

News from the

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**FRIENDS OF THE
BERNARD
BIOLOGICAL
FIELD STATION**

Meet the Inhabitants



California Scrub Jay

Aphelocoma californica

California scrub jays are about 11-12 inches long, larger than western bluebirds and smaller than crows. They can be found throughout the State and their bright blue color and pale breast makes them easy to identify. Around 20 different calls have been identified, with a raucous “dzweep, dzweep” being common. Not the most graceful fliers, as they seem to lumber a bit and glide. They are omnivores and their strong beak lets them eat acorns, which they have been known to steal from acorn woodpecker stashes. They also tend to make sure they aren’t seen when they bury acorns of their own. They have been seen sitting on the backs of deer, picking off ticks. They tend to forage on the ground, and in the fall and winter can often be seen in groups with a distinct “pecking order”.

They like to nest in dense shrubs or small trees. Both parents help to build a 6 inch nest of twigs and fine fibers. Up to 5 pale green or

Sightings

- ✓ Swallows swooping over the lake catching insects
- ✓ Red and blue dragonflies flitting over the lake
- ✓ Largemouth Bass guarding their nest
- ✓ Phainopeplas calling with a quiet “wurp”
- ✓ Red-tailed Hawks and Turkey Vultures soaring overhead
- ✓ Underwing moths flying with bright orange hindwings showing, then landing with brown camouflage
- ✓ Native bees wallowing in pollen in the cactus flowers



- ✓ Foothill Carpenter Bees sipping nectar on White Sage
- ✓ Southwestern pond turtles resting on a log

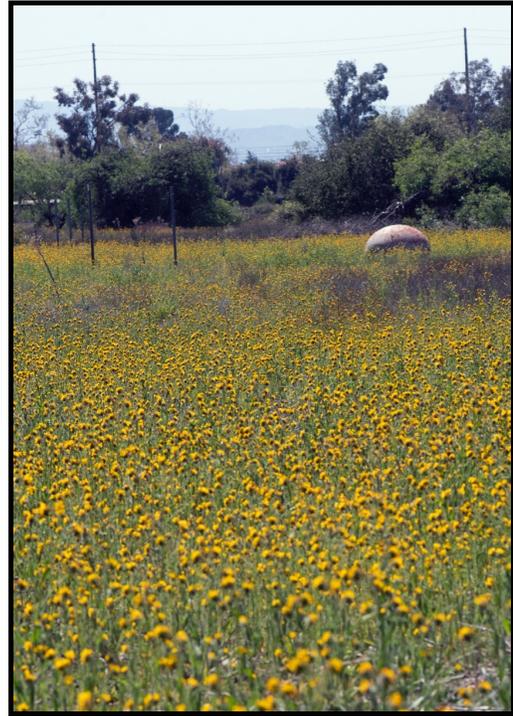


gray eggs hatch in about 2 ½ weeks. Pairs tend to stay together for years, and defend a territory year round.

Common Fiddleneck

Amsinckia menziseii

This is one of the most common annuals at the BFS, and often covers a large part of the east field in the spring. The coiled inflorescence (a scorpioid cyme) resembles the head of a violin, hence the name “fiddleneck”. The plants grow about 18 inches tall and are covered in coarse hairs. It does best in full sun and is often seen on disturbed ground. Attracts lots of pollinators, and probably is host to two species of butterflies. All parts of the plant are toxic to livestock, and may be to dogs or cats.



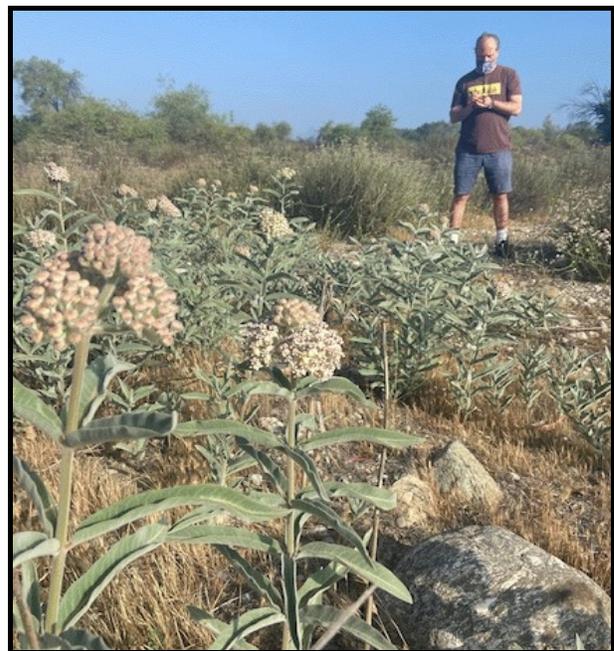
Fragments within a fragment: classes poised to collect data to inform biodiversity conservation at the BFS

Wallace Meyer, BFS Director

As COVID is hopefully coming to an end in our region, use of the BFS is increasing, and novel ways to combine both student learning and research are emerging. Professor Jon Moore (photo right) from Pomona College is one of the people leading what I hope will be a renaissance.

Over the past few months, I have had many conversations with faculty who, like Jon, are considering embedding authentic research experiences into curriculum at the Claremont Colleges. These activities not only help model the scientific process and improve scientific understanding, but can also provide critical information to help me effectively manage biodiversity at the BFS.

