Edgewood EXPLORER
FRIENDS OF EDGEWOOD • FALL 2022

# Monitoring Is the Watchword for Restoration Efforts

by Peter Ingram

As we reported in late June, on the afternoon of a very hot solstice, two separate fires broke out on the southeastern perimeter of Edgewood. Aircraft immediately started water and retardant drops. Multiple engines responded with ground crews who created "dozer lines" and hand-lines in the vegetation. The fire was mostly contained by that evening, and the preserve stayed closed for several more days. The cause of the fires has been investigated, but to date there have been no conclusions announced.

About 20 acres were burned, of which approximately five were within Edgewood's boundary. In addition, and of higher concern to San Mateo County Parks staff and the Friends, there was significant damage inside the preserve caused by a large CAL FIRE bulldozer and hand crews. In our discussions with parks staff, we were able to contribute strategy and method to the emerging two-prong rehabilitation plan:

- Physical repair of the affected habitat, the small creek, and the Clarkia trail, including erosion control. This must be completed ahead of the wet season, or in the next two months.
- Active, continuous monitoring to track the return of native plants and record the appearance of invasives early in their growth cycles.

Friends of Edgewood volunteers have helped with replanting native bulbs and corms that were unearthed along the dozer lines and are working hard to observe and prevent new social trails into the burned areas.

Concurrent with monitoring the aftermath of the recent fires, the county's Fire Fuel Reduction Project continues along the eastern preserve boundary, most intensely along the Sylvan trail from the Day Camp past the Baywood Glen trail intersection. Unfortunately the work in that section of the project required a much higher level of machinery used to masticate the vegetation and reduce/remove the heavy debris. We are quite concerned about the soil disturbance and the potential for erosion and weeds. We will meet with parks management in the coming weeks to press for a rigorous monitoring program and an action plan for mitigation.

In the realm of grassland restoration, we are currently focused on data analysis and seeing what is – and is not working. Creekside Science has performed detailed field observations of the second year treatment plots and they have completed progress reports for the San Mateo thornmint and the Bay checkerspot butterfly.

On all fronts, with climate change, drought, fire, machines, and weeds, "Be ever vigilant" is what guides our learning and field work to ensure that Edgewood's extraordinary biodiversity is appreciated and protected forever.❖

Solstice Fires *Photos by Barrie Moore (top), Bill Korbholz (l), Peter Ingram (r)*

# 2022 Wildflower Hikes in Review

by Kathy Korbholz

We know many of our wonderful friends and volunteers – perhaps some of our readers – first learn about Friends of Edgewood through our wildflower hikes. So it was important to us to restart our docent hike program after a two-year COVID-caused hiatus. A small group met to reimagine how we could offer safe and enjoyable hikes this year. I want to thank Sandy Bernhard, Nancy Enzminger, Kathy Goforth, Bill Korbholz, and Barrie Moore who joined me in trying to resolve the issues we faced.

We settled on a few significant changes from prior seasons:

- `Moved the hike schedule earlier – March through May – to take advantage of the early blooms and avoid the summer heat in June.
- Limited the group size by offering limited free tickets via Eventbrite.
- Staggered the starting times and trails used to avoid the crowding and the chaos our popular hikes often created around the entrance to the Education Center.
- Added shorter, kid-friendly hikes to serve our younger visitors.
- Advertised the events as 3-hour *hikes* so visitors knew what to expect and came better prepared with sturdy footwear, hats, and water.

In early 2022, the COVID-19 situation eased enough that our 2020 docent training class was able to reconvene and finish their training. They joined our other active docents and the combined group led more than 70 hikes with just over 300 visitors this year. That number is down from our past high water marks of over 1,000 visitors. Of course we wish there had been more visitors, but it felt good to dust off interpretation skills and get back on the trail.

In our after-season satisfaction survey sent to the 31 docents who led hikes, 18 responded.

95% indicated they had a positive experience.

All agreed our staggered starting times and locations helped reduce the chaos around the Ed Center.

We did have a 27% no-show rate, although some docents experienced an even higher rate.

