Friends of Edgewood Natural Preserve

Edgewood Explorer

PRESERVE • EDUCATE • RESTORE

June 2014 Volume 21 Number 2

Update on PG&E Pipeline Projects at Edgewood
by Bill Korbholz, FoE President

In October and November 2013, PG&E replaced an elbow in its Line 132, one of two existing gas pipelines routed through Edgewood, as part of their Pipeline Safety Enhancement Plan (PSEP). Park visitors may have noticed the mowing, digging, and subsequent restoration on two small plots of land near the west kiosk (see Figure 1). PG&E is still in the process of restoring these sites. Friends of Edgewood is working with the California Native Plant Society (CNPS) to oversee the restoration and ensure it is done properly so that no habitat degradation occurs.

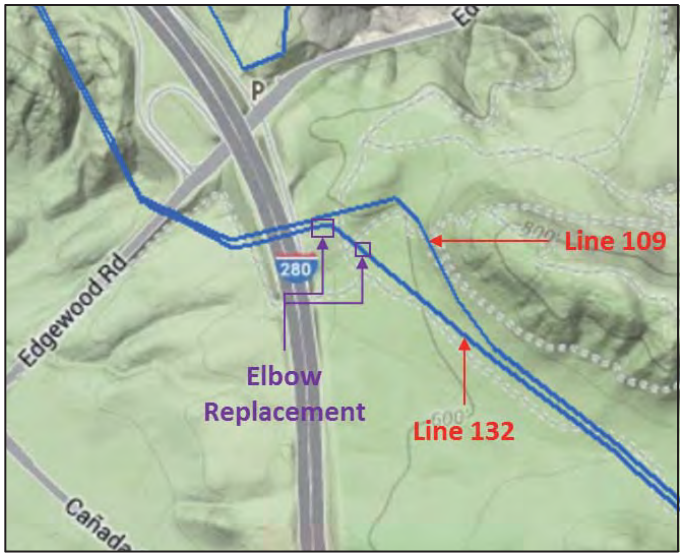

Figure 1. Existing Gas Pipelines

[source: http://www.pge.com/safety/systemworks/gas/transmissionpipelines/ with annotations]

The PSEP is PG&E's multi-year gas transmission system overhaul mandated by the California Public Utilities Commission (CPUC) following the San Bruno incident (http://www.friendsofedgewood.org/wp/wp-content/uploads/PSEP.pdf). The plan includes laying a new gas pipeline and decommissioning the Edgewood segment of Line 109, which is old (circa 1930s) and substandard (22-inch rather than 24-inch diameter). PG&E has chosen to install the new pipeline through the heart of Edgewood Park.

In order to determine the route of this new pipeline, PG&E evaluated four alternatives (see Figure 2 on page 2). The "Existing Alignment" route parallels the alignment of the existing Line 109. The "Service Corridor" route is a straighter version of the "Existing Alignment" route. The "Substation" route skirts the wetland near the Clarkia Trail, eventually joining Cañada Road and following it to Edgewood Road, then up Edgewood Road to rejoin the existing Line 109. The fourth route, "Ridgeline," completely avoids Edgewood, traveling through SFPUC Watershed lands on Edgewood's east boundary, and then under Cañada Road and Edgewood Road.

PG&E has chosen the Service Corridor route and identifies 12 reasons for their decision. These reasons are described on pages 26 and 27 of their routing analysis document (http://www.friendsofedgewood.org/wp/wp-content/uploads/PGE-Routing-Analysis.pdf). Among them are that this route is the shortest, most direct, will be the simplest to construct, and will be the easiest to operate and maintain. They also claim that this route complies with the Edgewood Master Plan and will cause the least impact to environmental resources, two claims with which we strongly disagree.

A "Pipeline Committee" has been formed, consisting of representatives from Friends of Edgewood, Committee for Green Foothills, the local Santa Clara Valley chapter of the California Native Plant Society, Midpeninsula Regional Open Space District (MROSD), and Creekside Center for Earth Observation. *(continued on Page 2)*

IN THIS EXPLORER...

