

Carpenteria

CNPS SEQUOIA CHAPTER



April 2019

www.cnps-sequoia.org

CONTENTS

1
The Science of Plants

3
Rare Plants of Fresno
County

4
Upcoming Classes
and Events

5
Membership and
Officers

6
China Creek Report

THE SCIENCE OF PLANTS

Cycle of Life

--Jane Pritchard

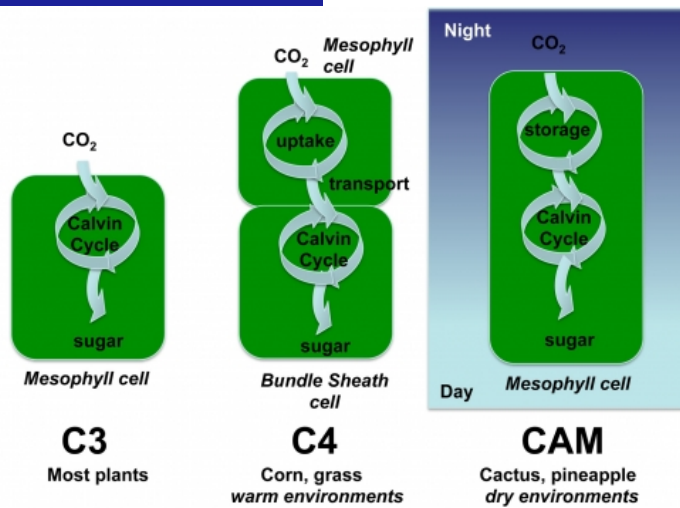
Cellular respiration and photosynthesis form the Cycle of Life. Photosynthesis uses energy from sunlight, water in cells, and carbon dioxide (1-carbon molecule) from the air to build glucose (6-carbon molecules), to store energy in the glucose (sugars), and to produce oxygen.



Energy from sunlight is stored in bonds between atoms in glucose molecules. Green plants, algae, and some bacteria photosynthesize and are responsible for oxygen in the atmosphere.

Cellular respiration is the opposite of photosynthesis. All living cells — plant, animal, fungus, bacteria — respire. Oxygen from the environment is combined with carbon. Glucose is broken down and carbon dioxide and water is produced; energy is released and used for growth, reproduction, and maintenance of organisms.

Parasitic plants do not photosynthesize and do not contain the green chlorophyll to make glucose. They attach to other plants and feed from them. Some plants are partially photosynthetic and more or less green.



Three main types of photosynthesis have evolved in different climates: C3, C4, and CAM. Each has advantages and disadvantages for plants living in different habitats. C3 is best in moist, cool conditions; C4 is best in warm, sunny, dry areas; CAM is best in deserts.

Most turf grasses have C3 photosynthesis and do fine in spring and summer when there is abundant rain. In late summer, conditions dry out, and crabgrass may take over. Crabgrass is a C4 plant adapted to warmer, drier conditions. Corn, another C4 plant, originated in dry areas of the western hemisphere. CAM plants often are restricted to deserts.

From textbook "Life on this Rock: Biology" – Sample Chapter by Shea Gonzalez; <http://www.trinity.net/lifeonthisrocksample/view/article/534eafa10cf226e0bdbfc918/?topic=538dd80b0cf226e0bdbffa0e>

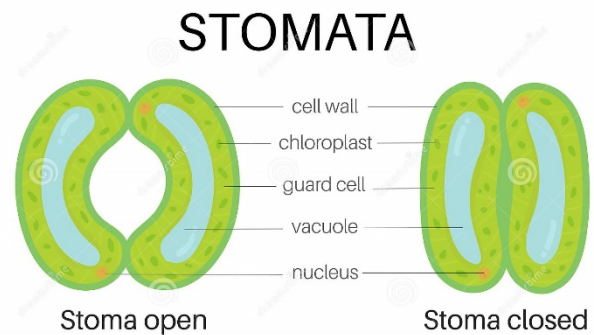
THE SCIENCE OF PLANTS: CYCLE OF LIFE (CONTINUED)

All three forms of photosynthesis are based on two pathways. The first is the “light reactions”, where chlorophyll absorbs energy from sunlight and transfers the energy to hydrogen ions that split off from water, which produces oxygen. The second pathway is the “dark reactions” where carbon (from carbon dioxide in the air) is fixed into glucose molecules in cells. The three types of photosynthesis differ in chemical details that determine how the processes are carried out.