The written survey responses had a number of interesting ideas about how to handle no-shows which we can consider as we plan the 2023 season.

We sent a different survey to docents who were on our "active list" but did not lead a hike in 2022; 10 of those 34 responded.

60% of those said they still want to be considered active and thought they would lead hikes next year.

Even those who no longer want to be counted as active docents want to remain connected to our docent community via our "interest" email list.

Although they didn't personally experience the changes implemented by the planning team, 90% considered them tangible improvements.

We look forward to expanding the program next year so we can accommodate more visitors and perhaps encourage some new volunteers to join our Friends of Edgewood community.❖

Wildflowers from left to right: yerba santa, chaparral clematis, chaparral mallow, checker mallow, purple sanicle, San Francisco collinsia, dense-flowered owl's-clover. *All photos by Kathy Korbholz*

# A Mission for the Future

by Barrie Moore

Last fall, the Friends of Edgewood board of directors kicked-off a round of strategic planning to help us think about the strength of our organization and how we can best support Edgewood Park and Natural Preserve into the future.

Since our founding in 1993, FoE has been committed to conservation and nature education. That ethos is reflected concisely by three words in our logo: Preserve, Educate, Restore. The broader articulation of our mission, though, had wandered a bit over the years. As we had attempted to explain all that we do in different contexts, our mission statement had become long, complicated, and varied.

During two offsite planning sessions in October and November, we determined that we needed to tackle new challenges like increasing Edgewood's resilience in the face of climate change, making Edgewood a welcoming place for people of all backgrounds, and raising more funds to continue important restoration efforts. We realized it was time to refine our mission statement and better articulate our vision.

The board created several task forces to begin tackling these challenges, but clarifying our mission was the first step. Linda Leong, Angela Mallett, and myself formed the Mission Statement Task Force, and we began work by reviewing the history of our mission, gathering input from various stakeholders, refining our statement to reflect the future of the organization, and looking at how our programs and resources align with our priorities. Our goal was to create a mission statement that was clear, concise, memorable, and reflected the resiliency of Friends of Edgewood and the preserve itself. We wanted to emphasize the importance of Edgewood's extraordinary biodiversity. We also wanted a simple way to describe our over 30 volunteer programs.

Our work spanned several months and included multiple rounds of input and feedback by the entire board. At our June 2022 board meeting, we were pleased to receive unanimous approval, and Friends of Edgewood adopted the following new statements:

- Friends of Edgewood engages in land and wildlife stewardship, nature education, and interpretive programs that support Edgewood Park and Natural Preserve.
- Our mission is to protect Edgewood's extraordinary biodiversity and foster lasting connections with Edgewood and the larger natural world.
- Our vision is that Edgewood be a resilient place of extraordinary biodiversity that is appreciated and protected forever.

Our commitment to protecting Edgewood is as strong as ever. Task forces looking at our human resources and land management practices have been using the work we did in the mission statement task force as a foundation, and they plan to report on their respective efforts in the coming months. This is an important time for Friends of Edgewood. If you are interested in being involved with the strategic planning and execution of our mission, consider joining the board of directors or inquiring about becoming a program coordinator or team leader. We can use all the smart, talented people we can get to help us continue this important work!

Send email to president@friendsofedgewood.org and let us know how you would like to get involved.❖

## 2022 Friends of Edgewood General Meeting

Sunday, October 9, 2022, 3:00 – 5:00 p.m. at Edgewood Park and Natural Preserve

This year's theme: **Building Resilience**

Guest speakers: **POST President Walter Moore** and **San Mateo County Parks Director Nicholas Calderon**

Come tour the newly expanded Edgewood Farms and learn about our many wonderful volunteer programs.

It has been three years since we've held an in-person General Meeting, and we are looking forward to seeing everyone "in real life" this year! Save the date and look for more details coming in September.

# Exploring Geologic Mélange in Edgewood Natural Preserve

by Jonathan Starr

The underlying geology of Edgewood Park and Natural Preserve is a *geologic mélange involving the Franciscan Complex*. This means that within the preserve's small area (less than one square mile), there are many different rock blocks of completely different types, compositions, and modes and times of formation. Somehow they all ended up here side-by-side, and one-above-the-other.

