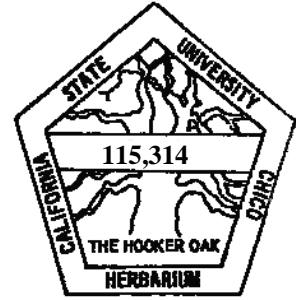




# Friends of the Herbarium

The Chico State Herbarium  
California State University, Chico



Volume 21 Number 2  
October 2015

## Newsletter

### Articles in this Newsletter:

- Page 1 FOH Host Seminar
- Page 1 FOH Annual Meeting
- Page 2 Student Photo Contest Results
- Page 3 The Friends Need Your Help!
- Page 3 Phytoblitz Celebrates the Friends' 20th Anniversary
- Page 4 Riparian Vegetation—Adaptations to River Processes
- Page 5 Upcoming Workshop
- Page 5 Specimen Spotlight
- Page 7 Highlights from Recent Workshops

**Friends of the Chico State  
Herbarium in Collaboration  
with Omicron Present -**

### **Web of Polyploidy in *Penstemon***

**Dr. Shannon Datwyler  
CSU Sacramento**

**Friday 4:00-5:00 pm  
November 13, 2015**

**170 Holt Hall  
Chico State University**



### **Friends of the Herbarium Annual Meeting**

**November 13, 2015**

Please join the Friends for their Annual Meeting:

**Reception: 3:00-4:00pm—Herbarium (Holt 129)**

Winners of the Native Photo Contest on Display

**Featured Speaker: 4:00-5:00—Holt 170**

Dr. Shannon Datwyler

**Annual Meeting: 5:00-6:00—Holt 129**

Including **Jokerst Student Award Talk**: “California Gall Density of the Manzanita Leaf Gall Aphid (*Tamalia coweni*) and the Presence of (*Tamalia inquilinus*)” - Clara Buccholtz



The **Friends of the Chico State Herbarium**, California State University, Chico, was formed to help maintain the high quality of work 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, in particular the curator's position. 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 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 January 1 of each year.

#### BOARD OF DIRECTORS

Adrienne Edwards	Elena Gregg
Rob Schlising	Tim Hanson
John Whittlesey	John Dittes
Erin Gottschalk Fisher	Linnea Hanson
Tom Griggs	

#### ADVISORS

Lawrence Janeway  
Herbarium Curator  
Newsletter co-Editor

Colleen Hatfield  
Herbarium Director  
Newsletter co-Editor

#### *Newsletter*

#### Volume 21 Number 2

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

## FOH Student Photo Contest

The 5<sup>th</sup> Annual Student Photo Contest was a huge success. For the Herbarium Open House on May 8<sup>th</sup>, the walls were adorned with over 80 photographs submitted by students by a number of area schools. Having so many photos made for an impressive and colorful display while also creating a challenge for the judges. The results reflected this challenge by having ties for 2<sup>nd</sup> and 3<sup>rd</sup> place along with several honorable mentions. Many of the photos demonstrated care and attention to composition, light and focus. It was a pleasure for the Friends of the Herbarium board to be on the receiving end of this creative work by so many students.



The Herbarium cabinets adorned with student entries.

The Results:

**1st Place: Hannah Tortorich**, Chico High School

**2nd Place: Angelika Driscoll**, Chico High School; **Maddie Miller**, Chico High School

**3rd Place: Giang Hang**, CORE Charter School; **Callie Robinson**, Chico High School

**Honorable Mention: Hannah Chumley**, Chico High School; **Chloe Baers**, Chico High School; **Ava Moore**, CORE Charter School



First Place Winner: "Flowers by the Sea" By Hannah Tortorich

**Have some free time on Fridays?**

**Consider volunteering at the  
Chico State Herbarium.**

**Great chance to share quality  
time with fellow botany lovers  
and help the Herbarium out.**

Contact : Lawrence Janeway at  
LJaneway@csuchico.edu or Colleen  
Hatfield at chatfield@csuchico.edu




## The Friends and the Herbarium NEED your Help!!

The CSUC herbarium is one of only five large herbaria scattered around California. The CSUC Herbarium houses over 115,000 specimens of which 86,185 plant specimens (mosses, lichens, club-mosses, grasses and flowering plants) collected around Northern California over the past 85 years, dating back to before 1930. These specimens represent a sampling of the current and historical flora that grows in northern California. Each specimen typically contains ecological information about the site of collection. Genetic DNA information can be recovered from these specimens and researchers and students use the herbarium to verify the identification of unknown or rare plants and to house voucher specimens that document individual research projects. With the future climate possibly to be very different from today's, the CSUC herbarium is a valuable reference to the past. As such, the Herbarium documents the past and future legacy of the North State.