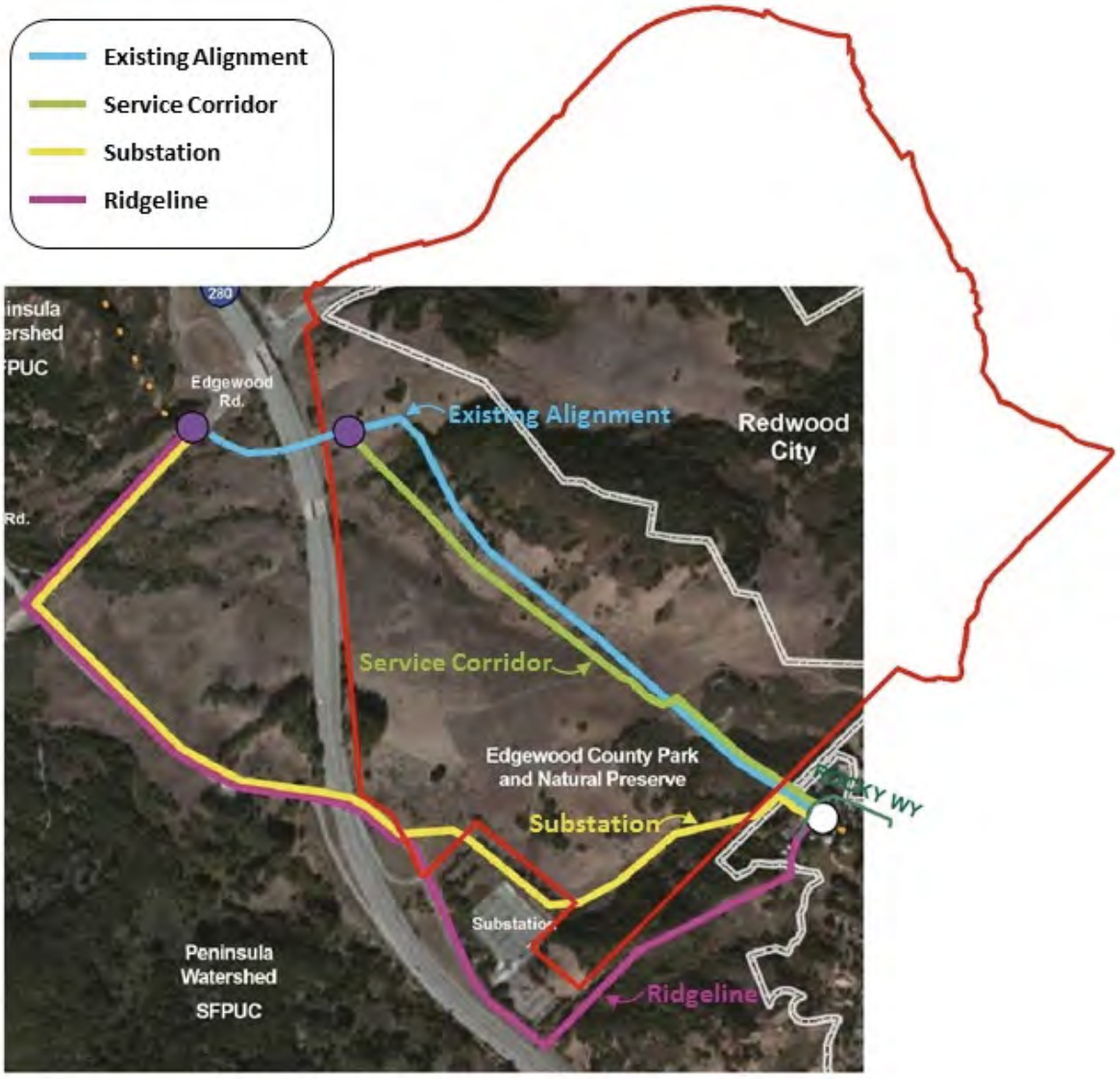

Figure 2. New Pipeline Alternative Routes
[source: PG&E's Edgewood Preserve Routing Analysis, dated November 13, 2013; with annotations]

***(PG&E Projects**...continued from Page 1)*

We have had two formal meetings with PG&E in an effort to convince them to choose the Ridgeline route. Our arguments are:

- Ridgeline is the only route that completely circumvents Edgewood.
- The other three routes pass through Edgewood, in violation of the County's General Plan, the Edgewood Park Master Plan, and the MROSD easement.
- The other three routes will cause irrecoverable damage to the grasslands inhabited by the Bay checkerspot butterfly, Marin western flax, and White-rayed pentachaeta, all species on the Federal Endangered Species List.