Such close proximity of such a variety of different rock types is unusual! For example, much of Oregon is covered by basalt and other volcanic rock, stretching for thousands of square miles. Much of the states of Utah, Arizona, and Colorado is covered by colorful sandstone. California's long spine of the Sierra Nevada Mountains is largely grey granitic rock, which is igneous rock formed by magma that cooled underground, and later was uplifted to the surface by powerful geologic forces.

But, contrary to those vast expanses of uniform or similar rock-type elsewhere, in little Edgewood Natural Preserve there are sedimentary, bio-sedimentary, meta-volcanic, and metamorphic rocks, all mixed into a mélange. Here are some of the main rock types in Edgewood:

*Courtesy Friends of Edgewood*

**Serpentinite:** The star of the show. Not common on Earth's surface but plentiful in Edgewood. It forms from water mixing with mantle material. Near the top of the Sylvan trail, dense woodland yields to sparser grassland underlain by serpentinite. Why the change in flora? Because soil containing degraded serpentinite is toxic to many plants; only a few can tolerate it.

*Courtesy Friends of Edgewood*

**Greenstone:** Usually reddish brown on the surface, due to oxidation of iron content. Originates as volcanic basalt flowing from fissures (called spreading centers) under the ocean, later subjected to heat, pressure, and water that change it to meta-volcanic greenstone. As the Live Oak trail passes from sparse grassland to rich woodland, the rock type correspondingly transitions from the relatively toxic serpentinite to the more plant-friendly greenstone.

*Photo by Jonathan Starr*

**Greywacke:** A sedimentary mixture of sand, mud, and gravel. It forms in near-shore marine environments from material eroded from coastal areas, delivered by streams or rainwater runoff or landslides, including ones underwater. It is present as underlay, outcrops, and/or rock islands in the wooded northern part of the preserve, in parts of the grasslands in the western corner of the preserve, and along the Clarkia trail in the southern part of the preserve

*Photo by Jonathan Starr*

**Whiskey Hill Sandstone:** Not part of the Franciscan Complex, to which the other rocks here belong. Instead it formed from coarse- grained sediments in basins on top of the Franciscan Complex after the latter was already in place. It underlies a few northern parts of Edgewood, such as the Old Stage picnic areas, and is abundant at nearby Pulgas Ridge Open Space Preserve.

*Photo by Jonathan Starr*

**Radiolarian Chert:** A bio-sedimentary glassy-looking rock, formed at the bottom of the deep ocean from the silicaceous skeletons of tiny plankton called radiolaria. Common around the San Francisco Peninsula and forms prominent beds in the Marin Headlands. Appears in the southwestern part of Edgewood Natural Preserve, and in spots in the Old Stage picnic area.

*Courtesy Andrew Alden, oaklandgeology.com*

**Blueschist:** A metamorphic rock formed from certain minerals subjected to high pressures but low temperatures (by geologic standards) underground. In Edgewood, there is some near the Sunset entrance. Blueschist sometimes has other crystals, like garnets, embedded in it.