### Why you should donate...

The majority of the currently funding for operation and curation of the Herbarium is from revenue generated by registration fees for workshops sponsored and managed by the Friends of the Herbarium (<http://www.csuchico.edu/biol/Herb/Friends.html>). In 2015 the FOH sponsored 13 workshops, with over 150 participants). Participants are local community members, and some come from across the state to attend these unique educational offerings.

Please help us continue to support the Herbarium and its operation. Your donation will go to the endowment that has been established to financially support the curator position and will keep the herbarium operating into the future. **Donating is easy.** Just fill out the form on the back of this newsletter and send to the address listed. And **Thank You** in advance for helping support the Herbarium's mission! 



### Phyto-blitz Celebrates the 20th Anniversary for Friends of the Herbarium

In honor of the twentieth anniversary of the establishment of the Friends of the Herbarium in 1995, Rob Schlising, a retired Chico State botanist, suggested a repeat of their inaugural field event at The Nature Conservancy's Vina Plains Preserve (VPP). This event, dubbed a "phyto-blitz" (finding plants in a very short time) was patterned after the original, where teams of Friends of the Herbarium members fanned out across the fields at VPP to record the plant species found on that particular day. Marjorie McNairn, long-time Vina Plains Preserve docent, and Rob compiled a checklist of previously identified species at the Preserve, for use in the 2015 phyto-blitz.

The original event was held on 1 April 1995, and the 20th anniversary event took place on 18 April, 2015. Despite the minimal rainfall in 2015, resulting in the lack of a major show of flowers, the total number of taxa (species, subspecies and varieties) recorded was 115, 42 more than in 1995, when March rains were ample. Perhaps the 2015 date, later by nearly three weeks, could explain the difference, because early season species were identified in the phyto-blitz, as well as later season species, which may have been triggered to bloom with longer day lengths.

People attending the phyto-blitz, who had car-pooled to the Preserve from DeGarmo Park in north Chico, enjoyed

*(Continued on page 6)*

## Inspirations from Recent Workshops:

### Riparian Vegetation—Adaptations to River Processes (by Barb Castro)

A field workshop was held in June and was attended by a diverse group representing local universities, resource agencies, consultants and non-profits. In the mix were attendees from UC Davis, River Partners, California Dept. of Fish and Wildlife, Gallaway Consulting, Sacramento River Forum, and Barb Castro from California Dept. of Water Resources. There was much networking as we learned about riparian vegetation and river processes at The Nature Conservancy's "Willow Bend Reserve" 18 miles west of Gridley on the east bank of the Sacramento River. This site is just upstream of Moulton Weir.



Workshop instructor, Tom Griggs', goals included that we learn the different ways that vegetation "slows the water down", and that species-level on the ground knowledge is necessary to back up aerial imagery analysis. Tom first led us on a stroll along the edges of a recently mowed native grass field and then through native growth on the way to the river, pointing out how to distinguish California grape (*Vitis californica*), Fremont cottonwood (*Populus fremontii*), box elder (*Acer negundo*), Himalayan blackberry (*Rubus armeniacus*), mugwort (*Artemisia douglasiana*), black willow (*Salix gooddingii*), native grasses like creeping wildrye (*Leymus triticoides*, LETR), blue wildrye (*Elymus glaucus*) and the non-native ripgut brome (*Bromus diandrus*), ubiquitous here. Black willow is the most flexible ecologically of the tree willows, able to withstand prolonged inundation and also stump-sprout.

Tom emphasized that **native grass stands MUST be managed** for many years. If mowing, grazing burning is not done, grass mulch (or thatch) builds up and kills the natives; weeds love the thatch whereas native grasses need bright sun to germinate their seeds and cannot germinate under the thatch. February grazing with sheep and/or cows is effective; LETR likes it, regrowing fast.

Tom also mentioned how people think vegetation is bad for levees, but what is bad is large trees falling and pulling up chunks of levee, whereas willows and similar shrubs can hold levee structure together with root systems.

Another of Tom's mottos: "**soils dictate the plant species**". Get to know your soils – structure and chemistry/ composition and you will know what plants will actually grow. Conversely, plants can also be indicators of soils if you know which plants like or need which type of soils. Example: valley oaks and ash need sandy loams, whereas black willow can grow in either clay or sandy loam. Arroyo willow wants very sandy soils. Sandbar willow (*Salix exigua*) is a gravelbar shrub which spreads underground.

