me a copy of a letter that she had just sent to Lowell. This letter thanked Lowell for the "beautiful set of specimens" that he had sent to the Jepson Herbarium (JEPS). Lowell sends duplicates of most of his collections to JEPS, as well as depositing a complete primary set at the Chico State Biological Sciences Herbarium (CHSC). The letter from Dr. Ertter contained a number identifications for specimens included in Lowell's shipment to JEPS. Most notable was her determination of Lowell's collection number 11,121 as *Coronilla varia*, a species not present in any of our local floras, nor in *The Jepson Manual*. No wonder Lowell couldn't key out his specimen!! Dr. Ertter noted that this

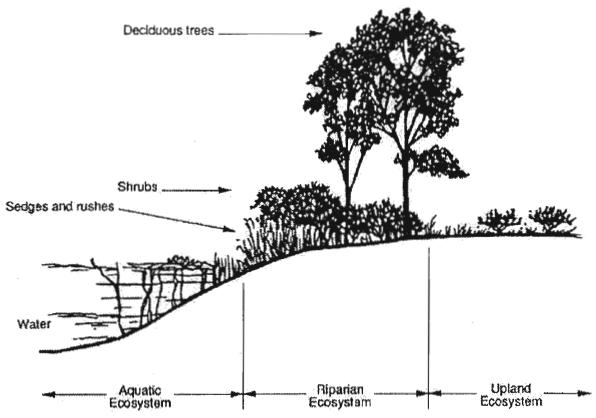
Coronilla *Continued on page 5*

A Comparison of Environmental Gradients for Understory Species in Restored and Remnant Riparian Forests Along the Middle Sacramento River, California

by 2005 Jim Jokerst Field Botany Award winner Catherine Little

The following summarizes a project I am proposing to complete as part of a master's degree at CSU, Chico, with Dr. Wood as my major professor and two other people on my committee that have yet to be determined.

The Sacramento River is one of numerous streams across the western United States that has been altered severely over the last century. Historically, the Sacramento River supported up to 800,000 acres of riparian vegetation that consisted of complex structure and composition within its forests. The riparian vegetation extended out to the 100-year flood line, with large seasonal marshes occupying the basin areas, and oak woodlands and perennial grasslands residing on the terraces created by natural levees. After almost complete elimination of marsh habitat, woodland clearing, and riparian forest harvesting, today the riparian vegetation along the Sacramento River consists of discontinuous, fragmented forests, confined to narrow strips along the banks of the river. These remaining scattered forests comprise only about 2% of the forests that existed a hundred and fifty years ago.



The awareness of this dramatic loss of riparian forest has led to a concerted effort consisting of several local, state, and federal organizations that have organized to protect and restore riparian vegetation along the Sacramento River. In 1986, a management plan for the Sacramento River was called for by the State Legislature by passing Senate Bill 1086. This bill mandated a plan to protect, restore, and enhance fisheries and riparian habitat along the Sacramento River. The Sacramento River Conservation Area includes 222 miles of the Sacramento River between Keswick Dam and Verona with approximately 23,000 acres of existing riparian forests and valley oak woodlands. The project I am working on will be conducted on restoration sites that were implemented as part of this conservation program.

Restoration efforts thus far, have focused on woody overstory species, with the assumption that understory species would naturally colonize. Observations suggest that the natural establishment of native understory species was not meeting the success standard for these restoration projects. The Nature Conservancy (TNC), Sacramento River Partners (SRP), and other organizations are now actively planting understory species when implementing restoration projects on the Middle Sacramento River.

In order to improve design, implementation, and sustainability of restoration projects, it is important to understand biological and ecological processes occurring at restoration sites and in surrounding sustaining naturally functioning ecosystems, conduct manipulative experiments for future proposed methods, and measure success of past restoration projects. The Sacramento River Project has provided the opportunity to conduct large-scale, repeatable studies that encompass the variability of habitats over a long period of time.