*continued on page 5*

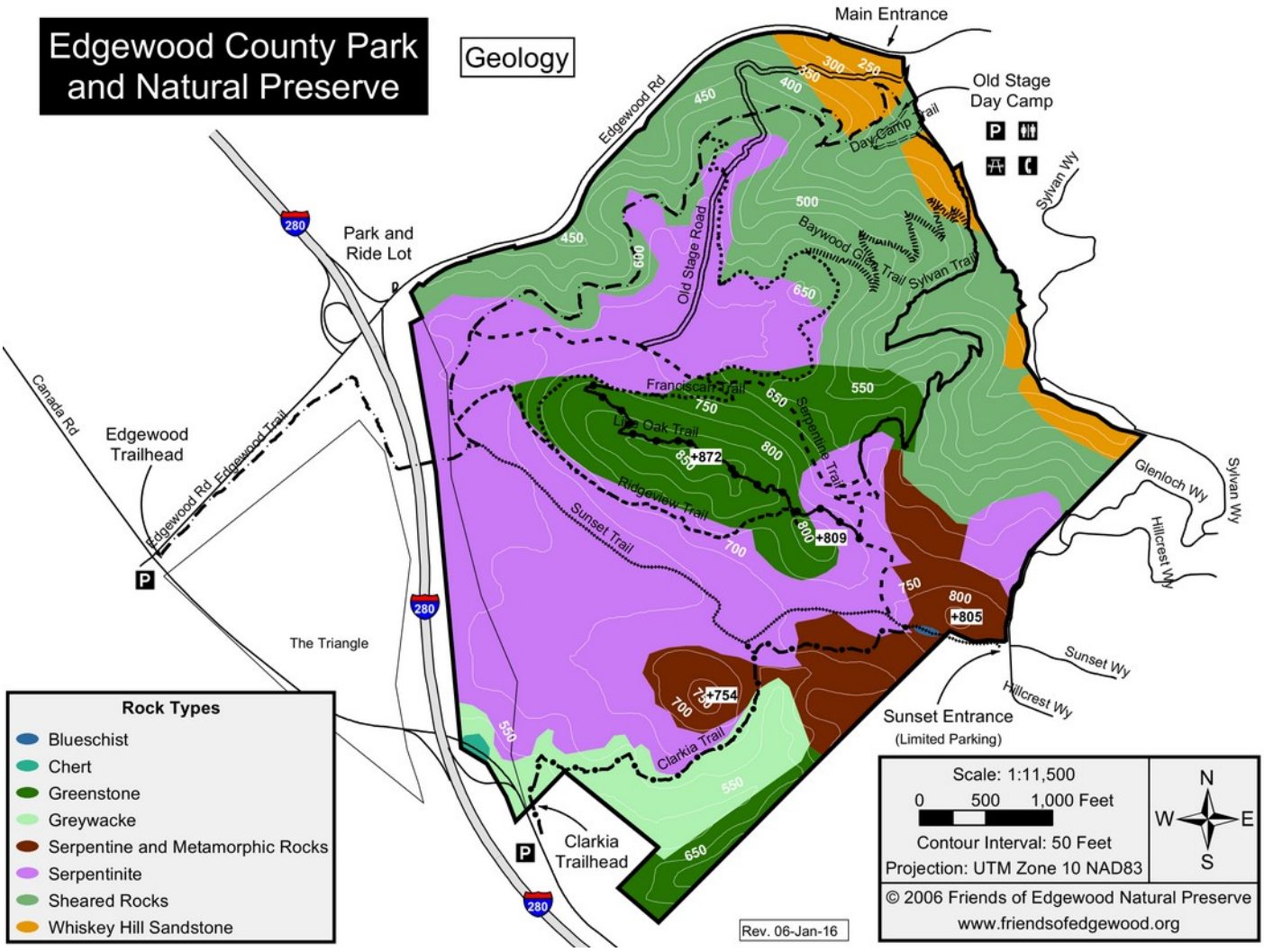
## Geologic Mélange *from page 4*

Here is a map of Edgewood Park and Natural Preserve showing the main rock types and trails. Note that:

- Serpentinite underlies much of the grasslands.
- Greenstone underlies much of the wooded central ridgecap.
- The areas marked as "Sheared Rocks" have many different blocks broken into such small pieces that none can be said to dominate. Greywacke, including some outcrops and rock islands, is in the Sheared Rock area, including along the trails there. Much of the woodlands in the northern area of the preserve is in this area, as are portions of the grasslands on the west side of the preserve.
- Chert is concentrated in a southwestern corner of the preserve, although it also appears as rock islands and smaller pieces in other parts of the preserve.
- Blueschist is most readily seen near the Sunset entrance.

