The summer of 2019 will go down as the year of the miraculous removal of yellow star-thistle (YST) at Edgewood. As most of you know, YST and many other weeds have been removed to levels that make them uncommon to see in the preserve. After nearly twenty years of work, the Weed Warriors believed we had largely vanquished this invasive weed. It was to my horror this June that I found YST had sprung up in nearly all parts of Edgewood at such levels that I knew the weeders would not have enough time to get it all before it began dropping seed to produce next year’s plants. I began to make plans as to which areas would be sacrificed as we retreated back to lines we could hold; yes, weeding is like a war with fronts, battles, and retreats when the enemy YST gets behind the lines. I was in despair when I notified the Green Grass project of the plans. Bill Korbholz suggested we ask the docents to help with special sessions. The counter-offensive was launched.

Over the next six weeks, special sessions full of fresh volunteers hit the fields. We decided to ask the county for mowing…and mow they did, within days of being asked. Bags and piles of dead YST were produced. Twenty-four individuals, many of whom had never weeded before, added an additional 182 hours of volunteer work. I have yet to add up all the many additional hours the regular weeders put into this effort. I can report that although there were some bites and scratches suffered, none of the volunteers fell on the field of battle. In the end, we can say the takeover that YST had planned did not succeed. To me, that seems miraculous, and I am happy to say I did not have to put the retreat plans into action.

Next year, we will see how well we blunted the invasion. The off-season will be a time to plan so that this does not happen again. YST is a weed that can be extirpated if a plan can be found to sweep all the plants out every year for ten years. I think that can be done.

I want to thank all who participated in this effort. You are all heroes of this year. ♥
[FoE] Caps Off to Our Volunteers
by Kathy Korbholz

On June 29th, we had a Goldilocks day for our third annual Volunteer Recognition event. Recall that two years ago we braved stormy weather, and last year the heat topped 90 degrees! Over 50 attendees joined the Friends of Edgewood in the Day Camp picnic area to enjoy light refreshments and take advantage of the opportunity to meet other volunteers.

As part of Saturday’s program, Stuart Weiss gave a motivating update on the progress of Project 467. In his talk, he discussed how, in troubling times, Edgewood has become his refuge. He added that the Preserve and the Friends of Edgewood are his support system as he deals with a recent loss in his family. It reminded all of us of the importance of small kindnesses and the value of our environmental community.

He went on to say that his colleagues in the restoration community are envious of the hands-on support FoE volunteers provide to projects like P467. Bill Korbholz then outlined some additional volunteer opportunities that are part of P467. They are:

- **Seed Collection** – A current off-trail opportunity. This effort is taking place now; promptly send email to Get-Involved@FriendsofEdgewood.org.
- **Seed Amplification** – An opportunity to help increase the number of seeds available for future restoration areas. Entails offering growing space in your yard (raised bed, planters, unused space) beginning this fall.
- **Rapid Assessments** – An off-trail opportunity (next year) to help quantify native cover in chosen plots.
- **Adopt-a-Site** – An opportunity to take personal responsibility for weeding a small plot to showcase FoE’s restoration efforts. This work can involve a single person or perhaps a small group dedicated to a single area.

If you are interested, even casually, in these opportunities please send an email to Get-Involved@FriendsofEdgewood.org.

Kathy Korbholz shared results of the recent, post-season docent survey and the promise that the board will work on addressing the two most troublesome concerns: (1) improve matching the number of docents available to the number of visitors wishing to go on any day’s wildflower hikes and (2) reduce the commotion that ensues when we have a crowd milling around the amphitheater area before the start of the walks.

New for 2019, we awarded a Habitat Hero and Lifetime Membership award to Jane Kos. The award text reads: “Jane has volunteered at Edgewood Park and Natural Preserve in many capacities over the life of the park. Jane was one of the original weed warriors. Back in 1994, they were known as the “Invasive Weed Eradication Group.” She has participated with trail maintenance crews, Adopt-a-Highway, and was a host in the Ed Center.

(continued on Page 5)
San Mateo Thornmint on the Increase!
by Christal Niederer, Creekside Science

You may remember the days when San Mateo thornmint was known from only one location at Edgewood. This diminutive annual mint had declined to 249 individuals in 2008, and its habitat appeared to be declining. The risk of extinction loomed large.