You can find our detailed arguments at http://www.friendsofedgewood.org/wp/wp-content/uploads/PGE-Gas-Pipeline-Position-Paper-v2.pdf.

At our last meeting on Feb. 28, 2014, PG&E told us they would consider our recommendation. Since then, we have had no meaningful feedback. We will, of course, be delighted if PG&E does the "right thing," but we are currently making plans to fight vigorously if they do not. Without going into details, there are many legal and environmental hurdles that PG&E must overcome, and we believe we can prevent PG&E from disturbing Edgewood.

In the coming weeks, we intend to broaden our support base by engaging more community members. Many of you will recall the valiant fight waged by the Save Edgewood Park Coalition in the early 1990s that

(continued on Page 6)

Junior Explorer Highlights

by Kate Connors

After an unusually quiet fall and winter, spring brought the field trip requests rolling in. Our docents have hosted over 150 children and about 50 adults at this writing (May), with more expected before the school year winds down.

Environmental Education students from Sequoia High School, preschoolers from Mountain View Parents' Nursery, and Scouts of all ages counted woodrat nests, made gold back fern prints, skirted scat, sniffed yerba buena, discovered spider turrets, and sought the wily banana slug. Middle schoolers acted out the functions of a tree under the guidance of Laurie Alexander, learned to use a map and compass from Miklos Salgo, and worked on an Edgewood collage with Martha Vercoutere and Leah Moffatt. We hope that many of these enthusiastic young naturalists will return to Edgewood with family and friends!

Coordinators Carol Hankermeyer and Kate Connors thank Laurie Alexander, Eric Anderson, Kathy Dollard, Barbara Erny, Paul Heiple, Leah Moffatt, Frances and John Morse, Suzanne Redell, Todd Reimche, Raquel Rivera, Miklos Salgo, Peggy Smullin, Jack Stovel, Robert Strode, and Martha Vercoutere for their support and participation this year.

New Native Species!

by Paul Heiple

I am announcing the discovery of three new native species in Edgewood. The first was found on April 11 as a few of us weeders went above the Ridgeview Trail to check some sites we had been weeding for Yellow Star Thistle and Italian Thistle. Ken Himes and I keyed the plant on Thursday, April 17, and determined it is *Camissoniopsis micrantha*, a small sun cup. A photo below.

© 2014 Paul Heiple

The weeders are working to enhance the location where it grows, removing non-natives of all types, in the hope that the sun cup will move down to the trail as chia did.

Then, on May 23, during Friday weeding, I identified and confirmed two additional new native plant species. The two species are *Logfia filaginoides* and *Lupinus affinis*. Both are found along the Clarkia Trail. This brings the new species count to three this year. It must be the dry weather!

Logfia filaginoides
© 2014 Paul Heiple

Lupinus affinis
© 2014 Paul Heiple

Seeking Coordinator for Children's Nature Program

Help children of all ages experience the wonder of nature.

You will help the Friends of Edgewood recruit, coach and manage docents for our Junior Explorers program. No special expertise or botanical knowledge is required to be the Coordinator. Only a passion for nature and a desire to inspire in children attitudes of appreciation, wonder, and caring for the natural environment. You will be the administrative glue of our program. Of course, if you would like to participate with the children in the field, you are welcome; it is not a requirement.

Help Wanted

Job duties include:

- Receive and process field trip requests
- Establish field trip date(s) with teacher/group leader
- Send request to docent team for volunteers
- Select the appropriate number of docents and assign to field trip
- Send Outreach Planning Form to teacher/group leader
- Record volunteer hours contributed to the program and provide an annual summary to the Friends of Edgewood Board
- Write reports of Junior Explorer activities for the Edgewood Explorer (newsletter), or submit reports submitted by docents
- Keep simple database records of field trips
- Develop and grow the program

Est. 1992 Celebrating 20 years
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Contact us at JuniorExplorers-coordinator@friendsofedgewood.org.