This study will address the relationship between a suite of environmental measurements and native and non-native herbaceous species response in restoration and remnant riparian forests along the Middle Sacramento River. The study will focus on six understory species including California dutchman's pipe (*Aristolochia californica*), Santa Barbara sedge (*Carex barbarae*), California blackberry (*Rubus ursinus*), California wild grape (*Vitis californica*), Douglas' sagewort (*Artemisia douglasiana*), and yerba de chiva (*Clematis ligusticifolia*). A comparison of the environmental variables among the sites will be completed to test the hypothesis that herbaceous understory composition varies between established restoration sites and surrounding remnant riparian forests due to the response from these physical parameters. This study will attempt to provide insight on selection of understory species in restoration design and predicting success of these species in varying microenvironments.

This project will include seven TNC restoration sites established between 1989 and 1998 and ten surrounding remnant riparian forests. The sites were chosen to encompass the range of restoration age and geographic location within the study reach. At least ten plots will be selected in the established restoration sites and three plots will be selected in the surrounding remnant riparian forests. A portion of these plots were

Riparian *Continued on page 5*

Continued from page 4
Riparian

chosen for a previous vegetation study on the Middle Sacramento River.

Vegetation measurements have been collected at some of the sites listed above and this study will add additional plots to that data set. Vegetation data collected includes species composition, basal area, species richness, percent cover by species, stem density, species diversity, percent cover by canopy layer, and height. Various environmental measurements will be taken and analyzed at each site during this study including stratigraphy, texture, moisture, pH, and nutrient content of the soil, depth to water table, light levels, flood frequency, elevation, land age, and land use.

Restoration ecology studies that include numerous heterogeneous sites are challenging in the classical sense of statistical analysis and interpretation due to the lack of true replicates, but can be considered an advantage when making predictions on management questions. This study will incorporate multivariate analysis techniques to determine the importance of several environmental parameters for presence of six focal understory species within the remnant and restored riparian forests. A completely randomized design will be used with at least three replicates at each site. Replication within each site is necessary because of the high variation between the sites. The sites themselves cannot be considered replications, but it is necessary to repeat the measurements over numerous sites in order to make generalizations across sites.

The proposed schedule for this project is to complete the majority of the field work this summer 2005. I plan to start data synthesis and analysis in fall 2005 and start writing my thesis in spring of 2006. Any additional fieldwork that is required is planned for May and June of 2006 and thesis revisions over the summer. If everything goes as planned, this portion of the project will be completed by fall of 2006.

[Ms. Little's original article included literature citations; if you would like to see the complete version, please contact the editor. Ms. Little will also present an update of her research at the upcoming November 5, 2005 Friends of the Herbarium Annual Meeting. –ed.]

Continued from page 3
Coronilla

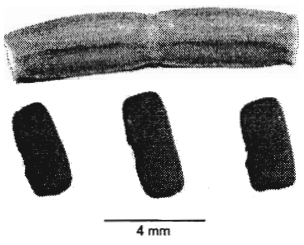
species is "highly invasive on the East Coast, due in large part to being a favorite ground cover along highways; unfortunate but not surprising to see it get a foothold in California."

I checked the internet and found an extensive write-up about *Coronilla varia*, also known as crown vetch or trailing crown vetch, at The Nature Conservancy's Invasive Species Initiative web site (http://tncweeds.ucdavis.edu). As noted in Dr. Ertter's letter to Lowell, *Coronilla varia* is already causing problems in much of the U.S., only recently being reported from California. The TNC write-up notes that "it is a serious management threat in many natural areas due to its prolific seeding ability and its rapid rate of vegetative spread via its rhizomes, which can create dense single-species stands."