There have been ups and down since, but we are pleased to report that restoration for San Mateo thornmint made huge strides again this year. In June 2019, there were ~25,000 plants occupying 479 m$^2$ at six occurrences, the highest number and area since this project began in 2008. This compares with our previous high in 2018 of 19,185 plants occupying 344 m$^2$ at five occurrences. In 2017, we were very pleased to report 7,549 plants occupying 236 m$^2$ at four occurrences, which at the time was a major success. It is important to point out that this project began over a decade ago with modest gains. Long timeframes can be needed to begin scaling up successes and making solid progress toward recovery goals. For the last two years, San Mateo thornmint can be found at Pulgas Ridge as well as Edgewood, increasing the resiliency of the species.

Interestingly, the 2019 growing season was not a particularly good year for thornmint, with many plots immersed in water over long periods and plants showing yellowish foliage from apparent water stress. Gains came mostly from the new macroplots at Pulgas Ridge. In addition to the experimentally seeded plots, two small macroplots were installed at that site. The purpose of the macroplots is to pilot methods of scaling up this recovery project as its successes increase. Instead of painstakingly measuring seeds, delineating plots, and censusing survivors, a larger area was marked, seeded more haphazardly, and later sampled (not censused) for survivorship. This method is much less labor-intensive, and it appears to be worth continuing based on this year's success. It is also an excellent use of the large number of seeds being produced annually at the Creekside Science Conservation Nursery (~430,000 total over the last three years). We also plan to continue installing experimentally seeded plots at Pulgas Ridge that will be censused and compared to references at Edgewood.

Modest gains also came from seeding a new site at Edgewood, Harrier Hollow. This was the wettest site this year (we nicknamed it Thornmint Swamp), and plants seemed to suffer from it. Even with its somewhat low numbers, the plants at Harrier Hollow outcompeted the same cohort of December 2018 seeded plots at the otherwise highest-performing Butterfly site. Drier years are likely to see better results at this new site, so we'll try again in the next growing season.

2019 was another grassy year. String cutting took place at all Edgewood sites in May to control nonnative grass cover.

Parasitic dodder continues to be a concern throughout the sites at Edgewood. After two years of handpulling both dodder and its common native host, hayfield tar plant, both dodder frequency and cover significantly declined in experimental plots. Creekside Science led a volunteer group to pull dodder near thornmint sites to create a buffer for this sensitive plant.

For the 2020 growing season, we anticipate another year of seeding at both Pulgas Ridge and Edgewood. Seeding at the original site is not recommended, based on overall poor performance. Unfortunately, the high-performing Butterfly site appears to be fully occupied until dodder in adjacent areas can be controlled, but we have other areas just waiting for thornmint seed. Propagation will continue at the Creekside Science Conservation Nursery.

We are grateful to the Friends of Edgewood and the San Francisco Public Utilities Commission for continued funding of this project. We also appreciate our partners at San Mateo County Parks for mowing and financial support; as well as the San Mateo County Parks Foundation. We continue to thank our volunteers and staff from Yerba Biocamp and California Native Plant Society; as well as California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service.
Project 467 Update
by Peter Ingram

Green Grass
As readers may remember, the Green Grass initiative aims to restore Edgewood’s non-native grasslands to their former floral beauty and species diversity by reducing or eliminating weeds and promoting greater cover of native plants. Approximately 40% of Edgewood Park consists of grassland, and almost all of Edgewood’s grasslands have been significantly degraded due to the invasion of weeds, especially non-native grasses. While the Weed Warriors are effectively removing thistles and other non-grasses, it’s just not feasible to remove grasses by hand.

By employing the best practices of grassland management, including mowing, de-thatching, and selective treatments, the Green Grass initiative will significantly increase native cover. Because non-native grasses also threaten the Bay checkerspot butterfly, thornmint, and pentachaeta, we expect Green Grass to deliver benefits to these related, high-priority projects as well.

