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## THE SCIENCE OF PLANTS

### Caterpillar Thwarts Plant Defense

--Jane Pritchard

Plants fight attackers with smells that attract help such as tiny wasps that parasitize leaf-chewing caterpillars. As caterpillars crunch into a leaf, substances in their spit trigger a burst of plant chemistry, which releases certain scents. At first the cut-grass smell comes from just-ripped tissues spilling their contents. But, within hours maize sends out new scents (detectable by humans) that can identify the kind of pests attacking it.

From the scents, female *Microplitis rufiventris* wasps track down a suitable species of caterpillar, *Spodoptera littoralis*, in which to inject an egg. The resulting larva eats the insides of the living caterpillar. The caterpillar continues feeding for several days, and then remains alive as it serves as a source of fresh baby food.

Consequently, what the caterpillar eats makes a difference. The wasp is more interested in caterpillars grazing on maize that is genetically engineered NOT to produce a plant defense compound called indole. Wasps are not very likely to inject eggs into the caterpillar when it is feeding on indole-producing maize leaves because wasp eggs flourish less well inside caterpillars that eat indole.

Thus, when female wasps are nearby, the caterpillars willingly feed on leaves that produce indole even though they don't like indole's mothball-like odor. Despite growing fatter when eating indole-rich foliage, they can die prematurely.

Although the odor of pure indole attracts wasps, the caterpillar that eats indole-rich leaves does not. This caterpillar's foraging evolution found a loophole in maize's defense strategy. Nearly every plant tested so far synthesizes special compounds to lure in some kind of natural enemy of pests. *Spodoptera littoralis* is the only caterpillar found yet that has evolved a work-around defense against a widespread plant defense.



Photo from <https://www.bioserendipity.com/plant-insect-tritrophism> by N. R. Gough (2018)

# ANNOUNCEMENTS

## Change in CNPS Membership Dues

A change in individual membership dues and levels was approved by the CNPS board in September 2018. Implementation began on April 1, 2019 for the 2019-2020 fiscal year.

Fees for students and those on a fixed income will remain at \$25. No changes were made to membership for organizations.

Individual fees are as follows:

<u>Amount</u>	<u>Member Level</u>
\$50	Individual
\$120	Plant Lover
\$500	Supporter
\$1000	Patron
\$2500	Benefactor
\$5000	Steward
\$10000	Guardian



## Join Calflora's Matching Gift Challenge and their Photo Contest!

**What is Calflora? It is a non-profit organization responsible for providing a website service that allows you to learn about, locate, and track plants that grow wild (native and non-native) in California.**

Help Calflora continue to provide a valuable service by making a donation today at <https://www.calflora.org/contributions.html>.

Make your most generous gift by May 16th and your gift will be matched dollar-for-dollar (up to \$15,000), so your gift to Calflora will go twice as far!



+++++

Publish your photos of wild plants seen May 1–May 31, 2019 in the Calflora database. Use the Calflora phone app Observer Pro Apple or Android and upload your photos to Calflora. How? Go to the following website to get the details:

<https://www.calflora.org/entry/mycalflora.html>.

The top 3 three winners will be acknowledged on the Calflora News page and on Facebook.

# CHINA CREEK REPORT

## March 2019 Work Party

--Warren Shaw

It was the day before Easter and some folks had family obligations. It was also Earth Day, and we're proud to say Mary and Madeleine were representing the Chapter at Radio Park. The amazing thing was that we had a good crew of volunteers at the Park anyway.



In the early hours we all worked the southwest area with hoes and shovels, uprooting thistle rosettes. We were pleased to find much of this area pretty clean, though we had the usual massive growth of milk thistle under the big lone valley oak, and saw a discouraging amount of the giant bedstraw that has been showing up in the Park in the last couple of years. We also found the first recognizable yellow star-thistle (YST) plants beginning their annual spring appearance.

After a break, which featured Helen's special Easter muffins, we diversified a little, with a crew moving to the north area to cage some of the oak seedlings we had spotted in March. Mysteriously, they found none of the flags that we had tied to the seedlings last month. Do you suppose the cows ate them? In any case, they found and caged five seedlings.



We also drove the trail and replaced two damaged signs, and noted, too late in the day to replace it, that the sign for station 2 on the short trail was simply gone, board and all. That repair was put on the list for May. In addition, we spot-sprayed a couple of dense patches of thistles where the plants were too numerous for hand work.

Also in May, we'll most likely rotate back to the southeast area for both weeding and caging, being especially alert for YST. Much better to get it now before it blooms.

Our May work parties (please note the plural) will be Saturday, May 11, and Saturday, May 25, from 8am-12pm. Some may remember that we decided at our annual meeting in November to double up in May and June in hopes of avoiding the heat and getting to the weeds while they're small, before they go to seed. We'll then take July and August off.

