

News from the Friends of

The Bernard Biological Field Station

Of the Claremont Colleges

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P.O. Box 1101, Claremont, CA 91711 (909) 260-4403

www.fbbfs.org

Earth Day at the Botanic Garden:

Rancho Santa Ana Botanic Garden hosted a wonderful Earth Day celebration on April 20. Our assigned spot was in the shade of a venerable oak tree. It was a beautiful day and lots of people stopped by to learn about the BFS and lend support.



The Folk Music Festival at Larkin Park:

We were once again invited to set up a children's booth at the Folk Music Festival on May 4. This year we provided "feelie boxes", pictures to color, and a badge-making machine. Kids colored in a picture of a BFS plant or animal, or drew their own, and made it into a badge to wear. This was a very popular activity indeed and everyone had a good time (including the adults who made lots of sample badges!). The music was great too. This annual event is one of Claremont's lesser-known treasures.

California Buckwheat

Eriogonum fasciculatum

In late spring, chaparral and coastal sage scrub are ablaze with the pink-tinged white blossoms of California Buckwheat. The new, bright green leaves darken to a deep, almost blackish green. The blossoms, after pollination, darken to a lovely deep orange and remain on the plant into the fall.



✓✓✓ Sightings

- In spite of the lack of rain, there were lots of purple *Phacelia* and white *Cryptantha* (popcorn flower).
- The small but lovely deep maroon flowers of our native peony (*Paeonia californica*) appeared beneath an elderberry.
- The cherries (*Prunus sp*) bloomed prolifically and were noisy with the hum of foraging bees.
- The delicate lavender blossoms on eight foot tall spires of white sage (*Salvia apiana*) are full of visitors too.
- The branches of the golden currants curved under the weight of the fruit.
- The beautiful purple and blue flower spikes of *Penstemon spectabilis* light up the landscape.
- The California Quail are out and about with their new families.
- Three birds were recently sighted that are new to our bird list: the Calliope hummingbird, Cassin's Vireo, and the Gray Flycatcher. The unusually dry weather in the deserts may have caused these to forage farther afield than usual.
- The uncommon pink glowworm (see "Meet the Inhabitants") was spotted by a student.

California Buckwheat (no relation to the plant of pancake fame), is a low, evergreen shrub of the family Polygonaceae. This is a large family, with at least 75 species in the state. *E. fasciculatum* is an indicator species for Coastal Sage Scrub and can be found all over the Field Station. The small, narrow leaves are dark green on top and light green below. They are attached to the long, straight stems in bundles and the flower stalks stay attached long after the seeds have been dispersed. The plants are generally about two feet tall and two to four feet wide.

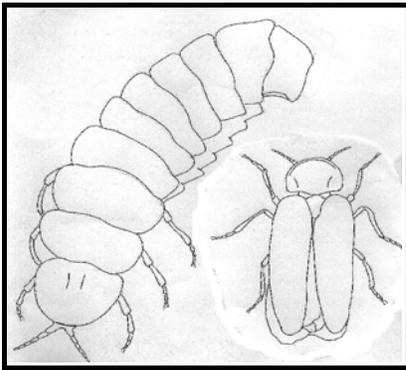
Native Americans gathered buckwheat ("Wilakal") all during the year. The early spring leaves and shoots were eaten raw. The seeds were ground and eaten with those of blazing star. The oldest ("grandmother") plants were considered the best for medicine. New leaves were brewed into a thick tea for headaches and stomach pains, as were dried and ground roots. Leaves and stems were made into a mild tea for bladder problems and used as a gargle for

sore throats. In mid spring, the blossoms were gathered for medicinal teas to treat bronchitis and to bathe newborn babies, as well as for an eyewash. Flowers and leaves were made into poultices to treat wounds. Branches were used to line granaries to keep acorns dry. The stems were stripped and cleaned and used to pierce earlobes for earrings. During ceremonies, seeds were ground and scattered in processions and in ceremonial areas.

The Pink Glowworm

Microphotus angustus

The pink glowworm (Order Coleoptera, Family Lampyridae) is one of the more unusual insects found at the Field Station. These uncommon beetles are found mainly in dry grassy areas in late spring and early summer. They have been seen on a number of occasions around the area



near the outdoor classroom at the Field Station. The males look like an ordinary, pinkish-tan beetle about a quarter to a third of an inch long. The very bright pink females, however, are wingless and elongated like the beetle larvae (think caterpillar) and are about half an inch long.