The Green Grass work group continues to meet each month to take stock of accomplishments and fine-tune work plans for the coming weeks. Scientific permits were secured for seed collection in the spring, and since then a small group of determined volunteers has collected a sizable amount of seeds from plants in the Preserve: Yarrow, Poppy, Soap Root, Harvest Brodiaea, and Clarkia. An earlier decision to contract-grow one species this year, using grant funds, resulted in the collection of nearly two pounds of Yarrow seed, which has been sent to a specialty grower for “amplification” propagation. The Edgewood seeds will be planted on a half-acre nursery plot and the resulting, much larger, volume of seeds harvested next year for return to Edgewood with installation as early as the fall season of 2020. A similar process will follow for other high-volume targeted species. For smaller seed collection efforts, the Green Grass team is exploring several methods of amplification: Volunteer adoption of “showcase sites” along grassland trails; a small seed nursery someplace in Edgewood where volunteers can manage propagation; and off-site mini-nurseries in local volunteers’ own yards and gardens. All of these potential methods will require more study and the development of “best practices” for the proper handling of native plant seeds from collection to installation in Edgewood.

Weed Warriors
At the July work group meeting, it was reported that a serious and unanticipated return of yellow star-thistle (YST) to Edgewood had been observed. After years of successful control, the 2019 rains had stimulated germination, and the prospect of losing a lot of ground in the battle to control YST at Edgewood was determined to be unacceptable. The group agreed that immediate action was required before the plants went to seed. A call-to-action was sent out to Edgewood docents, hoping to augment the work that the Weed Warriors were already doing. Within a few days, new weeding groups were mobilized to focus on YST removal. The County Parks Department was able to quickly support the effort with targeted mowing in some areas of dense stands of YST, while volunteers hand-worked edges and pockets. By early August, the report from the field was, “We’ve taken back significant portions of the Preserve from this invasion and feel that the situation can be monitored and managed going forward.” This outcome would not have been possible without many hours of volunteer help and our Parks partners.

San Mateo Thornmint
The San Mateo thornmint is a federal and state endangered annual mint once known only from Edgewood. This population had been in decline for years, with 53,000 individual plants documented in 1994, down to near-extinction with only 249 individuals counted in 2008. A Friends of Edgewood and Creekside Science restoration project began that year with the goal of conducting habitat enhancement experiments at the existing site, conducting habitat suitability surveys for potential introductions, collecting and banking seed from the existing population, and initiating a seed increase program.

As recently reported by Creekside Science, restoration of the thornmint made huge strides in 2019, following increased successes going back to 2011. By June, field surveys revealed that nearly 25,000 plants were occupying approximately 480 square meters at six locations, the highest number and cover area since this project began in 2008. In addition, the Creekside Science Conservation Nursery produced about 122,000 thornmint seeds in 2019. This compares with ~180,000 harvested in 2018, 132,000 in 2017, and ~47,200 in 2016. For more details, see Christal Niederer’s article on Page 3.

While the 2019 results are promising, Creekside Science experts remind us that long timeframes are needed to begin scaling up successes and making sustained progress toward recovery goals. The Green Grass initiative will provide the strategic framework for attaining recovery goals.

PROJECT 467
Protecting every acre
Dorothy and Bob Young also received a Lifetime Membership award. The award text reads: “In gratitude for their dedication and enduring commitment, individually and as life partners, in support of Edgewood Park and Natural Preserve and the Friends of Edgewood. Bob and Dorothy, through their consistent care for more than 30 years, embody FoE’s mission and inspire us all to protect and celebrate Edgewood as a unique treasure through exemplary stewardship and education.”

Finally, Peter Ingram presented Bill Korbholz a Hero of Edgewood Award. The award text reads: “Bill Korbholz is an Extraordinary Friend Forever of Edgewood County Park and Natural Preserve. Bill is a founding member of the Friends of Edgewood and has pretty much served in every role and held many consequential responsibilities over the past quarter century. He has volunteered at Edgewood Park and Natural Preserve in countless capacities over the life of the Preserve. He has learned from, championed on behalf of, and advocated for the conservation of special places in the region. He has raised prodigious amounts of money and attracted legions of passionate volunteers to the cause. And he has gracefully, courageously, tenaciously provided inspiring leadership in all that he has and continues to do for the Preserve. Lifetime Love & Gratitude From the Friends of Edgewood Natural Preserve.”

Again, this year we formed a circle of all volunteers present, ordered clockwise from most years of Edgewood service to our newest volunteer. Moving counterclockwise, each volunteer introduced the person to the right by name and their years of service to Edgewood. Bill added up the volunteer years represented by all those present. Earlier in the event, guests had entered their guess of the total number of years of service. Docent Erica DeMonner submitted this year’s closest guess - 484 years. She won a set of four of our Friends of Edgewood stemless wine glasses and a California-themed tea towel.