Most plants growing in areas with sufficient water use C3. When water is present, C3 is very efficient because light (energy is trapped) and dark (carbon is fixed) reactions occur simultaneously in the same cell, and almost all of the cells in the leaf will be producing glucose. Under bright, hot, sunny conditions, stomata (leaf openings) close, oxygen builds up in cells triggering photorespiration, and photosynthesis stops.

C4 grabs carbon dioxide with a different enzyme that is less likely to bind with oxygen, so photorespiration is less likely to occur. C4 is inefficient but better than C3 if water is scarce. Fewer cells photosynthesize so fewer sugars are made.

CAM photosynthesis is most common in desert plants where water is at a premium. Stomata open only at night when it is relatively cool and humid and close during the hot, dry day. Carbon dioxide is taken from the air only at night and stored in vacuoles of the cells. In the morning, sunlight drives the light reactions and the stored carbon is made into sugars. Thus, desert plants can survive dry conditions but at the cost of rapid growth. Slow growth is one of the reasons they invest so much energy in defensive structures (spines) and chemicals that prevent nearby growth of other plants. They can't afford to lose such hard-earned biomass.



© dreamstime.com

ID 136984601 © Achiiichii



Researchers conducting studies by plane found lower than expected sulfur in the air over tundra, which is covered with lichens. The Bulletin of the California Lichen Society, Vol 1, No 2, Winter 1994 reported that lace lichen (*Ramalina menziesii*), and the eleven other lichens tested so far, use carbonyl sulfide (COS) and carbon dioxide in photosynthesis. The lichens can manufacture sugars from COS and remove large amounts of sulfur from the atmosphere.

Some plants such as manzanita photosynthesize in their stems. Manzanita bark is very thin to expose stems to sunlight. Tannins and other toxic compounds inhibit growth of lichens, moss, and fungi on the bark.

Photosynthesis and cellular respiration form a continuous cycle that sustains life on earth.

RARE PLANTS OF FRESNO COUNTY

--Jane Pritchard

The plants described below are listed in the CNPS Inventory of Rare & Endangered Plants of California, 8th edition.

Pygmy pussypaws (*Calyptridium pygmaeum*; aka *Cistanthe pygmaea*), in the Montiaceae family, is a California endemic with short, spatulate, fleshy leaves. It is an annual that grows in sandy to gravelly soils in conifer forest at 1980–3110 meters in the southern High Sierra Nevada and San Bernardino Mountains. Its white flowers bloom from June through August.

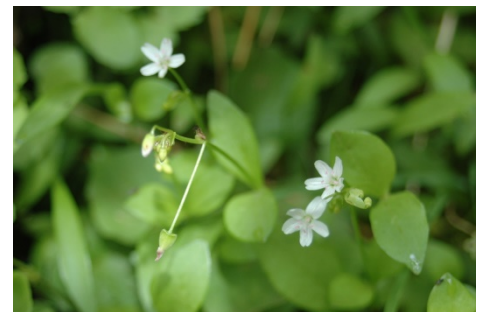
Mono Hot Springs evening-primrose (*Camissonia sierrae* subsp. *alticola*), in the Onograceae family, is an annual. It grows in shallow soil on granite outcrops in ponderosa pine forest located in the central High Sierra Nevada (Mariposa & northeast Fresno Counties) at 1035–2410 meters. Plants from Merced Lake (around 2200 meters in central Mariposa County) may be evolutionarily distinct. This evening-primrose has four-petaled, self-pollinated, yellow flowers that fade to red (no red dots). It blooms May through August. The genus is derived from the name of L.A. Von Chamisso (1731–1838), a French-born German botanist.



