News from the Friends of

The Bernard Biological Field Station

Of the Claremont Colleges

Volume 5 No. 3 October 2004 P.O. Box 1101, Claremont, CA 91711 bfsfriends@earthlink.net www.fbbfs.org

Join us at Village Venture Oct 23!

We would love to have you help staff the information or game booth, so let us know if you can help (bfsfriends@ earthlink.net).

Annual Auction

This event is the major fundraiser for the Friends, so please stop by the Folk Music Center, 220 Yale Ave, sometime between November 5 and 26 and make a bid on one of the artworks. If you have paintings, pottery, carvings, jewelry, or any other artwork to donate, please email us and we will arrange to collect it.

More on the General Plan

The seven subcommittees have met and produced vision statements. The chairs of the subcommittees have also met to condense the statements into a preamble for the General Plan.

A community festival was held on September 11 to get input from those not on the committees. The vision statements and the festival results (and soon the results of a City survey) are on the City website:

http://www.ci.claremont.ca.us

The City has decided to continue collecting comments on the website, so if you didn't mail yours in, there's still time to express them.

There will be several meetings during the next couple of months to discuss goals and policies that should be included in the General Plan. The public is invited to all of these. The dates are listed on the City website.

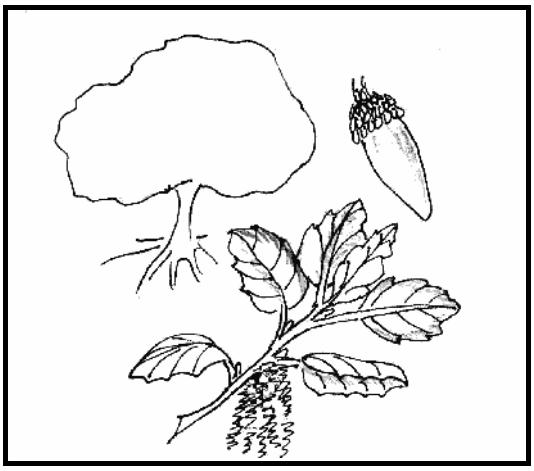
Teachers !

If you would like your class to visit the Station, please phone the manager, Stephen Dreher (909-624-6661)

Updated FAQ sheet

We've included a sheet with answers to common questions. Please keep it for future reference.

Meet the Inhabitants



Quercus agrifolia
Coast Live Oak

Oaks range from shrubs to large trees, and can be found from rich loam valleys to dry Chaparral slopes and foothill woodlands. They can be deciduous or evergreen. The leaves on some species are lobed, on others they are oval. Different species blossom within the period of March to May, with some fruits maturing in one year and others in two. Pollen is produced in strings of tiny, yellowish, male flowers called catkins, with one or a few tiny female flowers nearby. The fruit is a pointed nut with a scaly cap, the familiar acorn. Coast live oak is the most common species in our area and it has stiff, oval leaves whose edges curve down.

Oaks formed the core of Tongva life. Prior to the invasion of the Europeans with their cattle, swine, and goats, the great oak forests were the glory of the Los Angeles, Orange County basin. Today only patches remain as reminders of the grand Tongva oak world.

No other plant occupied so central a position to Tongva life as the oak. The oak was the central food plant: *Quercus agrifolia* was known as "wet", *Quercus chrysolepis* as "wiaht", *Quercus dumosa* as "pawish",

Quercus kelogii as "kwingili", and *Quercus lobata* as "sheve". The acorns of each species also had separate names. In early summer, the men and women of the villages began their annual inspection of their oak groves. Each village had designated groves which they tended and maintained. The men trimmed out old, broken, diseased branches. Women and children weeded out unwanted ground plants. The villagers carefully burned off grasses to clear the oak lands, to produce fertilizing ash, and to provide better soil for their beloved trees.

Each family harvested up to 500 pounds of acorns each year. In autumn, the villagers traveled to their groves to gather the ripe acorns, making temporary camps. The men beat the acorns down with sticks and the women gathered the felled acorns in large conical baskets. The acoms were stored in specially constructed storage units called "tsoahkah". The acorns were dried, cracked open, and peeled when needed. The acorn meat was pounded into a fine meal and then leached to eliminate the toxic tannin. The ground, leached meal was cooked into an acorn porridge or baked into small cakes. An acorn soup was also sometimes made.

