

News from the Friends of

# The Bernard Biological Field Station

Of the Claremont Colleges

Volume 6 No.2 June 2005

P.O. Box 1101, Claremont, CA 91711

bfsfriends@earthlink.net

www.fbbs.org

## ★Fourth of July★

Please stop by our information table and children's game booth in Memorial Park between 10am and 4 pm. If you would like to help, please send along an email.

**Join in the parade!** Carry a sign with a picture of a BFS plant or animal or just walk to show support. The parade starts at 4 pm. Email to say you are coming, or just show up on the day. Stop at the info booth to find out where we are in the parade.

### June 29<sup>th</sup> : CGU Graduate Housing

CGU's proposed housing project, north of the School of Theology, includes relocating the fence along N. College Ave about 10 ft east (to the west property line of the KGI-owned part of the BFS) along with widening the vehicle lanes to 12 and 14 ft and adding 8 feet of bike lanes. This would destroy habitat. The vehicle lanes would be wider than is usual for city streets. Habitat loss could be minimized if the fence were moved without grading and if the lanes were not widened. Narrower lanes would also slow traffic and make the road safer for children from the housing and for cyclists.

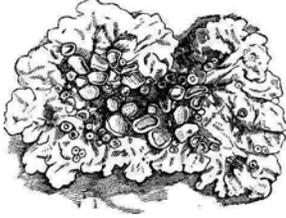
Current fire regulations require a driveable road width of 28 feet, which can include bike lanes. If the road is about that width, most of the coastal sage scrub along the edge can be preserved. If there is no way to avoid grading, then the area between the road and the fence should be kept as wide as possible and should be replanted with native coastal sage scrub plants. Measures to minimize light, water, and air pollution should also be taken. The Board hopes to talk with CGU, and there is a chance that an agreement can be reached. You can see the project plans and environmental impact study at City Hall. Please contact the City and CGU (see over) supporting a narrower road and less habitat loss. Come to the Architectural Commission meeting, 7 pm at City Hall on June 29 where the project will be considered for approval. Let's hope we can say thank you to CGU there.

### ✓✓✓ Sightings

- ✓ masses of the bright pink stars of *Centaureum* mixed with butter-yellow sun cups and dainty white pop corn flowers
- ✓ huge drifts of creamy buckwheat, occasionally tinged with pink, abuzz with bees
- ✓ Sara Orangetips, Cabbage Whites, Marine Blues, Painted Ladies, Underwing moths, skippers, sulphurs—a moveable feast for the eye
- ✓ stunning 7-foot spires of scarlet delphinium, massed under oaks and framed by the mountains
- ✓ prickly cactus with silky yellow and peach blossoms rising out of knee-high carpets of the bright blue stars of *Eriastrum*
- ✓ flashes of white bunny tails amid the last of the fuzzy, purple *Phacelia*
- ✓ cheeky ground squirrels and determined-looking quail darting across the paths
- ✓ hawks soaring and nesting in the tall trees
- ✓ bright-orange and sapphire-blue dragonflies dancing over the lake
- ✓ ruddy ducks and coots sailing and dipping
- ✓ beautiful purple spikes of penstemons contrasting with branches of golden currants curving under the weight of bright orange fruit
- ✓ fuzzy gray seedlings of dove weed and annual buckwheat
- ✓ yellow side stripes against the black background of a California Racer, sliding into the cherries
- ✓ mounds of California broom, tangled masses of thin, green stems with tiny, yellow pea-flowers
- ✓ pale lilac towers of white sage flowers rising from felty, pale, gray leaves
- ✓ the pungent smell of sage and sagebrush
- ✓ myriads of insects—large, small, fuzzy, smooth, yellow, black, metallic green, flying, walking—going about their daily business
- ✓ Chartreuse lichens on dead, gray branches
- ✓ signs of underground activity: harvester ant nests ringed by buckwheat petals; small, circular entryholes of solitary bees

## Meet the Inhabitants

### Lichens



5 mm

According to lichenologist Trevor Goward, “Lichens are fungi that have discovered agriculture.” These fungi capture certain algae or cyanobacteria, sometimes both, and benefit from the photosynthesis they carry out. The combination doesn’t look like either partner alone and can take several forms, from crustlike to leafy. Some Field Station lichens can be seen on the BFS website.