How did all of these very different rock types end up side-by-side in Edgewood? The main mechanism was plate tectonics, in which the Earth's crustal plates move relative to each other. The ancient oceanic Farallon Plate drove eastward and subducted under the western coast of the continental North American Plate. As it did, greywacke, chert, and other sedimentary rocks were scraped off the surface of the Farallon Plate and plastered into accretionary wedges against the North American Plate. Greenstone, basalt, serpentinite, and other fragments of the Farallon Plate itself accumulated there, too. So did blueschist and other metamorphic rocks formed in the special geologic conditions of the subduction zone. This created the jumbled rock mélange underlying much of the San Francisco Peninsula, including Edgewood.❖

This article is an excerpt from a document researched and written by Jonathan Starr and shared with Friends of Edgewood docents. Starr has been a FoE volunteer since 2013. He has contributed several informational pieces to FoE volunteers on wildflowers, woodpeckers, fence lizards, lace lichen, and other topics.



# Botanical Sex is Tricky

by Bruce Homer-Smith

In humans, individuals are biologically male or female. Each individual must find a mate of the opposite sex to create offspring. Over many generations, the vigorous mixing of different individuals' capabilities through sexual reproduction produces variations that help our species prosper.

Flowering plants are different from humans. Most individuals have many male (pollen) and female (receptor) parts. Therefore, unless something prevents it, a plant can pollinate itself. This is called selfing, where a plant creates offspring with a rearrangement of just its own genes. From a Darwinian perspective, selfing is almost always a bad long-term strategy.

Plants that reproduce by selfing, without incorporating genes from other individuals, will be unable to correct mutations or drop characteristics that become outdated as circumstances change. Plants that primarily reproduce with selfing are not likely to last thousands or millions of years. Therefore, plant species we encounter today have almost all found a way to reduce self-pollination.

Plants use many strategies to encourage cross-pollination. For instance, conifers typically release their male pollen near the bottom of the tree, while female receptors (cones) tend to be far away, near the top of the tree. Plants like coyote brush produce flowers of only one sex per individual, ensuring cross-pollination. Flowers with both male and female parts often release their male pollen before their female parts become receptive.

The other day I was introduced to another strategy to avoid self-pollination: distyly. Each individual belongs to one of two genetic groups – the L-morph and the S-morph. Pollen from the L-morph group cannot pollinate any other individuals in the L-morph group – only individuals in the S-morph. Pollen from the S-morph group can only pollinate individuals in the L-morph. This accomplishes the crucial goal of avoiding self-pollination but has the disadvantage that pollen can only pollinate half the members of its species.

This strategy has evolved several times in species across 24 plant families, such as Oxalis, Primula, Pea, and Borage. For instance, the garden primrose (*Primula vulgaris*) has evolved to use distyly, even though other members of the family have not. Over the long term, these species have been successful using distyly to ensure cross-pollination, even at the cost of fewer offspring.

Plants that use distyly have another adaptation that helps pollen reach a compatible receptor. The gene group that determines an individual's morph also affects the length of its style (the column that holds the female receptor). L-morph plants have long styles and short stamens. S-morph plants have short styles and long stamens.

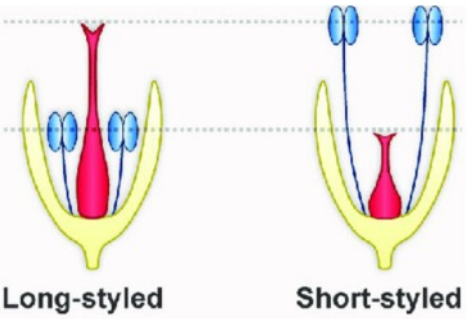



*Diagram © Joao Custodio Fernandes Cardoso, Universidade Federal de Alfenas, Brazil*

