



Edgewood Explorer

PRESERVE • EDUCATE • RESTORE

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New Trail Names and Signs

by Bill Korbholz, FoE President



In 2013, the San Mateo County Parks Department (Parks) performed much-needed maintenance on Edgewood's trails in an effort to better control water runoff and reduce erosion, as well as enhance access for emergency vehicles. Thanks to those

efforts, Edgewood's 11 miles of trails are still in great shape today.

Last year, Parks focused on trail names and signs. With the goal of making it easier for people to navigate the trails, Parks wanted to eliminate looping trails, overlapping trails, and ambiguously named trail intersections.

And the results are in! While the physical trails have not changed, we now have three new trail names, and some of the trail alignments have changed slightly. The trail signs are much clearer and more informative, too.

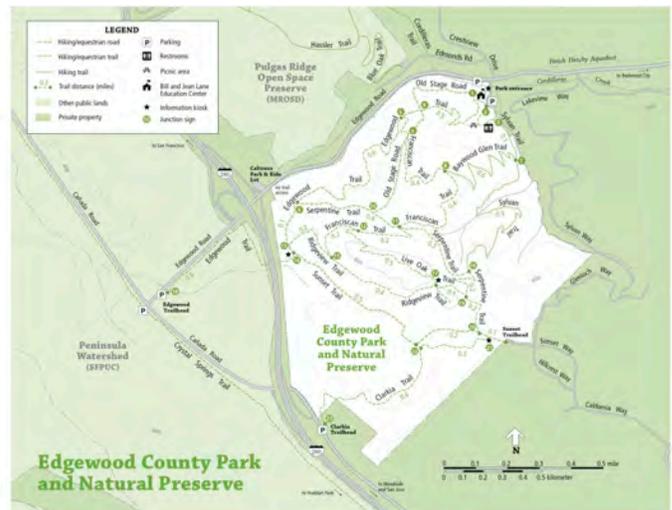
Although it may take a little while for folks to get used to the changes, our trail system is much improved. You will never be on two differently-named trails at one time, and we now have numbered trail intersections to help with directions.

The new trail names are the Sunset Trail, the Old Stage Road, and the Baywood Glen Trail. Please refer to the map in this article, the county's website <https://parks.smcgov.org/sites/parks.smcgov.org/files/Edgewood-Park-Map.pdf>, or the map on our plant photos website, <http://photos.friendsofedgeswood.org>.

One new name in particular deserves further discussion. The Baywood Glen Trail replaces the North Sylvan Trail. The term Baywood Glen plays very prominently in the history of Edgewood. That name was officially granted by the State of California on May 5, 1911 to Henry Finkler to designate his property. The last homesteaders to occupy that site, the Taylors, continued to use that name lovingly. The Baywood Glen Trail traverses much of that property.

A pleasant 2-mile loop from the Education Center will take you along the Sylvan, up the Baywood Glen, across the Franciscan, and then back down the Edgewood trails. You'll sample riparian, oak woodland, chaparral, and grassland communities, all within about 2 hours at a casual pace.

So, put on your hiking shoes and explore!



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Treasurer's Report for 2014

by John Morse

For the calendar year 2014, about 92% of the income for Friends of Edgewood came from membership dues and donations from both members and non-members. Another 3% came from fees for our special events. The rest of our income came from merchandise sales and fees we charge for docent training.

So, what do we do with the money? The largest chunk, 33%, was spent on habitat stewardship – the many programs we conduct to preserve and restore



the natural habitat of Edgewood Park. This effort focused primarily on efforts to restore the Bay checkerspot butterfly and on efforts to eradicate non-native species (weeds) from the park. About 18% of our income was spent to improve, operate and maintain the Education Center. The remaining funds were used to pay for such things as publicity, running the spring Wildflower Walks, publishing and mailing the Edgewood Explorer newsletter, and general operating costs.

I am always amazed and delighted to see the generosity of you, our members, and friends. It is your support that allows us to do what we do.

For more information, contact me at treasurer@friendsofedgewood.org at any time.

