

THE TIDINGS



LAKE MERRITT INSTITUTE

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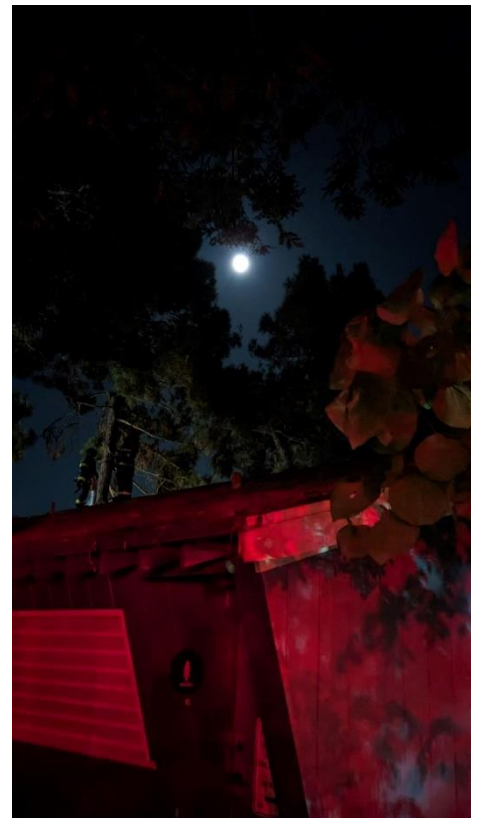
"The Tidings" is an editorial newsletter. Posted opinions are not necessarily those of the City of Oakland

ARSON AGAIN IN LAKESIDE PARK

It is alarming to witness again the loss of Oakland's heritage - cultural and natural history heritage - following two devastating fires at the Junior Art and Science Center in 2021 and 2022. The historic Rotary Nature Center at 600 Bellevue Avenue, founded by the Parks and Recreation Department in 1953 and designed by legendary naturalist Paul Covel, suffered a potentially devastating fire on the night of September 26th. A quick-thinking local citizen called the Fire Department right away and approximately 20 firefighters responded. They successfully contained the fire to between 10-15% of the rear exterior wall closest to the lake and the adjoining roof area. Thankfully, the interior of the center with library, beloved taxidermy cougar and eagles and other exhibits was largely spared from impact, aside from some minor smoke and water damage. Homeless encampment and activity had been reported in the immediate area of the fire's origin. However, the exact cause of this fire is still under investigation.

Arson and other forms of vandalism are not new to The Lake Merritt Institute (LMI) unfortunately. Our bulletin boards and U-Clean-It Boxes are often tagged, smashed and broken into. Only a day before the nature center fire, an attempted arson incident occurred while LMI Director and staff met in the LMI office at the Lake Merritt Boating Center. According to a staff member present, "We were working on our office project when someone set a fire under the building. We smelled the logs smoldering and ran outside to put it out."

Installation of outdoor smoke detectors, greater police or ranger presence in the park, and ultimately return of institutions like the Rotary Nature Center, the Junior Center and the boathouse to fulltime robust operation are urgently needed.



Rotary Nature Center ablaze on September 26th; photo by David Wofford.

LMI in SEPTEMBER 2023: 7,620 gallons of trash were removed from the lake by staff and volunteers in August. A total of 52,530 gallons of trash have been removed to date in 2023 as of September 1st.

In August, LMI Executive Director James Robinson hosted 132 volunteers, attended 6 meetings and gave 2 presentations.

20 used syringes were removed.

0.0 inches of rain were recorded by the LMI rain gauge in August

LMI in OCTOBER 2023: 4,650 gallons of trash were removed from the lake by staff and volunteers in September. A total of 57,180 gallons of trash have been removed to date in 2023 as of October 1st. In September, LMI Executive Director James Robinson hosted 137 volunteers and gave 1 presentation. 34 used syringes were removed. 0.0 inches of rain were recorded by the LMI rain gauge in September

THANK YOU TO ALL OF OUR VOLUNTEERS! See new column **Lake Merritt Hero of the Month** on page 9 and photos of volunteers in action at the end of this issue of The Tidings. Become a [supporter](#) and receive our digital newsletter every month.

LMI CLEANS UP ON CREEK-2-BAY DAY!

On October 23rd, The Lake Merritt Institute held its XXth annual Lake Merritt clean-up as part of the City of Oakland's Creek-to-Bay Month. Under the direction of Executive Director James Robinson and LMI Volunteer Coordinator Alfredo Sanchez, groups of community members like you, armed with long nets and pickers, pulled 502 gallons of trash from the water along the shore in one day. They retrieved bicycles, tires, shopping carts, mattresses, appliances and more. What you don't see is a tribute to their hard work. These items and the chemical pollution associated with them can harm the ecology of the lake that is recovering from a devastating fish kill in August of 2022.