-*C. bolanderi*- ©2014 Belinda Lo

Bolander's woodreed (*Cinna bolanderi*), in the Poaceae family, is a perennial with green to gold-green flowers that bloom from July to September. It grows on streambanks, in wet meadows, and at other moist sites within conifer forests. It is located at 1670–2440 meters in the central and southern High Sierra Nevada. *Cinna* was taken from the Greek *kinni*, which is a grass.

Marsh claytonia (*Claytonia palustris*), in the Montiaceae family, is a perennial that grows in marshy meadows, springs, and streambanks at 1000–2500 meters in the High Sierra Nevada. The white to pinkish flowers spring from basal leaves May through August. John Clayton was a colonial American botanist (1694–1773); *palustris* is the feminine form meaning marshy in Latin.



-*C. palustris*- ©2006 Dean Wm. Taylor, Ph.D.

The Sierra or Tulare County bleeding heart (*Dicentra nevadensis*)



-*D. nevadensis*- ©2018 Steve Matson

is in the Papaveraceae family and is an endemic to California. It is a rhizomed perennial that grows in subalpine forest openings at 2200–3050 meters in the southern High Sierra Nevada (Sequoia & Kings Canyon National Parks, Tulare County). Its white to pale yellow or pale pink flowers bloom from June through August and dry to black. The alkaloid-containing foliage can cause dermatitis and death if eaten in sufficient quantities. *Dicentra* is derived from Greek, meaning twice spurred, referring to the outer petals.

Upcoming Classes and Events

•April 13, Spring Fling on the Kings Saturday, 11:00am – 3:00pm

Location: Lapp River House, 26210 Elwood, Sanger
Sponsored by Cooperative Extension Fresno County

- There will be live music, games, and walks along the river.
- Las Cabañas Taco Truck lunch = \$10.00.
- Beer and wine will be sold.

Admission: Free

Information: Call 559-787-9500 or go to kingsriverconservancy.org

•April 19-21, California Lichen Society Foray at Angelo Coast Range Reserve

Location: UC Reserve system, Mendocino County

- Reservations are required.
- You will need to provide arrival and departure information and sign waivers.
- Potluck dinner will occur on Saturday night.

Cost: unknown

Information: If interested in attending, please RSVP to Ken Kellman at kkellman@sbcglobal.net.

•April 27, Spring Garden Tour Saturday, 9:00am to 5:00pm

Location: Fresno

- Spend a day visiting six lovely gardens in Fresno.
- Gardens include the Callahan Garden (an Asian influenced garden), the Holland Garden (a mature landscaped with a wonderful variety of plants and an outdoor bedroom), the Carroll Garden (a garden with an edible landscape), the Mazzoni Garden (newly landscaped waterwise and unusual plant garden in small space), the Raymond Garden (a Master Gardener's garden), and the Garden of the Sun (a demonstration garden tended by Master Gardeners).
- A Plant Sale will be held in conjunction with the Spring Garden Tour at the Garden of the Sun from 9am to 5pm.

Cost: \$30 advanced purchase/\$35 day of tour

Information:

https://ucanr.edu/sites/mgfresno/http://ucanredu_sgtfresno/



•May 4, Botanical Drawing and Painting Saturday, 9:30am – 1:30pm

Location: Intermountain Nursery at 30443 N. Auberry Road, Prather, CA 93651

- Taught by Shirley Spencer, Artist and Naturalist
- Introduction and demonstration of sketching and watercolor painting of botanicals.
- Achieve a realistic and dramatic painting.
- Watercolor paper, paint, and brushes will be provided.
- Bring your lunch.

Cost: \$35.00

Information and registration:

<https://www.intermountainnursery.com/classes.htm>
or contact the nursery at 559-855-3113



•May 4, Water-Wise Plant Exchange Saturday, 8:00am to 12:00pm

Location: Fresno State Horticultural Greenhouses, California State University, 3150 E. Barstow Avenue, Fresno, CA

- Bring water-wise plants, cuttings, bulbs, seeds, or trees from your garden for the free plant table.
- Free Workshops.
- Free water-wise plants.