© 2013 Kathy Korbholz



Quilt Update

As many Friends will remember, former Edgewood Ranger, Lynne Fritz (pictured on the left), donated our beautiful handmade

quilt to honor the 20th anniversary of the Friends of Edgewood. We initially thought that we'd frame the quilt inside a protective, plexiglass, box; however, several quilt experts advised against enclosing the quilt in this way. They said that quilts are best preserved when air can circulate around the quilt, and the quilt can "breathe" but not be handled. In retrospect, we also realized that glare from a plexiglass frame would make it difficult for visitors to appreciate the intricate needlework. Thus, we finally decided that the best course of action was to hang the quilt from a simple rod.

Further, in researching how best to display the quilt, Kathy Korbholz discovered that the major risk to the quilt is damage from ultraviolet (UV) sunlight. Therefore, she recently arranged to have

New Interpretive Tools

As reported last time, recognizing a need for information about some of the animals that live at Edgewood, Norma Jean Bodey, docent class of 1996, commissioned articles for Friends of Edgewood's docent training binder. Check out the new article on Botta's Pocket Gopher by science writer Carolyn J. Strange in this issue.



Science writer Carolyn J. Strange has written hundreds of articles. She became an Edgewood neighbor in 1998, a docent in 2003, and has served the Friends of Edgewood in various ways ever since.

UV protection film professionally installed on several of the Education Center windows. The special window film transmits 88% of the natural light while blocking out 96% of the damaging UV rays.

Several people made donations to allow Friends of Edgewood to display the quilt in a manner that would not only protect it but also make it available to our thousands of visitors to enjoy. A donor plaque has been installed on the wall next to the quilt in honor of their generosity.

Many thanks to Kathy Korbholz for her time and effort spent on this project so that the public and our docents and hosts can enjoy the quilt during each visit to the Education Center. ♥

Botta's Pocket Gopher or Valley Pocket Gopher (*Thomomys bottae*)

By Carolyn J. Strange



© 2009 Norma Jean Bodey, Russian Ridge

Photo: Stuffed pockets! Note the sprig of greenery sticking out of right pocket!

Names and Classification

French settlers may have named gophers, applying a word for honeycomb or waffle (*gaufre*), perhaps because the unfamiliar New World creatures honeycomb the ground with their burrows, leaving surface mounds and indentations resembling a waffle. The pocket in their name refers to two fur-lined cheek pouches used for carrying food and nest materials. Other rodent families use their cheeks for shopping bags, but gopher pockets open outside the mouth, can extend back to the shoulders, and can be turned inside out for emptying!

Endemic to North and Central America, pocket gophers are burrowing rodents in the family Geomyidae. Taxonomy is in flux, but there is a handful of genera (five or six) within the family, and about three dozen species. The *Thomomys* genus is also known as western pocket gophers. The species name honors Paul-Emile Botta, a naturalist and archeologist who collected mammals in California in 1820s-1830s.

Range and Habitat

Botta's pocket gophers live almost everywhere in California, and much of the West, limited only by major rivers, barren deserts or rocky terrain. They're at home in a variety of soil types and habitats, including grasslands, chaparral, scrubland, and woodlands, as well as agricultural lands and suburbs. This wide range is possible partly because western pocket gophers rely more on their teeth for digging. Most gophers dig primarily with their claws, which are softer and wear down faster, limiting them to softer soils. Look for gophers in Edgewood's grasslands.

What to Look for and Notice

It's easy to see the work gophers do, but it usually takes patience to see a gopher. Keep your eyes open for **asymmetric mounds** of fresh soil! A gopher can make several mounds a day. As it digs tunnels searching for food, it periodically pushes loosened dirt up to the surface with its head and front legs. The debris is pushed ahead, right and left, creating mounds shaped like fans, or hearts. Digging can continue year-round, but in drier areas like Edgewood, you may notice more mounds in spring or fall, when moister soil makes digging easier, and mounds more obvious.