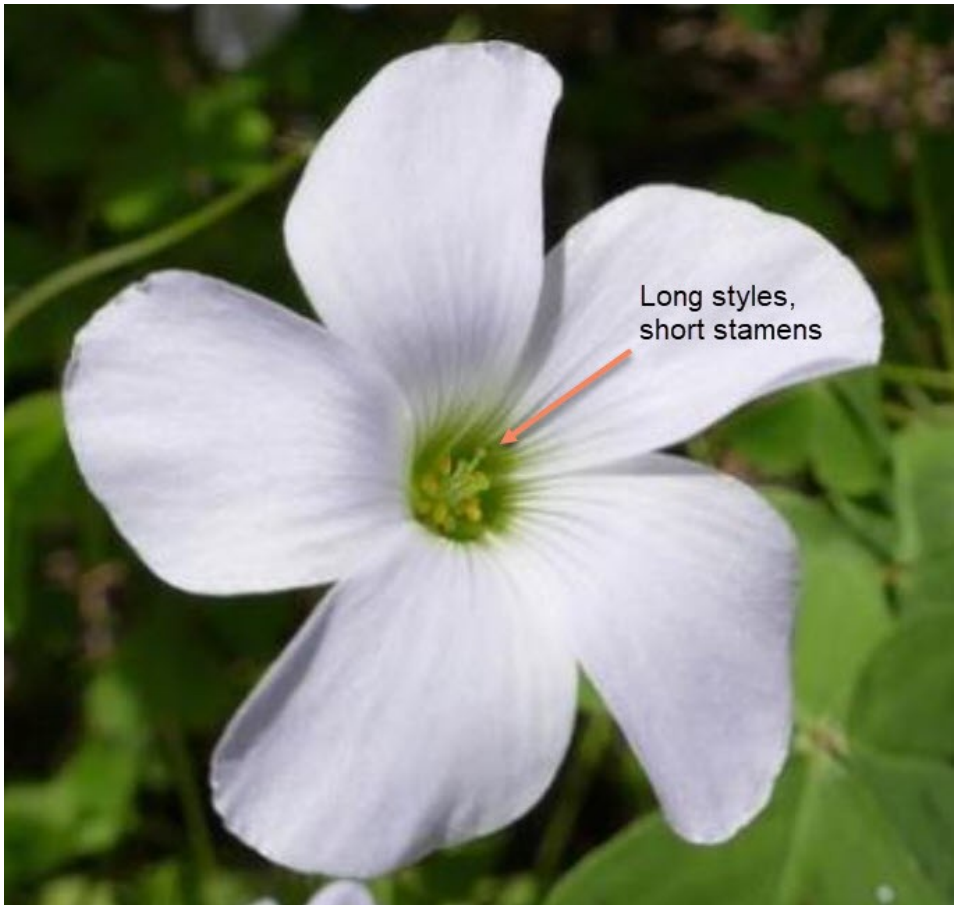
Imagine a pollinator visiting a long-styled flower with short stamens. The pollen at the top of the short stamen rubs off low on the pollinator's body, where it is most likely to rub off on a compatible receptor when it visits a short-styled flower. This works in the other direction as well. Our

*continued on page 7*

*Photo by Barrie Moore*

## Parks Connection

The home beat of San Mateo County Parks Ranger **Rob Cala** is overseeing Fitzgerald Marine Reserve, but Rob also doubles as an extremely talented photographer and video producer. He has been working with Friends of Edgewood and the San Mateo County Parks Foundation to develop a series of videos about Edgewood Park and Natural Preserve, funded in part by a generous grant from The National Environmental Education Foundation (NEEF). Rob has been filming and photographing Edgewood since early spring. Here he is on the Sylvan trail capturing a closeup for a video about wildflowers in Edgewood.




Crimson woodsorrel. L-morph (above) and S-morph (below).
*Photos © Neil Kramer*


## Botanical Sex *from page 6*

pollinator picks up pollen high on its body when it visits a short-styled flower, and then releases the pollen high on its body to a receptor of a long-styled flower.

Crimson woodsorrel (*Oxalis incarnata*), which can be found in the picnic area in Edgewood, uses distyly.

The L-morph individual, shown top left, has five long styles, with female receptors at their tip, and short stamens with yellow balls of male pollen.

The S-morph individual, shown below left, has short styles and long stamens. Notice that the yellow balls of pollen in this morph are higher than the short styles.

When I first heard of this, I was amazed. Since many plant individuals have both male and female parts, botanical sex is tricky. To accomplish cross-pollination, hundreds of plant species have evolved an additional system of genetic and physical dichotomies. Distyly is one of these.

Darwin wrote about distyly in his book *The Different Forms of Flowers on Plants of the Same Species*. See darwin-online.org.uk/content/frameset?itemID=F1277&viewtype=text&pageseq=1.