Mighty, Miraculous Moss

By Carolyn J. Strange

http://en.wikipedia.org/wiki/Ceratodon_purpureus

Several hundred years ago, during a cold period known as the Little Ice Age (1550-1850), a Canadian glacier advanced over a mossy area. Last year, scientists reported that they had revived some of that moss.

On ground the now retreating glacier had recently exposed, the scientists found what looked like dead moss clumps. But closer examination revealed bits of green among the soggy browns. Back in the lab, radiocarbon dating determined that the moss had grown about 400 years ago. Estimates from the glacier's retreat rate suggest the moss had been exposed for less than two years.

Any moss cell can be "reset" to grow a new plant, so to test viability, the team ground up some samples of what they'd found, then provided nutrients, water and light. Seven of 24 samples grew, producing a total of four moss species. Quite possibly, mosses buried by glaciers might help repopulate their ecosystems when exposed again centuries later.

How long can frozen moss cells stay viable? No one knows, but this year a different team working at Earth's other pole reported a new record—not just for moss, but for plants and multi-cellular organisms. (Single-celled microbes have survived in extreme cold for tens of thousands of years.) The scientists noticed that mosses buried in Antarctic permafrost look fresh and well preserved in core samples. So this team took slices from core samples and simply warmed them in an incubator. Four depths were sampled, from about a foot to nearly five feet down. The deepest/oldest moss had grown between 1,533 and 1,697 years ago. Once in the incubator, on their own, these moss Methuselahs naturally regrew from the slices.

Mosses can be marvelously tough! And apparently, at least some of them also welcome reproductive assistance. Just as flowering plants get a little help from pollinating friends like bees, tiny arthropods like mites and springtails may be assisting mosses, which also emit "come-hither" scents.

Mosses are very small, soft plants that have no true roots nor flowers, pollen, or seeds. (They produce airborne spores.) These "plants without plumbing" lack a vascular system to distribute water and nutrients, and they also dry out easily. Many mosses survive months-long desiccation and revive again within hours of rehydration. (Except in damp areas, Edgewood's mosses spend summer dried out, awaiting water.) Humidity can keep mosses growing, but reproduction requires liquid water, because moss sperms must swim to female plant parts.

It was known, from research in dry lab containers, that mites and springtails can carry sperm. Experiments in wetter, more natural conditions showed that, indeed, springtails improved rates of moss fertilization. Other work had suggested that the tiny critters follow odors, and more recent studies strengthen the evidence by showing that fertile moss shoots produce many scent compounds. Furthermore, in odor chamber tests with a common moss found worldwide, fire moss (*Ceratodon purpureus*), female and male plants discharged different blends of compounds—and springtails preferred whiffing female mixtures.

Here's a possible scenario: A springtail, sloshing along in a film of water on a mossy carpet, heads towards an inviting smell. Sperms thrashing around nearby hitch a ride on the "springtail express" and arrive at the fragrant, fertile female frond. It would be a big help, especially since moss sperms apparently don't swim well.

http://en.wikipedia.org/wiki/Moss

Some puzzles remain, like how the springtails benefit from the arrangement. But it turns out that reproductive mosses can seep sugary droplets. Could they be springtail treats? The discoveries are new, and only a few species have been studied, but scientists suspect such relationships could be widespread.

References:
http://www.sciencenews.org/view/generic/id/350646/description/Mosses_frozen_in_time_come_back_to_life

http://www.livescience.com/44134-old-frozen-antarctic-moss-regrows.html

http://www.sciencenews.org/view/generic/id/342420/description/Little_animals_spread_sperm_for_smelly_mosses

How Many Checkerspots Can Checkerspotters Spot?

By Christal Niederer

© 2012 Laurie Alexander

In 2014, a lot! What started as a shaky year due to extreme drought has turned into an amazing show of Bay checkerspot butterfly activity at Edgewood, with our checkerspotting team noting record numbers since the reintroduction began.