Reproduction can be tricky for lichens. Some depend on asexual means, producing special packets, consisting of fungus plus photosynthetic organism, that break off and grow into new lichens, and some just rely on dry, broken bits of the parent lichen to be blown or washed to a new location. In some lichens, the fungus makes spores which are dispersed, but this can be a chancy means of reproduction. The new fungus must find the right algal or cyanobacterial associate so on after it germinates or it will die, and many do perish.

Lichens can grow in spots unfavorable to other organisms and are often found on boulders, sand, dead branches, bones, rusting metal, and have even been found on plastic turn signals on abandoned cars! They are extremely hardy and outnumber plants 100:1 in the Arctic. They can go dormant and evade periods of extreme cold, drought, and heat. However, they do need sufficient light, space, and clean air in order to thrive, and rapidly disappear from polluted urban areas.

Lichens are an integral part of many ecosystems. If the symbiont is a cyanobacteria, it can change nitrogen gas from the air into biologically useful forms which can enrich the soil. Lichens provide nesting materials for animals such as flying squirrels and golden plovers; food for caribou, wild turkeys, and endangered Yunnan snub-nosed monkeys; camouflage and habitat for countless invertebrates such as butterflies. Some lichens with very slow growth rates can help determine when glaciers retreated or when earthquakes produced huge rockslides. Lichens produce hundreds of chemicals which protect them from being eaten and which reduce competition from nearby plants. Many produce compounds useful as dyes and antibiotics. Google “lichens” to find out more about these fascinating organisms.

## LOTS OF SUMMER RESEARCH AT BFS !

Stephen Dreher, BFS manager

Summer is usually quiet at BFS with school out of session and many faculty traveling for meetings and field work. Of course, it’s a busy time for plants and wildlife, so the voices of squirrels, coyotes and the many bird species are certainly heard. However, this year marks the start of several exciting long-term projects and we’re glad to see such a growth of research activity!

Dr. Nina Karnovsky from the Pomona College Biology Department has begun a long-term study of the dusky footed woodrat (*Neotoma fuscipes*) which occurs in wooded areas and chaparral. BFS land supports a healthy population, which uses the shady protected understory of large shrubs and oak trees to build its dens. These dens are made of twigs and brush, are somewhat conical in shape and can be as much as 3-4 feet tall. The nests are lived in for generations (up to 70-100 years!) and have various chambers for sleeping and storing food. The woodrat eats fruit, nuts and seeds. In turn, it is preyed upon by coyotes and owls. Hence, the woodrat is a critical component of the BFS ecosystem. Dr. Karnovsky and her students are locating the nests, plotting them on a GIS (Geographic Information System) grid and radio collaring some individuals. Their foraging and mating behavior can then be tracked to determine how they interact with the environment at the Field Station and adjacent botanic garden. Several of Dr. Karnovsky’s students have received grants to continue working over the summer months.

Dr. Joan Leong of Cal Poly Pomona has chosen BFS as a primary research area for her work on the invasive exotic annual Malta starthistle (*Centaurea melitensis*). Natural areas worldwide suffer from human-introduced invasive non-native plants. These plant species are aggressive and have adapted to the constant ecological disturbance of industrialized human society. BFS is not immune to this problem. Three species of starthistle, all introduced from Southern Europe, have invaded California. They produce yellow flower heads with nasty spines. In our area, the most common one is the Malta Starthistle, or “tocalote”. Dr. Leong has received funding to study the reproductive system of this species, as evidence suggests it is capable of both self-pollination and outcrossing (insect-mediated pollination among a plant population). Her work will lead to a deeper understanding of the species and perhaps some methods for controlling its spread in the future. She and her students are working throughout the summer, primarily in the grassy fields just west of Mills.

Dr. Hal Van Ryswyk, professor of Chemistry at Harvey Mudd College, is investigating lead contamination levels of the soil at BFS and whether these are correlated with proximity to the urban thoroughfares along BFS (basically Foothill and Mills). Lead residues in soil are long-lived and Dr. Van Ryswyk, along with his students, will quantify this contamination. Transects (single lines through the study zone) will be laid out from the streets into the BFS interior.