The **black walnut** we see in our riparian areas is not native; it is all an agricultural escape, dispersed by floating nuts. It mostly shades out native species, but it may also be allelopathic. Cottonwoods and willows cannot tolerate shade.

Vines of **California grape** festoon everything in their path; it covers shrubs and low trees (including elderberry) completely and can kill them by smothering in time. It used to be kept under control by repeated flood disturbance, but this has all but disappeared with Shasta Dam controlling the river flow regime. **Mistletoe** (most likely *Phoradendron macrophyllum*) kills cottonwood trees very slowly. It is native to California but not clear why it "infects" some trees. **Giant reed** (*Arundo donax*) clumps are inflexible and represent high "roughness", impeding flow and accumulating islands of sediment at bases.



Grapevines covering shrubs on west shore

Once at the gravel-bar edge of the river, we learned that the seeds of some sprouting tree seedlings and annuals are released in April and follow the receding water levels. Some (cottonwood, *Salix* spp.) can fix their own nitrogen, which is why they can grow in pure sand. As an example of another adaptation to this flat ephemeral gravel-bar environment, a dominant subshrub in the sunflower family, Oregon golden-aster (*Heterotheca oregona*), has horizontal roots extending for yards!

One non-native we saw getting started was **Ludwigia hexapetala** (a water primrose). The only reason we knew this was that this species is a specialty of the two UC Davis researchers in the class, who pointed out diagnostic features (tiny inflorescence bracts and, when present, large flowers).

During a break, we all sat by the river under the shade of some multi-stemmed cottonwoods on a raised sandy beach, which turned out to be almost directly across from the proposed Sites Reservoir Intake pumping site. Here, Tom talked about river processes from a handout we all were given: **Flooding** (depth + velocity and duration = "hydraulics", which is different from hydrology); **Sediment Transport** (erosion, deposition, bed mobilization, and channel meander); a typical pre-dam Trinity River hydrograph (flow levels vs month of water-year from Oct–Sept) from McBain & Trush showing corresponding stages of cottonwood, willow and fall-run chinook salmon and



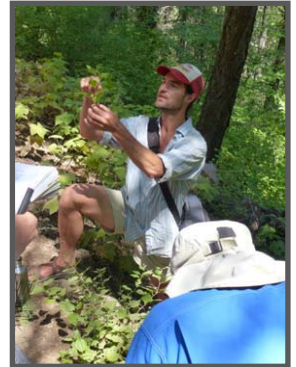
*Ludwigia hexapetala*

(Continued on page 6)

## Upcoming Workshop Sponsored by Friends of the Herbarium

### Fall Harvest: Edible and Medicinal Roots, Barks, and Fruits of California October 10, 2015, Saturday, 10:00 am—4:00 pm

Tellur Fenner, a clinical herbalist and educator who runs Blue Wind Botanical Medicine Clinic and Education Center in Ukiah, CA, will lead workshop participants through an exploration of the diverse array of edible and medicinal biennial and perennial plants that grow in California. Topics/activities to be covered include: botany basics taught from a plant family perspective, plant identification in the field, medicinal/edible/utilitarian uses, California ethnobotany, legal/ethical harvesting guidelines and information about at-risk medicinal plants, safety issues and tips on how to avoid toxic/poisonous plants, sampling of a variety of edible/medicinal plant preparations, and more! This academic immersion into the world of useful California plants is guaranteed to not only enlighten and inspire, but also aims to instill a sense of hope for a more sustainable future in all who participate. The morning session will consist of an interactive lecture/slideshow; in the afternoon we'll stroll the trails of nearby Bidwell Park where we'll observe more closely the great diversity of plant specimens growing there. The workshop will be held at the Chico State Herbarium. Registration fee is \$45 (\$40 for FOH members). Advanced registration is strongly advised for this popular workshop. Workshop size is limited to 24 participants (class cancelled without a minimum of 8 participants).



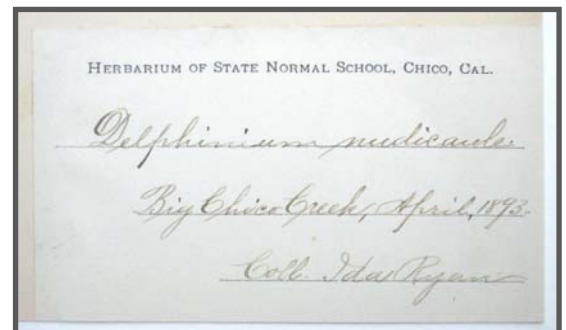
### Specimen Spotlight

We are introducing a new topic for the Newsletter entitled “Specimen Spotlight”. There are so many amazing plants it is hard to pick just one to spotlight. We are excited to make this a regular addition to our Newsletter and hope you enjoy it as much as we enjoy preparing it for you!