At the close of the event, as a “thank you” gift to our outstanding volunteers, each guest received a Friends of Edgewood baseball cap. See the photo with all the happy volunteers! These caps (and the wine glasses) are for sale in the Education Center.

Edgewood is eternally grateful to all those who devote their time, talents, and treasury to supporting the park we all love. Because of their dedication, Edgewood is able to offer spectacular programs to our community and is admired by many other Friends groups.

Many thanks to the behind-the-scenes crew who helped make this year’s Volunteer Recognition Event a success: Laurie Alexander, Emily Anderson, Gina Barton, Sandy Bernhard, Peter Ingram, Frank Peale, Howie Smith, and Mary & Dennis Wilson.

Photo above: Stuart Weiss gives a motivating update on the progress of Project 467. © 2019 Kathy Korbholz
Weeding Wonders
by Sandy Bernhard

On a recent Friday morning along the Clarkia Trail, our Weed Warrior leader, Paul Heiple, witnessed a monarch laying an egg on a milkweed and called us over to admire it. It was probably just 10 minutes old. Just one of the incredible things we get a chance to see and learn about while weeding. And the increased number of milkweed and monarchs in the park is partly due to our efforts. A monarch will lay up to 500 such eggs, one at a time. This one has only a 1 in 20 chance of making it to adulthood. We wish it good luck! If you are interested in joining our weekly Weed Warriors, you’ll find more info at http://friendsofedgewood.org/habitat-restoration.

Kirven-Morse Grant Funds Field Trips
by Laurie Alexander

For the next two years, second graders from Ravenswood City School District (RCSD) in East Palo Alto will be able to enjoy free, docent-led, discovery hikes at Edgewood Natural Preserve. FoE’s Junior Explorer hikes are always free, but costly transportation to the Preserve is often the most difficult obstacle for low-income schools. Thanks to the generous support of the Kirven-Morse Family Fund, all RCSD second grade classes through spring 2021 will be able to board a bus for a fun and educational hike at Edgewood. “This is a great opportunity to get students out in nature and doing something most of them don’t normally do,” says Lauren Traube, second grade teacher at Willow Oaks School, East Palo Alto. Thank you, Frances and John Morse, fund advisors, for providing this opportunity.
Late Summer Spiders
by Paul Heiple

During recent weeding sessions, three spiders have frequently been seen in the grasslands. They are the green lynx spider (*Peucetia viridens*), the banded garden spider (*Argiope trifasciata*), and a spider with no common name (*Tidarren sisyphoides*).

The green lynx spider is difficult to find except in late summer, when the female is guarding her egg case and the young spiderlings. The egg case is a white fibrous mass, often found near the top of the hayfield tarweed plant. Once you see an egg case, look for the mother spider standing on it. The mother will turn toward you if you get close and is reported to be able to spray venom at threats. I have not pushed any of the mothers to do this. You might also see this spider if you notice a bee that is not moving on the tarweed. A closer look will yield the reason the bee is not moving: lynx spiders, like crab spiders, catch and eat bees at the flowers.

The banded garden spider will be found on slightly tilted webs in the grasses. The best time to see them is on dewy mornings; orb-shaped webs are the ones to look for. The spiders stand upside down in the center of the webs. This species is making a comeback after the drought years, when they were hard to find and small due to lack of their common prey items. The *Argiope* often have zigzag webbing in the center of the orb that seems to cause grasshoppers and crickets to jump toward the web center. The much smaller male spiders may be seen in small webs near the edge of the females’ webs.

Our last spider, *T. sisyphoides*, is notable for its appearing to hide in the middle of the air, in a cobweb-like webbing. The spider builds a dome-like shelter with leaves and other items in which it hides. This looks like some material that just happens to have gotten caught in the web. From this structure extends a line to the center of the orb part of the web used to catch prey. If you look at the end of the line nearest the hide, you will see the leg of the spider on the line. The spider uses this to detect any movement in the catching web. If the vibration is that of a prey item, the spider comes down the line to complete the catch. *T. sisyphoides* is also known for what it does not do: the female does not eat the male; this is in spite of the fact that the male dies in her web soon after mating. Perhaps this is because the male is so much smaller than the female and has a single pedipalp that is 10% of its body weight. Why only one pedipalp? In this species, the male removes one of its pedipalps by tying it down with silk and twisting it off after the last molt. There is no information as to which side may be preferred for amputation. The theory is that the amputation is done to give the male an advantage in the race to mate, lighter-weight individuals can run faster. Unfortunately for the male spider, it is also a race toward death.