While Edgewood generally averages about 21 inches of rainfall a year, the 2013 calendar year saw only 4.2 inches. October 2013 to January 2014 had only 1 inch, with literally zero measurable rainfall in January (Western Regional Climate Center, Pulgas Ridge station). By the end of January, the normally green grasslands at Edgewood were still eerily brown. Few annuals had germinated, and many that did germinate died from moisture stress. Those annuals that survived were usually shaded by rocks or small divots in the ground. Perennials were heavily browsed.

Bay checkerspots are always in a race against their host plants, so an early start to the growing season (think November rather than December), is often key to their survival. With essentially no *Plantago erecta* for them to eat by late January, we questioned whether they would emerge at all, survive a second year of diapause, or emerge late only to not have enough time to complete their life cycle. Prospects seemed grim both at Edgewood and at the source population in Coyote Ridge, which was booming in 2013.

Finally our first larvae were spotted following germinating rains in early February. We estimated close to 4000 larvae, which was a good number but still below the replacement rate of the 5000 we introduced in 2013. Because numbers were even lower at Coyote Ridge, we decided to cancel transfers of larvae to Edgewood for the year.

By mid-March, however, conditions had changed dramatically. We found large pockets of record-high checkerspot densities on Coyote Ridge. Nearly 4.5 inches of rain in February recharged the soils, and host plants developed with little nonnative grass competition. (It appeared that many of the nonnative grasses germinated and then died during the dry January.) While the larvae got a very late start, they developed quickly in the long, sunny days. We brought 4105 larvae to Edgewood by March 12, with hopes that cool weather would prevent host plants from drying out too soon.

Our team of checkerspot monitors began surveying for adults in early March. As of late April, the checkerspotters had seen a record number of butterflies since the reintroduction began. In 2007, volunteers saw only 9 adults over two weeks. In 2011, there were 120 adults over four weeks. The numbers have increased every year, with 2014 our new record.

As of this writing in late April, it looks like we'll have an 8-week flight season with 799 adults spotted. The long flight season means more opportunities for mating and egg-laying. The butterflies are spreading out. At least one checkerspot has been found on the Clarkia trail, and other trails had unconfirmed sightings as well.

The high numbers and the long flight season are very exciting, but perhaps even more so is the timing between the butterflies and the host plants. As a rule of thumb, we want to see at least three weeks between peak flight and the complete drying out of host plants. We consider this a minimal amount of time for butterflies to mate, lay eggs, and for their small larvae to grow large enough to go into diapause. This is the dormant stage the larvae must enter before the long, hot summer when there is nothing for them to eat. The longer the plants stay fresh after peak flight, the better. Peak flight was probably early in the second week of April, and by the end of the third week of April, none of the host plants had dried out. While there were a few hot days in

(continued on Page 6)

(**Checkerspots**...*continued from Page 5)* April, overall temperatures were cool. A little bit of refreshing rain late in the month adds to the positive outlook.

The habitat continues to look amazing, thanks to a rotational mowing program completed by County Park staff. Plots mowed in 2012 and 2013 had an average of 34% *Plantago erecta* and 5% nonnative annual grass this year, while paired unmowed plots only had an average of 10% *Plantago erecta* and 30% nonnative annual grass. Host plants are clearly responding positively to the management treatment, and weeds are declining. Different areas are planned for mow treatment in 2014.

We were so pleased to see the year shift from gloomy to glittery. It was interesting to watch the larvae develop so quickly with the longer days when they started late in the season, and to see that host plants starting so late still needed a certain amount of time to complete their lifecycle. It appears that the larvae will win the race this year. While numbers will always vary dramatically, it is encouraging to finally feel that the Bay checkerspots are making a solid home at Edgewood.

Our thanks as always go to the checkerspotters: Alf Fengler, Howie Smith, Carolyn Strange, Bill Korbholz, Trevlyn Williams, Mary Wilson, and Paul Dixon. Each person selects a day a week during the flight season to walk an offtrail monitoring course tallying the checkerspots they spot. Alf Fengler and Mary Masters monitor the host plants.