During the day, males can be found on the underside of leaves and the females under rocks in leaf litter. Unlike eastern fireflies, these beetles do not flash on and off. However, the female lets the male know her whereabouts by glowing a continuous soft, intense, luminescent green at night. The males emit a little, weak light when disturbed but don't use it to communicate. Although the feeding habits of the adults are not known, the larvae, gardeners will be happy to know, prey on snails and slugs.

Lake Reclamation

pHake Lake has been under attack for some years by cattails. They have slowly been filling in around the edges so that the area of the lake has decreased. As originally designed, there was a marsh at the east end of the lake and a small island just offshore. Over the years, cattails have filled in the channel and the island has become part of the

lakeshore. This year the invaders are finally being beaten back due to the Herculean efforts of manager Stephen Dreher and his student workforce, and the island is reemerging.

A new addition to the newsletter:

Featured Project at the BFS

The Effect of Lead in Gasoline on the Environment near a Major Roadway

by Audrey Landale
Claremont High School

Recently I did a project involving the effects of lead on the soil ecosystem close to a major road-- Foothill Blvd. I knew that lead was added to gasoline for over forty years and some studies had shown that the lead in automobile exhaust has remained in the soil near major roadways for a long time. I hypothesized that if the lead had been there a long time, some soil bacteria would have become resistant to lead.

To test my hypothesis, I took soil samples at 0.5, 5, 10, 20, and 50 meters back from Foothill Blvd. The first two locations were in the parkway and the last three in the Bernard Field Station. I diluted the soil samples, plated them onto agar plates with or without lead, let them incubate for several days and then counted the colonies. Some bacteria did grow on the plates with added lead, proving that they were lead resistant and supporting my hypothesis (see figure below). The pattern with distance was not, however, quite like I expected. The highest percentage of lead was closest to the road, and at 5 and 10 m it decreased steadily, but instead of continuing to decrease with distance, the percentage of lead-resistant bacteria increased in the 20 and 50 m samples, which were inside the BFS.

The try to understand these results, I directly measured the lead content in the samples by using atomic absorption spectrometry. I found that the concentrations 0.5 m from Foothill were very high--in fact, some of the samples were above the level that would require remediation. Although the lead content dropped sharply with distance, there were still significant levels of lead even in the 50 m samples

(see figure). The lead content of the soil did generally correspond with the percentages of lead-resistant bacteria, although there did appear to be a difference between the parkway and the field station. It's possible that the bark mulch in the parkway affects the bacterial community or the bioavailability of lead.

Thanks!

Yard sale:

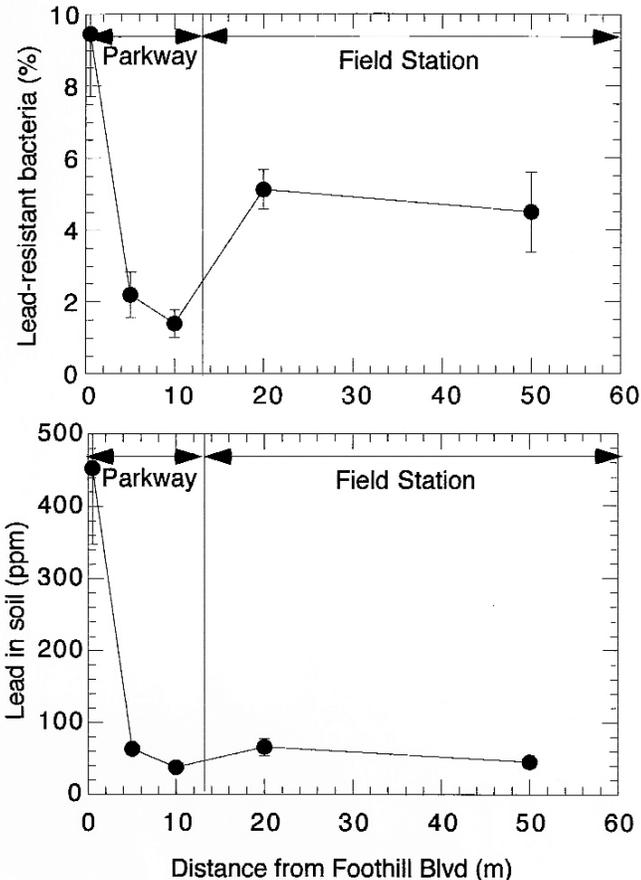
Many thanks to those who donated items and helped to sell them. Special thanks to Kathryn Herrman for inviting us to join her annual yard sale. Please keep the Friends in mind if you plan to give away any especially nice items during the year.