Did you know? The Chico State Herbarium has a number of specimens from the late 1800s, from several different collectors, with labels that say “Herbarium of State Normal School, Chico, Cal.” These collections are all from Butte County and from various locations mostly around the Chico area. These collections have been donated to the herbarium at various times over the past few decades, but there are no records of who brought them to the herbarium, or when, or why, or anything about the history of the collections or why they were originally collected. We suspect that the collectors were students at the Normal School, destined to be school teachers, and were required by a class to make collections of the local flora and press and mount their collections. Collectors represented in these 1890s collections in the Chico State Herbarium from the Normal School are Ella Icard in 1893, Ida Ryan in 1893, Margie Collins in 1894, Eleanor Stilson in 1897, and Agnes Riker in 1897. Can any of our readers provide any information about why these collections were made or about the history of any of these collectors?

The photos show a typical collection, made by Ida Ryan in 1893, and its very formal hand-written label. It was accessioned into the Chico State Herbarium in the year 2000, presumably donated to the herbarium not long before that.

By Lawrence Janeway, Herbarium Curator



(Continued from page 3)

landscape features that makes VPP a very special place: the vast open spaces, the gently rolling terrain, the close proximity of vernal pools in a grassland matrix. Some new features were on hand too: the absence now of the huge old sheep barn at the parking area, the near-absence of the weedy Medusa Head grass due to The Nature Conservancy's careful management with controlled burns and grazing. And Andrea Craig, Preserve Manager, gave a short, interesting presentation with a large map, to illustrate how the Vina Plains Preserve is much larger now than in 1995, and how it is now part of their present-day Lassen Foothills Project.

People divided into small teams and spent about 90 minutes recording plants in leaf, flower or fruit on their checklists. The photographs by Josephine Guardino and John Dittes illustrate some features of the landscape and the teamwork on 18 April. These teams of diverse, very knowledgeable botanists came up with six new plants not on the time-honored list for VPP, such as *Hesperervax acaulis*, *Ranunculus bonariensis* and *Glyceria declinata*. Most checklisters returned to DeGarmo Park to compare lists, eat their bag lunches, and enjoy the anniversary cake brought by Herbarium Director, Colleen Hatfield.



In the future Marjorie and Rob may prepare a new checklist for the entire-year's flora of VPP. They sent all attendees a summary of some of the phyto-blitz discoveries, such as

- Number of plant families found: 36.
- Percent of taxa native: 73.
- Percent of taxa annual: 80.
- Families with the most taxa (species, subspecies and varieties): Asteraceae (sunflowers, broadly speaking), 21; Fabaceae (legumes), 12; Poaceae (grasses), 10.
- Genera with the most taxa: *Trifolium*, 9; *Lasthenia*, 5; *Plagiobothrys*, 5; *Erodium*, 3.

It appears that about 8 species found during the phyto-blitz have had genus name changes in the 2<sup>nd</sup> edition of the Jepson Manual, and nearly 20 species had family name changes.

What will the next 20 years show?!



(Continued from page 4)

a low, flat post-dam hydrograph. Other handout maps and aerial imagery showed historic river channel movement.

**Riparian vegetation is disturbance-driven**, and dynamic, with the plants adapted to the various changes. **The key to riparian vegetation management is stem flexibility** which means lowered roughness. Large clonal stands of sandbar willow make the water slow down as it easily flows over the bent very flexible stems, and also drops some of its silt load, depositing sediments around the bases of the willows. Over time this would create new land, but usually the river would blast through and tear it all out and set the process back again. However, with Shasta Dam controlled flows, this forceful flooding does not happen as often.

Finally we walked along the shore a bit, working our way north past large cottonwoods with scour-holes on their downstream sides. We also encountered a fine specimen of the extremely invasive **scarlet wisteria** or red sesbania (*Sesbania punicea*) on the shore in full bloom; Rob Irwin documented its location with his GPS camera and Barb will upload this sighting to the Cal-IPC online weed mapping website.

Tom explained that one reason sycamore, box elder, elderberry and California rose like sand and not clay is that none of them can tolerate inundation for long periods, whereas cottonwoods are OK with inundation. So **silt and clay keep out sycamores, elderberries etc. because these soils hold long-duration floodwater**. Understory plants adapted to inundation include mugwort and creeping wild-rye, both of which have deep or wide root systems from which they emerge after floods, inundation or even deposition. Black willow is also able to withstand prolonged inundation.