To help identify this species, which, as Lowell found, keys to *Lotus* in our local floras and in *The Jepson Manual*, the following key comes from the *Intermountain Flora, Volume Three, Part B, Fabales* (by Rupert C. Barneby, published by The New York Botanical Garden, 1989):

> Leaves either pedately or palmately 3-7 foliolate; flowers usually subtended by a leaflike bract; petals mostly yellow, if pinkish then flowers very small and solitary; valves of pod continuous, elastically coiling in dehiscence or rarely indehiscent; native and cultivated – *Lotus*
>
> Leaves pinnately 15-23 foliolate; flower-umbel not bracteate; petals pink; valves of pod breaking transversely into 1-seeded achenelike loments; cultivated and naturalized – *Coronilla*

As an interesting aside, a check of the CHSC collection for *Coronilla varia* found that Vernon Oswald collected this species (no. 4278) in 1990 from "Butte County Center along Nelson Ave, Thermalito." Vern noted that the species was growing in a suburban area "scattered in landscaping where probably persisting from earlier plantings." Apparently considering the plants in Thermalito to be only an ornamental planting, and not escaping into the wild, Vern did not include the species in his *Manual of the Vascular Plants of Butte County* (1994) nor in his Selected *Plants of Northern California and Adjacent Nevada* (2002). Lowell's collection, however, is from a generally un-planted roadside through a natural mixed conifer forest, where he calls it "common." A species to watch out for.



Portion of a fruit or pod showing two loments or segments (top) and three seeds (bottom). From a color photograph by Steve Hurst at USDA-NRCS PLANTS Database (http://plants.usda.gov/). Digitally modified by Lawrence Janeway.

Yes! I would like to join!

_____ Student $5.00
_____ Individual $10.00
_____ Contributing $25.00
_____ Sustaining $100.00
_____ Lifetime $1,000.00
_____ Donation ..... $ _____

This is a renewal for 2005-2006..... ☐

Please make your check payable to:
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Friends of the Biological Sciences Herbarium
California State University, Chico
Chico, CA 95929-0515
(530) 898-5381

ADDRESS SERVICE REQUESTED

Dear Friend of the Herbarium,

The **Friends of the Biological Sciences Herbarium** at CSU, Chico is now in its eleventh year and it is past time (our fault for the lateness) to renew your membership. We appreciate your support. With your help, we can continue to tackle the numerous tasks needed in the herbarium to keep it functioning as the important resource to the botanical community that it is. Remember, the Friends group operates under the California State University Foundation and benefits from its non-profit status. Membership is renewed on **May 1** of each year. If you have recently paid your 2005 dues, please disregard this notice.

It is also time to elect the Board of Directors. Please vote on the ballot provided below and return to Friends of the Biological Sciences Herbarium.

RENEWAL FOR 2005

_____ Student $5.00
_____ Individual $10.00
_____ Contributing $25.00
_____ Sustaining.....$100.00
_____ Lifetime.....$1,000.00
_____ Donation.....$ _____

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Please make your check payable to and mail to:
Friends of the Biological Sciences Herbarium
California State University, Chico
Chico, CA 95929-0515

LJ 9/2/05

ELECTION of BOARD OF DIRECTORS 2005
Friends of the Biological Sciences Herbarium at CSU, Chico

The following seven people have expressed an interest in serving on the Friends of the Biological Sciences Herbarium Board of Directors. Write-in candidates are also welcome.

Please vote for seven:

_____ **Colby Boggs**
botanist, North State Resources, Redding

_____ **Josephine Guardino**
botanist, Dittes & Guardino Consulting, Los Molinos

_____ **Linnea Hanson**
Forest Botanist,
Plumas National Forest, Oroville

_____ **Lawrence Janeway**
Herbarium Curator, CSU Chico
& botanist, CA Dept. of Water Resources

_____ **Gail Kuenster**
botanist, CA Dept. of Water Resources, Red Bluff

_____ **Jenny Marr**
botanist, CA Dept. of Fish & Game, Chico

_____ **Caroline Warren**
botanist, CalTrans, Marysville

_____ _____
write-in

Please return your ballot by Sept. 30, 2005. Thank you!