Want more?

To read about some short-term advantages of selfing, see en.wikipedia.org/wiki/Self-pollination.

For a more technical discussion of distyly, see "The Biology of Heterostyly" at www.tandfonline.com/doi/pdf/10.1080/0028825X.1979.10432574 ❖

# Recognizing Our Volunteers In-Person Again

by Kathy Korbholz

It was delightful to welcome our wonderful volunteers back to an in-person recognition event in Edgewood. As we welcomed 42 volunteers to the party, we asked that they review the poster depicting all 40 of our programs and try to speak to someone from one of those they did not know. Refreshments were available during this mingle time.

After a recap of 2022 program activities, entertainment was provided through a group trivia game. It featured humorous multiple choice questions about each of our programs. This non-competitive venue allowed volunteers to learn a bit about programs other than their own.

We recognized Howie Smith (2020) and Perry McCarty (2021), who were named Best Friends during our last two annual meetings held via Zoom. This in-person event enabled them to receive their actual certificates and hear a round of appreciative applause.

Laurie Alexander received an award as Decent Docent of 2022. Despite initially feeling her docent skills were rusty she led 13 hikes! In her own words, "I got my mojo back …. Special thanks to Carol Hankermeyer who let me shadow her hike. Getting out on the trail with her reminded me that the most important part of leading a hike is simply to share the joy of being in a beautiful place—no need for a lot of facts, names, or stories when nature provides such a wonderful show."

Rebecca Reynolds received the Loneliest Docent award. For two of her four scheduled hikes no one showed up. She maintained her spirit and returned to lead her fourth hike which had four attentive visitors.

Ken Himes was recognized with these words for his past leadership of the Weed Warrior program:

> "Not only did Ken Himes lead the Wednesday night weeding efforts for many years, and could be seen solo weeding on countless days, Ken created a special collegial atmosphere for the program.
>
> He built a nimble community where it is acceptable to be social or weed by yourself when thoughtful contemplation was needed. He created an open classroom to learn about nature in an unforced, unstructured way and willingly answered the same "What's this plant?" question numerous times. He provided exercise and fresh air opportunities to many who might shy away if it was actually called exercise. He created a safe space for a troubled mother and daughter team to rekindle their love and open their communication by working together in the unguarded fresh air. Ken offered those magical moments of observing the fog spilling over the mountain tops, sunlight on a spider web, or sharing the evening scurry zone with a cottontail.
>
> For all of these gifts, we thank you Ken Himes and honor you on your semi-retirement from Weed Warrior leadership. We hope it is only "semi" because we need your loving, open spirit in these troubled times."

Ken Himes *Photo by Barrie Moore*

We asked all our volunteers to arrange themselves in a large circle from newest to longest serving. Each person introduced the volunteer on their left and said the number of years that volunteer had worked for the benefit of Edgewood. The number of years were tallied and came to a whopping 558 years! That is an average of over 13 years per volunteer.

Before saying goodbye, it was gift time. All volunteers received a water bottle sling made from recycled plastic water bottles. The sling features a thermal-lined bottle pouch, and generous extra space for keys, cell phone, sunscreen, even a small guide book. Volunteers were also invited to choose additional thank you gifts supplied by the San Mateo County Parks Department volunteer coordinator. Choices included T-shirts, jackets, blankets, license plate holders, and more. There were also water bottles provided by REI which fit into the new sling.

Thank you to all our volunteers who stayed active during the pandemic; Edgewood needed you.❖

## Volunteer Recognition Event, July 9

*Photos by Karen Johnson*

## Become a Friend of Edgewood!

JOIN or RENEW your membership ONLINE or by MAIL:

**ONLINE:** foew.org/donate

**BY MAIL:** Send this completed form with your donation amount circled to Friends of Edgewood, 3 Old Stage Coach Rd., Redwood City, CA 94062-3801.