Partners of the San Mateo County Parks include: Creekside Center for Earth Observation, San Mateo County Parks Foundation, United States Fish and Wildlife Service, Pacific Gas & Electric Company, the Jiji Foundation, Microsoft, the California Native Plant Society, and the Friends of Edgewood.

(**PG&E Projects**...*continued from Page 2)* resulted in the designation of Edgewood as a Natural Preserve, defeating plans to develop a golf course. We hope you will join us in our battle to ***Save Edgewood Park*** again.

In case you are wondering about the impact of digging a new pipeline through Edgewood, imagine an 80-foot wide swath of land stretching approximately 1 mile between the eastern and western boundaries going right across Serpentine grassland, looking like the work site shown in Figure 3. ❖

Figure 3. 80-Ft Wide Work Site
[source: http://norcalpug.com/nu_upload/PSEP_Overview_PUG_3.19.2013.pdf]

Education Center Visitors

Time Period	Adults	Children	TOTAL
Apr '11 - Mar '12 **(Inaugural Year)**	7474	2363	9837
Apr '12 - Mar '13	6884	2478	9362
Apr '13 - Mar '14	6575	2402	8977

Docent Training Program 2014

by Mary Wilson, Docent Training Coordinator

Our docent training session for 2014 has just ended. Some of our graduates are still following wildflower walks and going on their one-on-one walks to finish up their training even though the formal classes and hikes are over. Please welcome them if you see them on the trails.

Every year I write that we have a remarkable bunch of new docents and every year it seems to be true. Some of our new docents joined the training via the usual advertising. Many of our new docents joined in response to my invitation to weed warriors to take the training as enrichment or as a perk for being so dedicated. They were not required to become docents but all of them have completed the full training and will make good docents.

Our new docents this year are:

Eric Anderson
Paul Anderson
Joan Marlowe
Kelly Rogers
Anita Stewart
Jim Vannice
Deanna Schiel*

*Deanna Schiel is an experienced docent. She returned to training this year for a brush up and to help out with the set-up and take-down necessary at the Education Center. I owe Deanna a special "thank you!"

I also thank our great presenters John Allen, Alf Fengler, Ty Freiberg, Paul Heiple, and Ken Himes for training our new docents, year after year, and for successfully passing on their enthusiasm for Edgewood. ✍

MEMBERSHIP DUES

New or renewing members may clip and complete this section to pay tax-deductible annual membership dues. Please send your check, payable to Friends of Edgewood Natural Preserve, to the return address on the back of this panel. Renewing members can determine their membership expiration date by checking the six-digit code to the right of their name on the mailing label. For example, if the code is 06/2014, membership runs through June 2014.

Questions? Lv msg at (1-866) Go-Edgewood (1-866-463-3439) or contact membership-coordinator@friendsofedgewood.org

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- ❑ Set of 6 Edgewood greeting cards and 1-year subscription to *Bay Nature* magazine
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- ❑ 1-year subscription to *Bay Nature* magazine
- ❑ Toni Corelli's *Flowering Plants of Edgewood Natural Preserve*

❑ **Please keep the premiums and maximize the value of my dues.**

❑ **I am enclosing a gift of _____.**

Please send (subject to availability):

____copies of *Common Native Wildflowers of Edgewood* @ $1.50; ____copies of the *Edgewood Vascular Plant List* @ $3.00; ____copies of the Apr-Jun 2004 *Bay Nature* magazine @ $6.00; ____copies of *Flowering Plants of Edgewood Natural Preserve* @ $12.00. All prices include tax, shipping & handling.

I would like to participate in the following:

- ❑ Docent program
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- ❑ Public relations
- ❑ Junior explorer program
- ❑ Habitat management
- ❑ Organizational support
- ❑ Adopt-A-Highway

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Bill and Jean Lane Education Center (EC) - Summer 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

Adopt-a-Highway
Next Sessions: 7/13, 8/2, 9/7

To volunteer or get more information, contact Ken Seydel at adoptahighway-coordinator@friendsofedgewood.org

Second Sunday Bird Walks
7/13, 8/10, 9/14 (8 AM start)

Third Saturday Nature Walks
6/21, 7/19, 8/16, 9/20 (10 AM start)

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.friendsofedgewood.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@friendsofedgewood.org.