Tunnels (up to 200 yards-worth per burrow system) are generally one-way (~3-inch diameter) so gophers somersault to turn around. A burrow system typically includes long, shallow (~4-12-inch deep) tunnels for foraging, and deeper (up to 6 feet!) tunnels and chambers used for larders, latrines or nesting. Burrow systems are closely regulated microenvironments, and any opening gets plugged within a day. Thus, an open hole with fresh dirt might mean the occupant is still digging. Hang around quietly and you might see a gopher.

Built like blunt torpedoes with short, strong legs, gophers are adapted for digging and tunneling. Roughly 7 to 10 inches long, including about 2 inches of tail, they have large claws on their front paws, and small eyes and ears. Large, ever-growing front teeth loosen soils and rocks, and also chomp roots. Their lips close behind those incisors, preventing mouthfuls of soil. Sensitive whiskers help find the way forward, and gophers run backward almost as fast as forward, probably aided by their sparsely-haired tails. Short, rich brown fur

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can trend reddish or yellowish, often closely resembling local soil color.

Life and Behavior

Pocket gophers are territorial and solitary, except during breeding season when young live with their mother. Males are larger, nearly double the weight of females. Their territories are larger too. Gophers aggressively defend areas bigger than their own burrow systems, maintaining unoccupied “demilitarized zones” between neighboring burrow systems. Where food is abundant they can breed year-round, but in general, they breed early spring to early summer, producing one litter of 3 to 5 pups. (Gestation ~18 days.) Born hairless and blind, pups remain in the nest for 5-6 weeks before wandering off (above ground) to establish their own territories. They live one to two years. Gophers spend nearly all their time underground, but may emerge at night to forage. They’re active year-round, about 9 hours a day, at any hour. They’re quiet creatures, but communicate with clicking noises, soft hisses and squeaks.

What They Eat, and Who Eats Them

Gophers eat vegetation only—a LOT of it—including plant parts encountered underground, as well as leaves and stems of plants around tunnel entrances. They find food by sense of smell, and get enough moisture from their diet, so don’t need a water source. They eat a lot for their body size, possibly because they use so much energy digging. They’re choosy about the plant parts and species they eat, possibly for the same energetic reasons.

Birds of prey catch gophers above ground — hawks by day, owls at night. Coyotes, foxes, bobcats, domestic dogs and cats catch gophers at burrow entrances, and by digging. Other predators hunt them down in their burrows, including skunks, rattlesnakes, and gopher snakes, as well as badgers and some weasels. (The last two are not found at Edgewood.)

Roles in Ecosystem

Sometimes nicknamed “Nature’s rototillers”, their constant burrowing helps keep soil loosened and aerated, while burying vegetation that enriches the soil. Depending on circumstances (soil, climate, etc.), a single gopher may rearrange more than two tons of soil in a year, mostly below ground. The flora of gopher mounds often differs from surrounding areas, and their presence can increase plant

diversity. Gopher holes/burrows can capture runoff, allowing it to sink in, which can conserve both water and soil. But, extensive burrowing sometimes increases erosion on slopes. Gophers can kill trees and sometimes become pests in agricultural areas. A variety of other animals use their burrows, and as herbivores gophers turn plants into meat.



© 2009 Norma Jean Bodey, Russian Ridge

Photo: Stretching out of the burrow in broad daylight is risky. Pineapple Weed (*Matricaria discoidea*) must be worth it!

Not to Be Confused with...!

The word “gopher” sometimes gets used loosely to refer to any burrowing animal, but nothing else is like a true pocket gopher. **Ground squirrels** are rodents, but they’re not closely related to gophers, and none live at Edgewood. (Think chipmunks or prairie dogs, which are easy to spot running around in daytime.)

Like gophers, **moles** live alone underground, rarely leaving their tunnels. Moles create somewhat similar earthworks, and are generally beneficial for similar “rototilling” reasons. But moles are smaller, and their mounds tend to be **symmetrically conical**. Moles are insectivores, not rodents. They prefer moist areas where they eat earthworms, snails, grubs, and insects. ❖



<http://en.wikipedia.org/wiki/Earthworm>

Plants vs. Herbivores vs. Plants vs. ...

