

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

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www.fbfs.org

Sightings

- ✓ Dark green, glossy yerba santa returning in the burned areas
- ✓ The first sheen of green across the land: non-native grasses, petty spurge and storksbill, along with native phacelia, nettles, and amsinckia
- ✓ The first new leaves on golden currants and elderberries
- ✓ Honeybees darting, dipping, drinking at the lake edges
- ✓ Ducks parading, three in a line
- ✓ Mosquito fish darting under the water, creating ripples and dips
- ✓ A lone coot preening before diving
- ✓ Green branches of coyote brush tipped with masses of white, fluffy flowers
- ✓ Geometric patterns in the bark of the largest oaks
- ✓ Tendrils of wild cucumber snaking up from the ground
- ✓ Yellow leaves on the sycamores by the lake; bunches of mistletoe draping bare sycamore branches in the north
- ✓ Little brown birds
- ✓ Lacy tracings of elderberry branches
- ✓ The last (or first?) leaf on the gold-backed fern
- ✓ Cheerful red berry bunches on the toyons
- ✓ Bright purple-red fruit on the beavertail cacti
- ✓ Flower buds on the lemonade berry, soon to burst into bloom
- ✓ The wind dispersing cattail, coyote brush, and pinebush fruits
- ✓ Wave patterns in the dirt roads, leftover from the November rain
- ✓ A sense of quiet, preparing for the spring

Meet the Inhabitants!



Lemonade Berry

Rhus integrifolia

This native evergreen shrub or small tree can be found in both coastal sage scrub and chaparral communities—there are quite a few on the BFS. It grows at a slow to moderate rate to about 15' x 15' but can be kept pruned back. It is usually a multi-trunked, sprawling plant, preferring full sun although it will tolerate a little shade. It needs good drainage and requires little water once established.

The leaves are 2"-3" long, leathery, waxy and have a variable number of teeth along the edge. These plants are closely related to Sugarbush, *Rhus ovata*, and the two species tend to hybridize, producing plants with more pointed leaves like Sugarbush but which have teeth like Lemonade Berry. The plant in the photo above is most likely a hybrid. The leaves are normally entire but occasionally one will be produced that has three leaflets like those of other members of the genus such as *Rhus trilobata*, basketbush. The two leaves

just below the inflorescence in the photo show this unusual pattern.

Lemonade Berry flowers December to April, producing small, conical clusters of tiny, pale pink flowers with a light, sweet scent. They attract bees and butterflies, and birds, including roadrunners, like the fruit. The small reddish, hairy fruits are shaped like disks and are covered in a sticky, acid coating that can be washed off to make a sour drink like lemonade (hence the common name). The Cahuilla Indians ate the fresh fruit and a mush made of dried berries, and also made a drink from the fruits. However, these plants belong to the same family as cashews so people with nut allergies should not try this.



Desert Cottontail *Sylvilagus audubonii*

This is one of the most common mammals at the BFS. They look a lot like ordinary rabbits, although their ears are a bit longer and they tend to keep them upright more of the time. They are generally gray-brown with a white underside to the tail and adults are about 15" long and weigh about 3lbs.

Desert cottontails live in abandoned burrows dug by other animals and generally come out to eat in the morning and afternoon. Unlike other rabbits, they like to forage in groups, eating grass and other plants, including cacti! They get virtually all the water they need from the vegetation they eat.

Cottontails provide food for many predators: hawks, foxes, bobcats, coyotes, and snakes. Native

Americans, of course, hunted them for food and fur. Motivated cottontails can zigzag at speeds up to 19 mph when eluding predators. If they are frightened or startled by another rabbit, they will often jump up into the air and then slap the other rabbit with a front paw or nudge it away.

Starting in February, each female produces several litters of from one to six naked, blind babies in shallow nests or above ground. The young are on their own at about 5 weeks, and at three months old they can reproduce. (Photo by Nancy Hamlett).

Native plants are not always desirable!

Consider, for instance, *Typha latifolia*, the cattail. This is a California native, but it is quite invasive in small bodies of water, such as pHake Lake. The first photo shows cattails completely blocking boat access to the south side of the lake a few years ago.



The small island in the lake has also sometimes been completely hidden.

Cattails spread by underground

stems (rhizomes) as well as by seed. At right you can see the familiar sausage-shaped groups of flowers. Each of these will



release hundreds of tiny, white, fluffy seeds which will be blown by the wind or float on the water to establish plants

in new locations. Keeping the lake level high helps to slow the underground spread, but even then a lot of volunteer effort goes towards removing the

plants. The third photo (taken by Nancy Hamlett) shows one of the piles of cattails recently removed by the BFS volunteers.