Silent Auction:

Our heartfelt thanks to the Folk Music Center for donating window space for our second annual silent auction during May and early June. Thanks also to those who bid on the items.

Earth Day and Folk Music Festival:

Thanks so much to those who helped set up and staff the booths. Public outreach is crucial to preservation efforts.



Audrey is a freshman at Claremont High School. She carried out her project at Harvey Mudd College. Her research project received first prize in Environmental Science at the Claremont High Science Fair and second prize in Ecology at the Los Angeles County Science Fair.

To view descriptions of other projects at the Bernard Field Station, go to www.bfs.claremont.edu

Film: "Contested Land", a student documentary by Lara Glueck about the controversy surrounding plans to build on the BFS. Call Steve Nagler (626-1185) for info.

We need people to staff the information and game booths and to help with the parade entry.



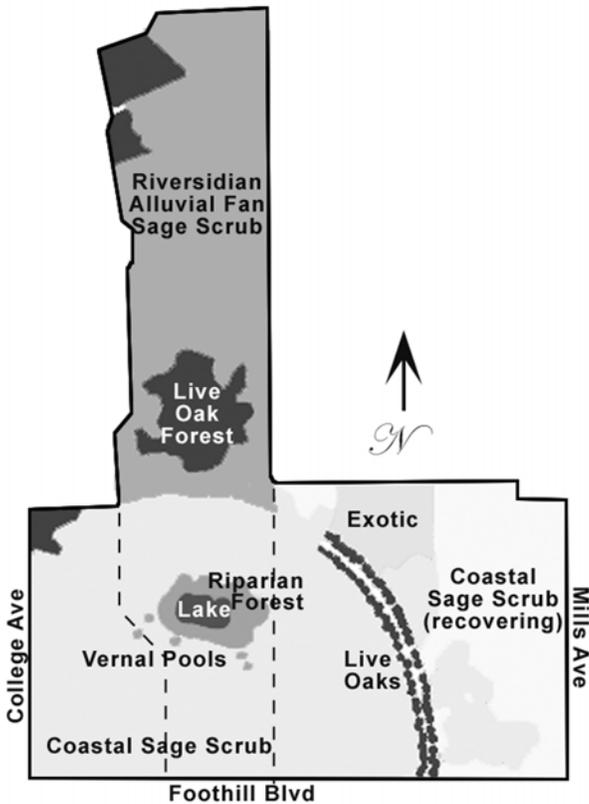
Please call 621-6381 to volunteer a couple of hours of your time.

Call 621-6381 if you want to help with the booths, newsletter, Farmer's market, phone tree, or fund-raising. Donations are always welcome (and essential!) too. Please send them to our P.O. Box.



"A tour of the property readily convinces visitors of the importance of keeping such a beautiful expanse of land, shrubs, and trees for scientific purposes."

Robert J. Bernard in "An Unfinished Dream"



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The Claremont Courier:	111 S. College Ave, Claremont CA 91711 Phone: 621-4761
The LA Times:	Inland Valley Edition, 5555 Ontario Mills Parkway, Ontario CA 91764
Inland Valley Daily Bulletin:	2041 E. Fourth St, Ontario CA 91761

How big is big enough?

A field station is land left in its natural state for use in the study of complex interactions between plants and animals. The usefulness of such natural laboratories depends on size and shape. Extinctions occur frequently in small areas, due to smaller populations. The current 85 acres is just large enough to maintain reasonable stability in the existing ecosystems. Narrow shapes increase the amount of pollution by noise, air, water, and pesticides from surrounding areas, and increase the chances of competition from exotic (non-native) species.

Who uses it?

The BFS is used by Claremont Colleges faculty and hundreds of students every year, as well as by many schoolchildren from Claremont and the surrounding areas. It has also been used by college classes from as far away as Long Beach, by scout troops, and by members of the public.

What's there?

There are over 30 acres of the fast-disappearing coastal sage scrub community with a number of Species of Special Concern. *Since much of Claremont was originally covered with coastal sage scrub, it is a fascinating window into our past.*

There is a stand of oak woodland in the north where water wells up along an earthquake fault, there is annual grassland slowly returning to coastal sage scrub in the east, and there is a one-acre, man-made lake excavated in 1978 which is a sanctuary for western pond turtles displaced by development.

*“Dedicated to Education
 and the Environment”*