$25 $50 $100* $150* 250* $500* $_____

Please make me a Sustaining Member and charge my credit card $_____ each month. ($5 minimum)

EXPLORER newsletter preference: ☐ email ☐ mail

*Check if you wish to receive eligible thank you gifts:

☐ 6 Edgewood greeting cards for donations of $100+

☐ Plus 1 year of *Bay Nature* magazine for donations of $150+

Name_____

Address_____

City/State/Zip_____

Email_____

Phone_____☐ home ☐ cell

Type of credit card: MasterCard Visa Discover

Name on card_____

Card number_____

CVC_____Expires_____

Thank you for supporting the Friends of Edgewood.
Friends of Edgewood is a 501(c)3 nonprofit.
Donations are tax-deductible as allowed by law.

## Switch to a Sustaining Membership

### Easier for you. Better for Edgewood.

Friends! A sustaining membership lets you make a monthly donation via your credit card and have a huge impact on programs like Project 467, Junior Explorers, and more. Can you spare just $5 or more per month to support Friends of Edgewood and the park we love?

Go to foew.org/donate, and follow directions to become a sustaining member, or email us at mem@friendsofedgewood.org, and we will help you get set up.

Est. 1993
Friends of Edgewood
PRESERVE • EDUCATE • RESTORE

Friends of Edgewood Natural Preserve
3 Old Stage Coach Road
Redwood City, CA 94062-3801

ADDRESS SERVICE REQUESTED

**Bill and Jean Lane Education Center**
**at Edgewood Park and Natural Preserve**
Open Saturdays and Sundays, 10 a.m. – 2 p.m.
Please check the website for the latest information.

To learn more about Friends of Edgewood, visit our website at foew.org, call us toll-free at (1-866) GO-EDGEWOOD, or email us info@friendsofedgewood.org.

www.instagram.com/friendsofedgewood/

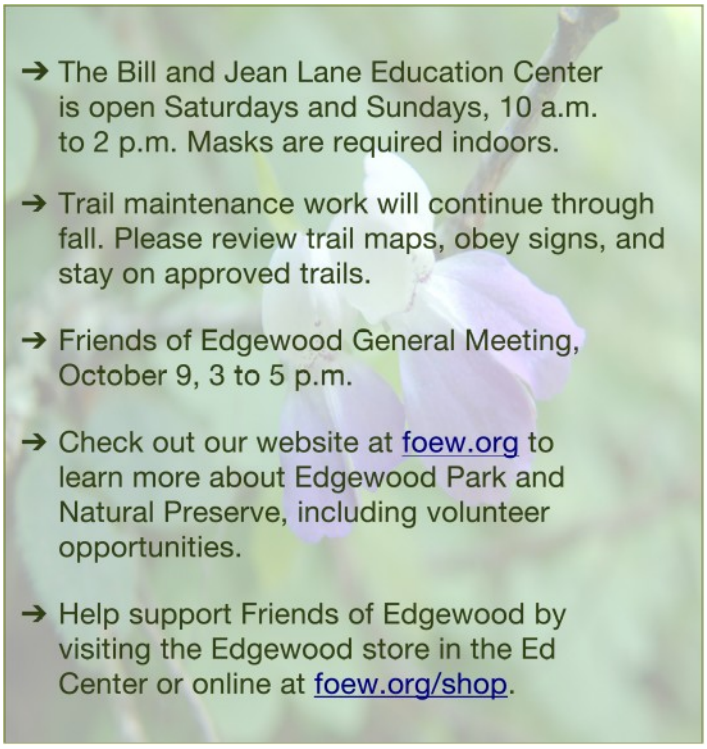
www.facebook.com/FOEdgewood/

# Edgewood EXPLORER

FALL 2022 • VOLUME 29 NUMBER 3

## IN THIS ISSUE






The Edgewood EXPLORER is published quarterly by Friends of Edgewood Natural Preserve, a nonprofit organization dedicated to protecting Edgewood's extraordinary biodiversity and fostering lasting connections with Edgewood and the larger natural world. Friends of Edgewood Board of Directors: Laurie Alexander, Sandy Bernhard, Nancy Enzminger, Peter Ingram (president), Kathy Korbholz, Linda Leong, Angela Mallett, Perry McCarty, Barrie Moore. The newsletter is edited by Michele W. Conway and supported by contributions from many Friends.