We should have another beautiful day on May 11, plus a glorious display of *Anemopsis* blossoms. Hope you can be there.

China Creek Park is located in Centerville, 16.5 miles east of Fresno. To get to China Creek Park, drive east on Highway 180. Turn right (south) on Smith Road where the elementary school is located and drive 0.2 miles to Rainbow Drive. Continue straight, 0.5 miles down the small road to the Park gate at the end of the road.



## Upcoming Classes and Events

### •May 17, National Public Gardens Day Friday, 10:00am

Location: Clovis Botanical Garden, 945 N. Clovis Ave., Clovis, CA 93611

- Celebrate by enjoying a tour with Anne Clemons.
- Tour limited to 20 people.

Cost: Free

Registration: To reserve your spot contact Anne at 559-493-8052.

### •May 18, Identifying and Appreciating the Native and Naturalized Grasses of California Saturday, 9:00am – 4:00pm

Location: Pepperwood Preserve, 2130 Pepperwood Preserve Road, Santa Rosa, CA

- Course currently full, but you can be put on a Waitlist.
- Familiarize yourself with grass-specific terminology.
- Identify grasses by using the Jepson manual, 2nd ed. dichotomous key.
- Recognize the basic groups and common species.
- Build a collection of identified samples.
- Morning coffee and snacks are included, but bring your own lunch.

Admission: CNGA Member \$160/non-member \$180/Student with ID \$95

Information: <https://cnga.org/event-3337158>

### •June 1, Wildflower Walk at Grand Bluffs Forest Saturday, 9:00am – 3:00pm

Location: Meet at Dinkey Creek Road Park N Ride located one mile east of Hwy 168

- Enjoy a mildly strenuous hike at the higher elevations.
- View a variety of wildflowers and other native plants.
- Wear long pants, hiking boots, and bring a backpack, jacket, lunch, and water.
- A Plant Sale will be held in conjunction with the Spring Garden Tour at the Garden of the Sun from 9am to 5pm.

Cost: \$10

Information:

<https://www.intermountainnursery.com/classes.htm>

### •June 1, Irrigation for the Home Garden Saturday, 9:30am – 11:00am

Location: Garden of the Sun, 1750 N. Winery, Fresno, CA 93703

- Learn how easy it can be to convert your sprinklers to a water-wise drip system or start from scratch in a new landscape.

Information: [mgfresno@ucdavis.edu](mailto:mgfresno@ucdavis.edu)

### •June 8, Fairy Gardening: A Green World in Miniature Saturday, 9:30am – 11:00am

Location: Garden of the Sun, 1750 N. Winery, Fresno, CA 93703

- Find out the details of creating and maintaining a miniature garden.
- A fairy garden will be built during class.

Information: [mgfresno@ucdavis.edu](mailto:mgfresno@ucdavis.edu)

### •June 15, Waterwise Fresno Saturday, 9:30am – 11:00am

Location: Garden of the Sun, 1750 N. Winery, Fresno, CA 93703

- Because higher water rates are the new norm, the new Fresno garden will be discussed with information on smart controllers, drip irrigation, soil health, plant selection, rebates, and more.
- You will leave this class with a big picture plan on how to manage water and drought.
- Bring your smartphone, if available.

Cost: Free

Information: [mgfresno@ucdavis.edu](mailto:mgfresno@ucdavis.edu)



### •June 22, Soil Is Not a Dirty World Saturday, 9:30am – 11:00am

Location: Garden of the Sun, 1750 N. Winery, Fresno, CA 93703

- Learn a few simple tests that will tell you how well your soil drains or holds water.
- Learn about hardpan and what to do about it if moving is out of the question.
- Learn about weed control.
- Learn about the type of soil you have in our garden and how to improve it.

Information: [mgfresno@ucdavis.edu](mailto:mgfresno@ucdavis.edu)

## SEQUOIA CHAPTER OFFICERS\* AND COMMITTEE CHAIRS

### Membership

John LuValle

Thanks to new and renewing members.

If you require corrections or additions to your membership information, contact John LuValle at [jluvalle@mcn.org](mailto:jluvalle@mcn.org).

The Sequoia Chapter serves Fresno, Madera, and Kings counties.

The IRS considers dues in excess of \$12 per year and all gifts to CNPS as tax deductible. Renew your CNPS membership online using a credit card. As an option, renew automatically year after year. It is quick, easy, and convenient, and reduces renewal-mailing costs. Visit [www.cnps.org](http://www.cnps.org) and click on the JOIN button.