By Carolyn J. Strange

Rooted in place as they are, plants can't run from threats. Instead, they present remarkable defenses. Plants and herbivores shape each other over eons, in an intimate co-evolutionary dance, sometimes encouraging astonishing adaptations. Myriad and multi-layered relationships can develop, because, as with many long-standing feuds, additional players get pulled into the fray. Herewith, a sweeping overview of some plant defenses against herbivory, not just for fun, but also to provide context for some new examples of herbivore countermeasures—and further plant counter strategies.

Defenses we can see and feel are the easiest to observe: structural adaptations such as spines, thorns, or prickles and mechanical deterrents like waxes, sticky gums, and resins. (Some defenses may also serve additional purposes, such as providing shade or insulation or slowing evaporation.) To be useful, structural defenses have to be well positioned and of appropriate scale to thwart the threatening herbivore(s)—something to observe and ponder as you amble.

Defenses cost resources that usually must be conserved, so patterns of expensive armoring can vary. Spines may grow longer or more abundantly on lower branches and shorter or more sparsely on higher branches, above mouth height. Younger, smaller branches and plants may be thornier than bigger, more mature ones. In some plants, thorny armor may increase in size and density in response to increased munching from herbivores.

Spikes may bear various invisible chemical and biological weapons too, with payloads including irritants, poisons, and disease-causing bacteria and fungi. Plants are consummate chemists, and tens of thousands of defensive chemicals have been identified, in several chemical categories. Defensive effects range from repulsive smells and tastes to outright poisoning by hijacking herbivore biochemistry in numerous ways. Humans have long taken advantage of plant chemistry for

pesticides and medicines. Plants also serve up abrasive compounds that wear down insect mandibles and mammal molars, and they mine their tissues with sharp crystals that cause pain, damage digestive tracts, and improve poison delivery.



© 2006 Kathy Korbholz

Edgewood's two blackberries (native and not, respectively), with contrasting prickles.

Herbivores counter-adapt, of course. Some caterpillars have evolved the ability to digest and disarm plant poisons, or even stockpile them, thus protecting themselves from their own predators. Relationships can become quite complicated. Tropical passionflower has evolved a counter defense against its poison-adapted caterpillar nemesis: its leaves produce yellow sugar deposits that look like caterpillar eggs, which deters the butterfly, who distributes her eggs and avoids laying them on already occupied leaves. These sugar deposits also attract ants and wasps that prey on the caterpillars.

Other caterpillars manipulate plant chemistry with their spit, upgrading their diet. But spit signals can work both ways. Wild tobacco deters most grazers with potentially deadly nicotine—except hawkmoth caterpillars, which tolerate huge doses. The plant, in turn, identifies these caterpillars by something in their spit, and shifts resources from nicotine to alternate chemical methods. The caterpillars enjoy small bristly “hairs” called trichomes, which the plant chemically alters such that caterpillar body odor changes, making them more obvious and inviting to their predators.

Mammals also can engage in chemical countermeasures, and here too, slobber is a salient substance. Moose, beavers and mule deer produce salivary proteins that counteract

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tannins, and these salivary proteins appear to be tuned to the types of tannins that the different animals encounter in their preferred diets. Moose saliva has been shown to increase branching of nibbled willow twiglets, encouraging tender, nutritious regrowth. Moose drool also turns out to have an antifungal effect, which undercuts one grass' defense. Mutualistic fungi living within grass tissue handle the defense chemistry, making otherwise palatable grass noxious enough to sicken and repel grazing animals. The toxin is

produced only after the grass has been nibbled (or snipped by scientists), so the first meal is untainted. In drool-daubed grasses, toxin levels dropped by about half, but over many weeks. So, the salivary assault helps only upon revisiting formerly hostile grass patches. This long delay raises the question of whether the defensive drool evolved to thwart something else entirely. Researchers are still unraveling the relationships.

Back and forth, round and round, co-evolutionary dances continue. 🐾

Why Does Edgewood Need Friends Like You?