Elaborate ceremonies, dances, and songs celebrated the acorns and the gathering times. Stories of how and why the different acorn shapes and sizes came into being were common throughout California. The Tongva sing of a time when the acorns were five spirit sisters who had to weave new basket caps before entering the physical world. Each sister wove a distinct cap and these caps became the different acorn cups.

A side product of the great tree was the large, round gall produced when the California gall wasp laid her eggs in the stem. The gall was dried and ground into a fine powder and used for eye infections. The galls were also painted and decorated and attached to head sticks for ritual dances.

The Tongva were truly an Acorn People.

To get info about the BFS:

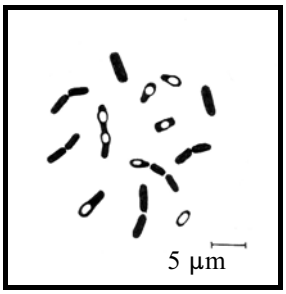
You can get information about the history and features of the station, as well as about its plants and animals (and some great pictures) at www.bfs.claremont.edu.

Past Issues of the Newsletter

When you suddenly have a question about pink glow worms or elderberry and can't locate the right past issue of the newsletter, log on to our website and find the info there.

The white circles are spores and the dark rods are actively dividing cells

Two *Bacillus* Species



Just like the plants that live there, BFS soil microbes must deal with long dry, hot stretches between periods of drenching rain. Soil bacteria in the genus *Bacillus* are ideally equipped for the BFS habitat. If you dilute a little coastal sage scrub soil and spread it on a nutrient agar plate, you will find that in a few days the plate is populated with many *Bacillus* colonies.

Bacillus species can survive hot, dry, nutrient-poor conditions by making tough durable spores. When they lack water or nutrients, they package up a copy of all their genome in a thick, impervious coat, producing a spore. Bacillus spores are not only resistant to dryness, they survive heating (many can be boiled without harm), ultra-violet light, and toxic chemicals. The spores can remain in a dormant state for years, decades, or even centuries. One scientist at Cal Poly San Luis Obispo even claims to have revived spores from the guts of insects in 250 million year-old amber!

When spores again encounter water and nutrients, they swell, bursting the spore coat. They proceed to grow and divide rapidly while the growing is good, all the while ready to make spores again when times get bad. While the *Bacillus* bacteria are growing, they break down dead plant material and use the sugars, starches, proteins, and other simple and complex organic compounds as energy sources and building blocks.

Some *Bacillus* species make industrially useful compounds, including antibiotics, natural insecticides, and enzymes used in detergents. One day, a student researcher may find a new useful compound in the BFS *Bacillus* bacteria.

An aside: One *Bacillus* species has become quite notorious, as it causes anthrax. Its durable spores are a great part of its appeal as a bioweapon. Other *Bacillus* species, however, do not cause disease. They just live in the soil, cycling nutrients, to the benefit of plants and animals, including us.

BFS Observations

Stephen Dreher, BFS manager

The Claremont version of fall is here. In many ecosystems, October means cool, fresh days and a colorful landscape of changing foliage. Southern California usually gets hot, dry Santa Ana winds and fire. Here in the coastal sage scrub, it's the start of a slow transition period between dry and wet seasons. What we do share with everyone else are shorter days and the promise of rain in winter.

Often it's the day length that triggers the seasonal plant and animal responses, rather than any hint of frost. Certainly the legions of Argentine ants start looking for places inside our homes in early September, long before any cold or wet weather sets in. This ant invasion ushers in "fall" for me in California.

There are other predictable signs of autumn at the BFS, a few that might go unnoticed by the casual visitor. The oak acorn crop matures, if there will be one at all. Acorn production varies greatly from year to year, for reasons that are still debated. There is a crop this fall at the field station, though not a particularly large one. The toyons have finished setting their fruits, a process they began early in the summer. Now the berries will ripen in bright red clusters just in time for Christmas.