Plant adaptations to a dry climate

Plants in Mediterranean climates like ours have evolved in response to our wet (at least sometimes!) winters and hot, dry summers.

Annuals avoid the whole problem by restricting their entire life cycle to the wet season. Seeds start into growth as soon as there is rain, pause a bit until days are longer and warmer, and then the plants complete flowering and setting seed before it gets dry. Sprouting early can give annual seedlings a competitive advantage, but if fall rains are followed by a dry winter, the new plants are likely to die. Annuals hedge their bets by producing a set of seeds that differ in germination time so at least some are likely to hit a time when conditions stay good.

Some of our perennial plants and shrubs cope with the heat and lack of rain by going partly or completely dormant in the summer. They may stop producing leaves, produce smaller leaves, or lose leaves. California sagebrush does all three. Perennials like California peony and Goldbacked fern grow in the shade until it gets too hot and then die down until the next spring.

Plants at the BFS also have other characteristics that help them to survive high heat and little water. Sagebrush, cotton thorn, and white sage all have gray leaves. The pale color helps to reflect light and therefore reduces heating and water loss. Redberry, pinebush, and scalebroom have small leaves which reduces heat absorption. Yerba santa and lemonade berry have waxy leaves which retards water loss. White sage and milkweed have hairy leaves. Hairs provide shade to the surface, help to trap water lost from the stomates (leaf pores), creating a local high humidity zone, and slow down water loss due to wind. Beavertail cacti have decreased their evaporative surface area by modifying their leaves into spines. Spines also produce some shade to the cactus pads and deter predation by animals attracted to the water stored in the stems. The stems photosynthesize and are held upright which reduces the amount of sunlight hitting them.

Other arid zone plants, like mesquite, cope with hot, dry conditions by having roots deep enough to

reach the water table even in summer. Agave leaves funnel rainwater towards their roots. Many grasses roll their leaf edges towards the midrib at midday, reducing the area receiving heat.

Tours of the BFS

Community and school groups can take tours of the BFS. If you are interested in bringing your group up to learn about what is there, please call or email (909-398-1751, wallace.meyer@pomona.edu).

BFS volunteer days

First Saturday of the month, 10:00 a.m. until noon, followed by a tasty pizza lunch for the volunteers. For questions or to be added to the volunteer list, please contact the BFS Volunteer Coordinator, Nancy Hamlett (hamlett@hmc.edu) or 909-964-2731.

Sustainable Claremont Garden Club

Free and open to everyone interested in any type of gardening. Meetings are on the second Wednesday of most months at 6:30 pm at the Napier Center at Pilgrim Place. There is a monthly email newsletter.

More info at www.sustainableclaremont.org or email gardenclub@sustainableclaremont.org.

Update on plans to build on the BFS

Still little information, but Pitzer, Scripps, and Harvey Mudd are working to raise the money needed to buy the parts of the East Field that they have been allotted (you can see the proposed divisions at <http://www.fbbfs.org/about.html#map>).

All of them need to purchase their 12 acre parcels at the same time. The sale is expected to go through in the summer of 2015 when college is not in session.



“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” pg 708

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www.fbbfs.org

***“Dedicated to Education
and the Environment”***

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Claremont, CA 91711 Phone: 621-4761
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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, so the center bit of the BFS alone would not be sustainable.

Who uses it?

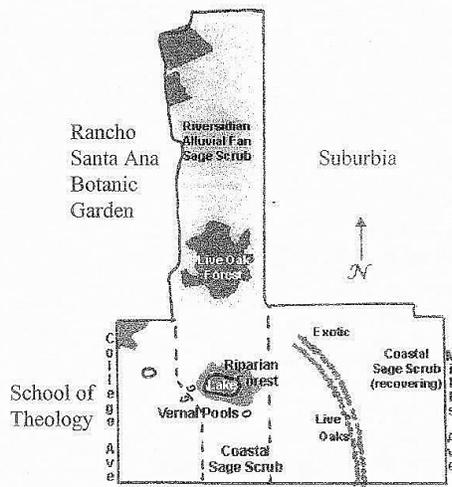
The BFS is used by Claremont Colleges faculty and hundreds of students every year, as well as by many schoolchildren from Claremont and the surrounding areas. It has also been used by college classes from as far away as Long Beach, by scout troops, and by members of the public.

What's there?

There are over 30 acres of the fast-disappearing coastal sage scrub community along with a number of species of state or federal 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.



There are 3 parts to the BFS:

Owned by HMC	←	Owned by CUC	→
Temporary protection		No protection	

Note: west part now owned by CGU and HMC; eastern part to be sold to Pitzer, HMC and Scripps
See fbbfs website for map showing divisions