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### Next Newsletter: July 2019

Send newsletter suggestions to Laura Castro at [lacastror@outlook.com](mailto:lacastror@outlook.com). The deadline for submissions to the next newsletter is

**Monday, June 24, 2019.**



### JOIN THE CALIFORNIA NATIVE PLANT SOCIETY RENEW

Membership includes the quarterly CNPS journal, *Fremontia*; the quarterly *Bulletin* which gives statewide news and announcements of Society activities and conservation issues; and our chapter newsletter, *Carpenteria*.

I wish to affiliate with the Sequoia Chapter.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Make your check payable to "CNPS" and mail with this form to:

New Member       Renewing Member

- Student, Fixed Income ..... \$25
- Individual ..... \$50
- Plant Lover ..... \$120
- Supporter ..... \$500
- Patron ..... \$1,000
- Benefactor ..... \$2,500
- Steward ..... \$5,000
- Guardian ..... \$10,000

**California Native Plant Society**  
2707 K Street, Suite 1  
Sacramento, CA 95816-5113

The California Native Plant Society is a statewide nonprofit organization of amateurs and professionals with a common interest in California's native plants. The mission of the Society is to increase understanding and appreciation of California's native plants and to preserve them in their natural habitat through scientific activities, education, science, and conservation.

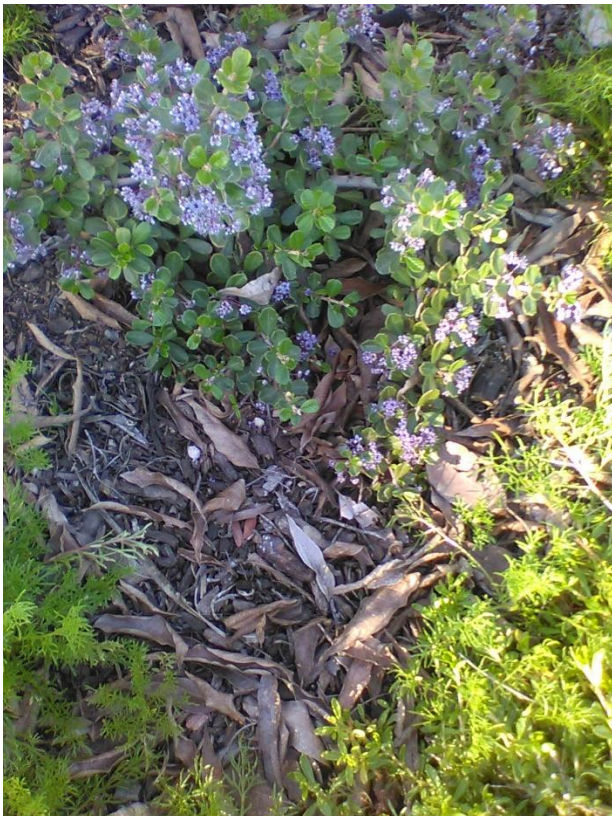
# CARPENTERIA

May/June 2019

## CALIFORNIA NATIVE PLANT SOCIETY SEQUOIA CHAPTER

c/o Jeanne Larson ♦ 3457 Redlands ♦ Fresno, CA 93726

### GARDEN NOTES



#### **My Ceanothus**

**--Jeanne Larson**

In the fall of 2017, a one gallon *Ceanothus maritimus* “valley violet” was planted in a 4.5 foot wide strip along my drive that had no piped water. The plant was carefully hand watered, as the 2017 fall was dry. Watering continued through the spring of 2018, but there were no blooms. At the 2018 fall plant sale, I bought a second valley violet, and nursed this new plant, along with the older one, through the drought year.

This spring 2019, with normal rainfall, they both bloomed profusely. During the early heat spell, it seemed that the younger of the two shrubs needed some water. It often takes two or three years, depending on the weather, for drought tolerance to kick in.

At maturity, three feet by three feet, the shrubs will be just right for the site. I am hoping that a flush of growth in the fall of 2019 will produce a spring delight in 2020.





Baby Blue Eyes  
(*Nemophila-menziesii*)



Blue-Eyed Grass  
(*Sisyrinchium bellum*)



Goldback Fern  
(*Pentagramma triangularis* ssp.  
*triangularis*)



White-petaled Blennosperma  
(*Blennosperma nanum* var *nanum*)



Warrior's Plume  
(*Pedicularis densiflora*)



Sierra Shooting Star  
(*Dodecatheon jeffreyi*)



Foothill Lomatium  
(*Lomatium utriculatum*)



Viola ssp

**May 2019  
Sequoia Chapter CNPS**



Saxifrage  
(*Micranthes californica*)



Cream Cups  
(*Meconella californica*)

Photo credits: Jane Pritchard  
Blue-eyed Grass – China Creek  
Warrior's Plume – Jose Basin Road  
Blennosperma – McKenzie Preserve  
All others - Sugarloaf