**Valley oaks and elderberries grow at the highest point in the floodplain**, where we also started to see pipevine (*Aristolochia californica*) and some poison oak (*Toxicodendron diversilobum*) as we crashed through downed branches buried in vegetation on our way to the last stop at the north end of the property. The reason why there can still be some old cottonwoods in this mix is that they originally started when the soil surface was lower, but they can grow as sediments pile up, with their roots still down in the water table. Valley oak roots need to hover just above, but not down in, the water table. The oaks can tolerate only thin, occasional water flow.

After a short rest among the fallen logs and riggut brome in dappled shade, the majority of the group went on to a last stop a few hundred feet onward to the north at a native grass stand. Yours truly had maxxed out and trudged back to the cars, saturated with information and exciting encounters with riparian plants, and ready for some iced coffee at the Gridley Starbucks.



## Highlights from Recent Workshops

### Butte County Butterflies and their Host Plant Affinities--May 21, 2015 (by Adrienne Edwards)

Since at least the time of Aristotle, butterflies have been associated with the human soul; indeed, the Greek word for butterfly is ‘Psyche’. An introduction to butterflies that was appropriate for novices as well as experienced entomology enthusiasts was presented by Dr. Don Miller, from the CSUC Biology Department. The workshop was held on a Thursday, and Miller invited us all to join him in the field that Friday to practice what we had learned. He began the workshop by reviewing some taxonomic history and evolutionary biology of butterflies, and shared examples of butterflies expressed in art. Unlike moths with their feathery antennae, there is a reasonable number of butterflies one can learn in Butte County (~115 species), and they fall into five groups: Hesperidae (Skippers), Papilionidae (Swallowtails), Pieridae (Whites and Sulphurs), Lycaenidae (Gossamer-wings), and Nymphalidae (Brush-footed). We reviewed key characteristics of these five groups by examining pinned butterflies from the CSUC Entomology Collection. We also received a selected list with known larval host plants. Knowing the plants on which specific butterfly caterpillars feed can both help in identification and inform the savvy gardener about what to plant to sustain these beautiful “flying souls”.

Based on our field outing, the prolonged drought and landscape changes appear to have been hard on many butterfly species while others seem unaffected. It was sad to hear that our endemic state butterfly, *Zerene eurydice* (California dogface, a gossamer-winged butterfly) has been in steep decline in Butte and other counties, due in part to habitat loss. Along the Yahi Trail in Bidwell Park, we observed mostly *Battus philenor hirsuta* (a pipevine swallowtail subspecies that is endemic to northern California)—as adults, caterpillars, and eggs. At the higher elevation Big Chico Creek Ecological Reserve, *Junonia coenia* (Buckeye, a brush-footed butterfly) also seemed to be common.

Dr. Miller is a superb and engaging naturalist, and his workshop was a wonderful opportunity to learn more about butterflies and how to identify them. Let’s hope he can do it again!



Dr. Don Miller with his many butterfly specimens (Photo: Carolyn Short)



(Photo Jennifer Jewell)

### “Native Bees as Pollinators” Again (by Rob Schlising)

On 16 July Rob Irwin and Rob Schlising presented their workshop “Introduction to Native Bees as Pollinators” for the fifth year, with enrollees from Butte, Tehama, Shasta, Plumas and El Dorado Counties. New features included a handout by Rob I. that indicated how many species of bees are known in all genera occurring in northern California (e.g., 36 species in *Bombus*, bumblebees, and 1 species in *Peponapis*, squash bees). Rob S. provided a new key to local bumblebees, with pinned specimens of the 3 most common local species. There was also new focus on “insects seen in the company of bees in flowers,” with a handout, photos of many insects, and specimens that were pinned or in small glass-topped Riker boxes. On the next day a portion of the class went with the 2 Robs to several time-honored field sites in high Butte County. Despite the very light snowpack here earlier in 2015, several well-timed rainstorms helped flowers and bees (including 4 kinds of bumblebees) be plentiful. One feature shown yearly by the instructors was the roadside ground-nesting area of a widespread species of solitary bee (shown in the photo) flourishing even though the soil had been driven over numerous times. A new feature in 2015 was Rob I. starting a permanent record of bees seen in the large meadow at Butte Creek House Ecological Reserve, by GPS-ing and photo-ing the exact locality, and the flower visited by a bee. Such a “bee fauna list” can also include names from photo records of earlier bee workshop fieldtrips here, like the picture shown, of *Diadasia nigrifrons* in *Sidalcea glaucescens*, taken by Steve Fischer in 2012.