A few weeks ago, a small group, led by Jon Moore, set out to improve understanding of the genetic patterns associated with the native milkweed plants at the BFS. Milkweeds are the host plants of monarch butterfly caterpillars and a host of other unique insects. Loss of milkweeds at the BFS could also mean the loss of the insect fauna that require this plant for their survival.



We have focused our attention on milkweed plants because California Botanic Garden staff, who occasionally collect seeds and cuttings from the BFS for plant propagation, have reported low germination rates associated with milkweed seeds collected from the BFS. One potential cause of low germination rates may be inbreeding (closely related individuals breeding with one another), in this case through pollen transfer by bees and other insects, over a number of generations.



Inbreeding depression, the reduced fitness of a population associated with inbreeding, is a concern for any habitat fragment. The BFS is a fragment and is often described as an island of native habitat surrounded by a “sea” of suburban habitat. This means that milkweed plants at the BFS are isolated from other populations, the nearest populations likely being located in the Claremont Wilderness Park. Even within the BFS, there may be isolated fragments or populations of milkweed. At the BFS, there are three known patches of milkweed, and all have anecdotally been declining in abundance. Is it possible that these three patches are composed of closely related individuals with limited gene flow among these patches, potentially leading to declines in germination rates, and ultimately declining milkweed populations? Are these milkweed patches fragments within a larger fragment?

Jon Moore hopes to answer these questions by comparing genetic diversity within and among the three milkweed patches at the BFS, and comparing the genetic diversity at the BFS to that of milkweed patches in the Claremont Wilderness Park. He is not sure if this effort will form the foundation of a senior thesis project, or maybe even a component of the Introductory Genetics course, where students can learn contemporary genetic techniques, while simultaneously helping provide critical data to improve management of milkweeds at the BFS.

The good news is that after the data are generated, they can inform management practices to help improve the milkweed population stability at the BFS. For instance, if the three patches at the BFS have low within-patch genetic diversity, but high among-patch genetic diversity, human-mediated pollen transfer (moving pollen on paint brushes like Mendel) could help reduce inbreeding depression and enhance germination rates in all three patches at the BFS. If all three populations at the BFS have low genetic diversity, we might have to consider crossing plants at the BFS with plants in the Claremont Wilderness Park. Regardless, these activities have the potential to not only include students in authentic research opportunities, but will help students grasp the value of such information in helping preserve biodiversity within our town.

This integration between curriculum and research is exciting to me, and I think will be exciting for our students. I am looking forward to assisting the amazing and engaged professors from the Claremont Colleges, and interacting with students to train them to address one of the many environmental challenges our society currently faces (loss of regional and global biodiversity).



Prickly Pear Blossoms

As you can see, different plants can have quite differently colored flowers!

Limited Volunteer Workdays Resumed this Spring



With Los Angeles County having moved first into the State of California's Orange Tier and then into the Yellow Tier, COVID-related restrictions on activities were eased, and the Claremont Colleges allowed the BFS to resume limited volunteer workdays – with COVID modifications, of course!

We held two very scaled-down workdays in May, in which the number of participants was limited, and all participants were required to preregister and complete an only Daily Health Check prior to the workday. In addition, all volunteers were required to wear a face mask or cloth face covering and to maintain a distance of six feet or more from other volunteers not in their household.

The volunteers were able to remove an impressive amount of mustard, horehound, tree tobacco, thistles, and other invasive plants! Alas, however, we were not able to end the workday with our usual pizza lunch.

We hope that by next fall, that restrictions will be lifted, and we can get back to our normal workdays – pizza included! Please check the BFS Volunteer website (<http://bfs.claremont.edu/volunteer.html>) to look for more information when it's available!



Recent Butterfly Photos

Acmon Blue (*Plebejus acmon*) **Painted Lady** (*Vanessa cardui*) and **White-checked Skipper** (*Pyrgus albscens*)



A flock of herons fished in the lake.



Landscapes above and at right. Golden
currant fruit and flowers below.

*All photos except caterpillar and milkweed courtesy
of Nancy Hamlett.*



Tours of the BFS

Community and school groups can arrange to take tours. If you are interested in bringing your group to the BFS to learn about what is there, contact the Director: 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. If you have questions or want to be added to the volunteer list, please contact the BFS Volunteer Coordinator: Nancy Hamlett (909-964-2731) (hamlett@hmc.edu)

Claremont Garden Club

Free and open to everyone interested in any type of gardening. Meetings are second Wednesday of most months, 6:30-8:30 pm at the Napier Center at Pilgrim Place, 660 Avery Rd. Talks start at 7pm. For more about the club: www.claremontgardenclub.org info@claremontgardenclub.org

Friends website

www.fbbfs.org
for past newsletters and a map showing which colleges now own which parts of the Field Station.

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P.O. Box 880, Claremont, CA 91711
City Clerk: 399-5460
Claremont Colleges: www.claremont.edu
The Claremont Courier : (909) 621-4761
114 Olive St, Claremont, CA 91711

*The Friends is a non-profit,
grassroots organization*

*“Dedicated to Education
and the Environment”*

The BFS: A Facility of the Claremont Colleges

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. 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. The current 85 acres from College to Mills is just large enough to maintain reasonable stability in the existing ecosystems. The center bit of the BFS alone, which is all that is currently protected, would not be sustainable if Harvey Mudd, Scripps, and Claremont Graduate University build on the parts they have now purchased.

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 and for research by other institutions.

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. 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.

→ *Since much of Claremont was originally covered with coastal sage scrub, it is a fascinating window into our past*



“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