Both our oaks and toyon are evergreen, but some BFS species do lose their leaves now. Perhaps this is a response left over from eras in the past when the climate was colder. The sycamores, poison oak, willows, alders, and cottonwoods which drop their leaves at the BFS are all plants that are also found in more typical winter regions. In contrast to these plants, many coastal sage scrub and chaparral plants are just waiting for the first blast of winter rain to green up again, having lost their leaves in the heat of summer to reduce water loss.

Wildlife behavior and movement has started to change as well. In addition to Argentine ants setting up shop in our walls, the native Californian ground squirrels are less visible, spending time preparing the underground networks where they will spend most of the (hopefully) wet months. This is a subtle transition, but is clear by these October weeks. Now, instead of dozens of sightings per day, I see fewer than ten. The summer's young have matured and are busily engaged storing food. The same holds true for the dusky-footed wood rats. The first white-crowned sparrows appeared the begining of October, coming down from their summer mountain homes to the milder winter of the lowlands.

Once again the wheel of life turns at this rare and endangered refuge we know as the Bernard Field Station. Both plants and animals are making complex preparations in anticipation of the life-giving rains.

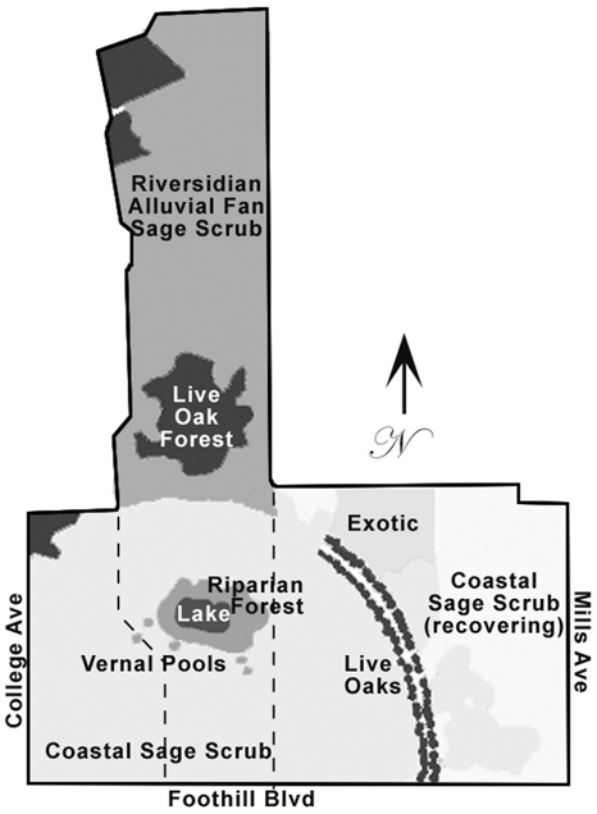
✔✔✔Sightings

- Huge, triangular-leaved calabazilla vines festooned with bright yellow, tennis-ball-sized gourds
- Coots and ducks sailing through bright green patches of algae on the lake
- Brilliant blue and incandescent orange dragonflies darting erratically along the lake edge
- Cattails bending gracefully in the afternoon breeze
- Black and white Phoebes landing in the willows
- Long, thin male catkins and tiny, pinecone-shaped female catkins decorating the alders
- Russet heads full of seeds on the buckwheat and russet petals ringing the harvester ant nests
- Rabbit pellets and coyote scat evoking checks and balances
- Summer dormancy in the sagebrush contrasting with the plump stems of the cholla
- More quail and goldfinches than usual, perhaps refugees from new developments
- Small clearings carpeted with tiny yellow annuals
- Crunchy sounds of leaf litter underfoot
- Wind gently moving tiny, bright-green, patches of duckweed back and forth at the margins of the lake
- A hawk, startled into flight, skimming the trees
- Toyon berries beginning to turn orange, promising better times to the birds
- Hip-high woodrat nests, occupied by generation after generation
- Pinebush and scalebroom bursting into yellow bloom and coyote brush blooming white, in spite of drought
- Spiky, gray-green leaves of endangered Nevin's barberry
- The first white-crowned sparrows of the season

"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"

@@@If you would like to be put on the mailing list, please send email to bfsfriends@earthlink.net



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Useful addresses

City of Claremont: P.O. Box 880, Claremont, CA 91711
www.ci.claremont.ca.us

Claremont Colleges: www.claremont.edu

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"