Dr. Marius Van der Merwe, a recent addition to the faculty of the Joint Science Department of the Claremont Colleges, has chosen BFS to conduct his long-term study of the California ground squirrel (*Otospermophilus beecheyi*). Our ground squirrels, like the dusky-footed woodrats, are among the few remaining mammal species one is likely to encounter in the urban landscape of Southern California. The species' distribution ranges from a small area of south-central Washington to northern Baja California. They build underground burrows, which may house a single individual or be extensive enough for a colony. For an excellent description of the ground squirrel and its activities, you can visit <http://www.etc-etc.com/sqrlinfo.htm>. Dr. Van der Merwe and his students will be studying the foraging behavior and dietary preferences of the squirrel at BFS. His work will be year-round and with the squirrels being highly active during the summer months, so will he! Additional research plans include setting up night-time camera traps to capture various nocturnal feeders at BFS as well.

Dr. Steve Adolph, Professor of Biology and Dr. Mike Erlinger, Professor of Computer Science, both from Harvey Mudd College, have received funding from the Howard Hughes Medical Institute and Harvey Mudd Center for Environmental Sciences to develop a wireless

communication network capable of transmitting real-time environmental information using the Bernard Field Station. Initial work will include installing temperature sensors at various lizard perching locations (Dr. Adolph is a herpetologist), such as on tree trunks of various heights. These data will be used as part of Dr. Adolph's LizardNet project. If successful, this "remote sensing" project could be greatly expanded to provide information to many biologists and other researchers at the Colleges.

I am certainly excited by all the new activity and wish the researchers all success in their new endeavors.

**Teachers:** If you would like to bring your class to the BFS, fill out a use request form at [bfs.claremont.edu](http://bfs.claremont.edu) or call the manager at 624-666

## General Plan Update

The City Council and Planning Commission are meeting to consider the land use alternatives that will become part of the General Plan. You can see what these are on the City's website ([www.ci.claremont.ca.us](http://www.ci.claremont.ca.us)). The City and consultants are working on the first draft of the Plan and of the EIR that goes along with it. The public will have the opportunity to comment on these at another community meeting in the fall. The EIR should be available this summer for public review, and the draft General Plan should be brought forward for approval around March 2006. Do take a look at the draft and let the City know what you think. Land use policies will be in this document and they will guide decisions about what development is approved in the future.

### 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](http://www.bfs.claremont.edu).

### Past Issues of the Newsletter

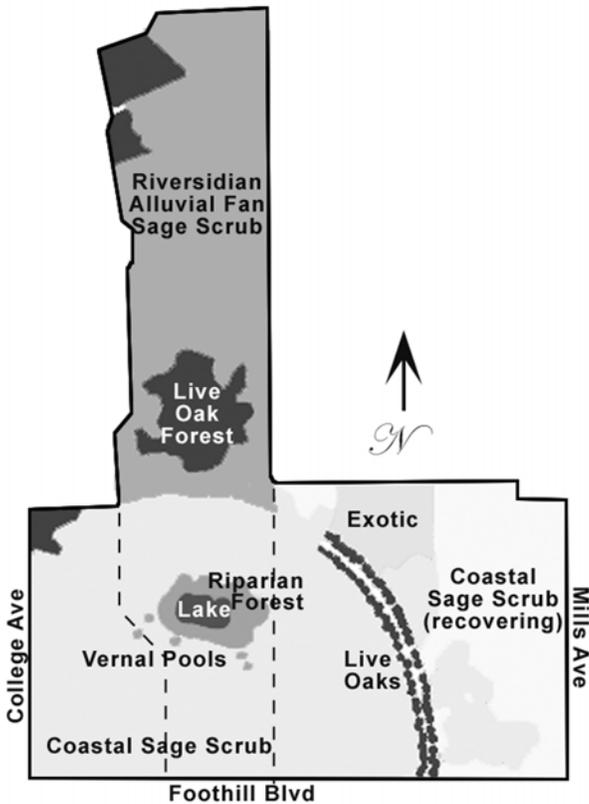
When you suddenly have a question about pink glow worms or elderberry and can't locate the right past issue of the newsletter, log on to our website and find the info there.



*"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

*If you would like to be put on the snail-mail or email list, please send a note to [bfsfriends@earthlink.net](mailto:bfsfriends@earthlink.net)*



Now owned protected ----- not protected -----  
by KGI for 50 yrs

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”*