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*Photo, above left: banded garden spider; https://www.publicdomainpictures.net/pictures/230000/nahled/banded-garden-spider.jpg*

*Photo, above: green lynx spider; © 2019 Paul Heiple.*

*Photo, above right: Tidarren sisyphoides; http://staffwww.fullcoll.edu/lvincent/spiderguide/image/img_0027rv.jpg*
Bay Checkerspot Butterfly Hangs on at Edgewood

by Christal Niederer, Creekside Science

The Bay checkerspot butterfly, the beloved mascot of the Friends of Edgewood, continues to hang on at Edgewood. Its presence in the 1990s helped tip the scale from Edgewood’s proposed fate as a golf course to its destiny as the Natural Preserve we all love. Unfortunately the butterfly was extirpated in 2002, a victim of dry nitrogen deposition from Interstate 280 (I-280) that fertilized the nonnative Italian ryegrass that outcompeted its host.

Since 2007, this project has been underway to re-establish a Bay checkerspot butterfly population in restored habitat. Coyote Ridge in Santa Clara County maintains hundreds of thousands of butterflies and is the source of transferred caterpillars and adults.

The project had an estimated high of about 4,000 caterpillars in 2014. This declined to 2,300 in 2015, then dropped drastically to the low hundreds in the last three years. Adult observations have followed the same trend. Our volunteer Checkerspotter team walks an off-trail permanent monitoring course in the high-quality serpentine butterfly habitat on sunny days during the flight season, recording where they see any adults. The amazing wildflower display is a perk for these volunteers. In 2014, they observed a high of 800 adults, which dropped to 451 in 2015, then 78 in 2016. The last two years’ sightings have been in the 40s.

So what’s going on? The habitat looks great: San Mateo County Parks staff continue to mow nonnative annual grass, and the host plants and nectar sources are abundant in their habitat area. In fact, even during the regionally grassy spring of 2019, we had to work to find areas grassy enough to warrant mowing within the habitat area. We’ve had a couple years of relatively cool springs, which is an important factor that helps host plants stay fresh longer as the tiny caterpillars race to become large enough to enter diapause (their dormant state) over the long, dry summer when they have nothing to eat. Yet the Bay checkerspot butterflies are continually failing to reproduce at replacement rates. Edgewood may lack the steep north-facing slopes that remain cool enough to maintain fresh host plants even longer into the season, especially in the face of rising spring temperatures.

It’s also possible that the transplants from Coyote Ridge, a much larger area, may be less in tune with habitat edges than the original butterflies that were adapted to Edgewood. Perhaps the new transplants are more likely to fly into inappropriate habitat and miss out on chances to mate. The current strategy is to observe whether stopping translocations and maintaining Edgewood stock selects for more sedentary animals, with the idea that the ones that survive are best adapted to Edgewood. We honestly don’t know what the future holds for Bay checkerspots at Edgewood, but we’re glad to see they’re still hanging on and hope they continue to flutter above its beautiful wildflower displays.

We remain grateful to the following partners for financial support, volunteer time, and excellence on the job: U.S. Fish and Wildlife Service (USFWS), San Francisco Bay Wildlife Society, PG&E, San Mateo County Parks, San Mateo County Parks Foundation, Friends of Edgewood, and of course the Edgewood Checkerspotters.
To learn about our volunteer opportunities go to http://friendsofedgewood.org/get-involved.

Friends of Edgewood is a 501(c)3 nonprofit. Donations are tax-deductible as allowed by law.
Save the Date!
2019 General Mtg is scheduled Oct. 6

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.FriendsOfEdgewood.org

UPCOMING EVENTS

**Adopt-A-Highway**
Next Sessions: 9/18, 10/5, 11/3, 12/7
To volunteer or get more information, contact Dave Hershey at adoptahighway-coordinator@FriendsOfEdgewood.org

**Third Saturday Nature Walks**
9/21, 10/19, 11/16 - 10 AM @ BJLEC

**Annual General Meeting**
Sunday, 10/6/19

**Bird Walks**
10/13, 11/10 - 8 AM @ TBD

For more event info, see www.FriendsOfEdgewood.org/events