- County resources are limited and focused on operations and maintenance
- Friends emphasize education, preservation, and community involvement
- Friends need your help and support to:
 - ✓ preserve Edgewood for human, plant and animal generations to come
 - ✓ provide docents for spring wildflower walks
 - ✓ sustain exotic weed removal and revegetation efforts
 - ✓ join the Adopt-A-Highway Road Warriors maintaining I-280 frontage along Edgewood Preserve
 - ✓ educate visitors through volunteer trail patrol
 - ✓ provide informational material for kiosks and literature racks
 - ✓ continue community, youth and school outreach
 - ✓ assist with monitoring of preservation and maintenance efforts

Join The Friends of Edgewood - Make a Difference!



Edgewood Guests Defy Extinction, Share the Larv

by Bill Korbholz

On February 14, about 35 guests joined biologist Dr. Stuart Weiss to help defy the extinction of the Bay checkerspot butterfly. Guests of this exclusive event were supplied with caterpillars that Stuart had collected earlier in the day from a location south of San Jose where they abound. Participants were instructed on how to handle and place the larvae carefully on or near California plantain plants, the caterpillars' favorite food source. In celebration of Valentine's Day, Stuart encouraged guests to "Share the Larv."

It was a warm, sunny day, perfect conditions for the caterpillars to eat and digest the plantain leaves, eventually to mature enough to pupate into butterflies. That should happen within about 5 to 10 days. Then the butterflies will mate, the females will lay eggs at the base of the plantain plants, and in time, baby caterpillars will emerge. After they reach a certain critical mass, they'll enter a state of suspended animation (diapause) and spend the summer in the soil or under a rock, waiting for the

plantain to germinate next winter. In approximately a year from now, they'll pupate into butterflies, completing their annual life cycle.

The population of these Bay checkerspots has been increasing since Creekside Science, Stuart's company, began restoration efforts in 2007, after they had gone locally extinct at Edgewood. Event participants received an official Certificate of Adoption proving that they had played a role in defying the local extinction of this federally threatened insect.



Event participants "spread the larv!" © 2015 Jordan Ross

Yes, I'd like to become a Friend of Edgewood!

Here's my membership donation to support preservation, education, and restoration:

Join or renew online at FriendsOfEdgewood.org

- \$25 Friend
- \$50 Advocate *
- \$100 Steward *
- Other: \$ _____

* Donors of \$50 or more receive a set of six Edgewood greeting cards; donors of \$100 or more also receive a one-year subscription to *Bay Nature Magazine*.

Name _____

Address _____

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I'd like to get the newsletter by email mail.

- Please keep my thank-you gifts.
- Please keep my donation anonymous.

Make checks payable to **Friends of Edgewood**, and mail to:

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Redwood City, CA 94064-3422

For volunteer opportunities, visit www.FriendsOfEdgewood.org/Get-Involved



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Mission Statement of The Friends of Edgewood — To protect and celebrate Edgewood as a unique treasure by promoting exemplary stewardship, and by reaching out with informative public programs. www.friendsofedgeswood.org

PRESERVE • EDUCATE • RESTORE

Bill and Jean Lane Education Center - Spring Hours and By Appointment*

Wed	9:30 am to 12:30 pm
Sat	9:30 am to 4 pm
Sun	9:30 am to 4 pm

*Subject to volunteer staffing.

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UPCOMING EVENTS

Wildflower Walks
 Sat/Sun 3/14 to 6/7

Adopt-A-Highway
 Next Sessions: 3/1, 4/4, 5/3, 6/6

To volunteer or get more information, 
 Dave Hershey at adoptahighway-coordinator@friendsofedgeswood.org

For more, see <http://www.friendsofedgeswood.org/events>

The Edgewood Explorer is published quarterly by the Friends of Edgewood Natural Preserve, a nonprofit organization dedicated to preserving and restoring Edgewood and to educating the public about its treasures. The newsletter is edited by Linda Leong and is supported by contributions from many Friends. For more information about the Friends of Edgewood, visit our website at www.friendsofedgeswood.org, mail us at PO Box 3422, Redwood City, CA 94064-3422, leave a message or fax us toll-free at (1-866) GO-EDGEWOOD (1-866-463-3439), or email us at info@friendsofedgeswood.org.