Cost: Free

Information: call 559-621-5480, email or go to http://www.fresnostate.edu/jcast/documents/pdf/2018-19/WaterWise_Plant_2019_Flyer.pdf

•May 10, Grassland Vegetation Monitoring Methods and Techniques Friday, 9:00am

Location: Contra Costa County Farm Bureau Hall, 5554 Clayton Road, Concord, CA.

- Will provide a comprehensive overview of vegetation monitoring in the context of grassland habitats.
- Morning: indoor presentations on grassland ecosystems, sampling designs and in-field methods, and data analysis.
- Afternoon: apply skills and techniques in the field at Lime Ridge Open Space.
- Includes lunch and workshop materials.

Cost: \$160 Member/ \$180 non-member/ \$95 student

Information and registration: <https://cnga.org/event-3234310>

**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.

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 and click on the JOIN button.

*President	open	
*Vice-Pres.	Warren Shaw warshaw1955@gmail.com	559/451-1256 (h)
*Secretary	open	
*Treasurer	Thelma Valdez yucca37tv@yahoo.com	559/323-8962 (h)
•Membership	John LuValle	jluvalle@mcn.org
•Field Trips	Jane Pritchard xxiii_xx@yahoo.com	559/765-9954
•Newsletter Editor	Laura Castro lacastror@outlook.com	559/643-6012
•Hospitality	Madeleine Mitchell madeleine43@comcast.net	559/638-2784 (h)
•Horticulture	open	
•Education	Warren Shaw warshaw1955@gmail.com	559/451-1256 (h)
•Rare Plant	Jane Pritchard xxiii_xx@yahoo.com	559/765-9954
•Plant Sale	Thelma Valdez yucca37tv@yahoo.com	559/323-8962 (h)
•Conservation	Jeanne Larson jrjlars@aol.com	559/243-0815 (h)
•Directors at Large	Michele LuValle	jluvalle@mcn.org
•Webmaster	Thelma Valdez yucca37tv@yahoo.com	559/323-8962 (h)

Next Newsletter: May 2019

Send newsletter suggestions to Laura Castro at lacastror@outlook.com. The deadline for submissions to the next newsletter is **Monday, April 22, 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: _____

- Student, Limited Income..... \$25
- Individual \$45
- Family, Group, or Library \$75
- Plant Lover \$100
- Patron \$300
- Benefactor \$600
- Mariposa Lily \$1500

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

- New Member** **Renewing Member**

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

April 2019

CALIFORNIA NATIVE PLANT SOCIETY SEQUOIA CHAPTER

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

CHINA CREEK REPORT

March 2019 Work Party

--**Warren Shaw**

Even though it was almost a week after St. Patrick's Day, we were promised Irish soda bread (and brownies). Perhaps that was the reason such a great group of determined weed warriors showed up for our March work party. We got in a good two hours of uprooting invasive thistle rosettes before break time.



As we were finishing up our break, the threatened rain started. We rushed to distribute a trailer load of native plants donated by Westervelt Inc. (surplus from a mitigation project near the Park). A substantial portion went to the Kings River Conservancy for a joint effort to revegetate some Army Corps of Engineers property near Pine Flat Dam. Volunteers chose some for their own gardens, and John and Laura each took a flat home to nurse through the summer in preparation for the Fall Plant Sale.

By the time the plants were distributed, the rain had increased to the point that we decided to call it a day, and a good day at that.

In April, our China Creek partner, The Kings River Conservancy, will hold its annual "Spring Fling on the Kings" event on Saturday the 13th. To avoid conflict, since some China Creek volunteers will be participating, our April work party will be the following Saturday, April 20, from 8am-12pm. Though we killed hundreds of thistle rosettes in March, there are still plenty to dig. We also need to catch up on caging valley oak seedlings, maintaining the trail, and bushwhacking the Sanctuary trail.

Please join our hard-working and congenial volunteers on April 20th if you can.