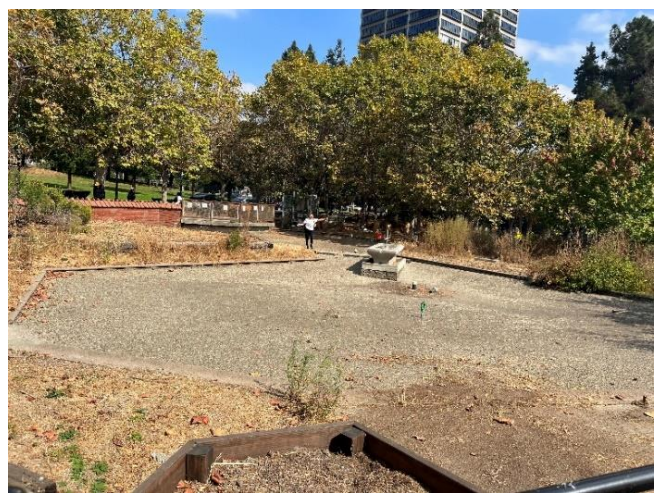
Trash keeps coming in. The Bay Area is on the cusp of the rainy season and potential returns of atmospheric river events. With the first rains, trash that has been hanging out in the city's storm drain system all year is flushed down the system's network of pipes to Lake Merritt. In fact, the deluge of trash that arrives in the lake then is referred to as "The Big Flush." No water treatment. Storm drain filters installed by the city over the years help some but curb filters and more are needed.

If you would like be part of the army of volunteers that helps keep the lake clean (LMI's Clean Water Project) make a donation or become a supporter on The Lake Merritt Institute website [here](#). Join the twice-weekly clean-up team or contact James to make an appointment for your group to clean.

OXYGEN! Construction to make the City of Oakland's Lake Merritt Management Plan a reality is underway! Installation of a state-of-the-art oxygen delivery system in the Glen Echo arm of the lake has begun. It will be under the surface at the bottom when installed and working.

Creek-to-Bay Clean-out of the Rotary Nature Center Bird Yard

Teamwork and volunteers are a beautiful thing! Thank you to the Rotary Nature Center and community volunteers and organizations. The brush-choked fresh water ponds in the bird yard were cleared in one Creek-to-Bay Day!



July 26th Bird Walk - Blazing Light at Lake Merritt – by Hilary Powers

Golden Gate Bird Alliance Volunteer

Thirteen birders assembled for the 4th-Wednesday walk sponsored by the group now called the Golden Gate Bird Alliance – one of the many local chapters still affiliated with the national Audubon Society to have changed its name – to discover a new meeting spot. We were in sight of the old meeting spot but about 40 feet away, to take advantage of some much-needed shade and also free up the much-traveled path.



Of course, everyone promptly deserted the shade when a couple of peeps flew in and landed on the beach – shorebirds visit the lake so rarely that it's an Occasion when they show up. These turned out to be Least Sandpipers, a common Bay Area bird but one never identified on these walks (though they might have made up the anonymous peep flock that fluttered through in April of 2022). They landed right at the water's edge, close enough for detailed discussion of their yellow legs and natty brown suits.



Least Sandpiper, *Callidris minutilla* - Wikipedia

The first returning Pied-billed Grebe of the season showed up inside the floats, a month later than usual. The lake offers a fine territory for these little grebes most of the year, but they need marshes with reeds to anchor their floating nests and so leave for the breeding season, a few months in late spring and early summer. The American Coots have the same problem with the same answer – they don't go far away, but most of them leave. (In the winter, it often looks like coots constitute most of the biomass on the lake, and for some reason at least one or two of them stay around all the time, but this year we hadn't spotted one since March – and we still haven't, though the grebe made us look around hopefully.)

Then we headed past the boarded-up art and science center (now scheduled to reopen in December!) and around the still depressingly dry and weedy bird paddock to the lakeside path, where we could get a better look at the islands. The leftmost island was full of young Brown Pelicans, some perched on branches several feet off the ground, heads held high and doing heron impressions. Others were playing with sticks like human children while one near-adult looked on.

A Red-shouldered Hawk soared and wheeled overhead, almost all dark against the bright sky. We couldn't begin to guess the bird's age with the normally definitive breast coloring lost in the light, but we could still be sure of the species because the crescents of pale feathers near the ends of the wings formed shining bracelets for us to admire. That's one of the joys of birding – learning to recognize which features do most to show who's what under what circumstances: white bracelets on a red-shoulder like this one, black elbows on a flying Red-tailed Hawk, black armpits on a Black-bellied Plover when it's otherwise all uniform gray, plus many more.

And we had Belted Kingfishers again for the first time since last January! One was a male (recognizable by his clear white chest with one blue band), which for some reason we almost never see here. Most of the time, all we have are females (with a second band in bright cinnamon orange), plus the occasional juvenile (with a bit of orange on the sides of the breast). Kingfishers are among the few females to wear brighter colors than their males, but they share the work of brooding and chick-rearing – unlike other reverse-color species such as the phalaropes, where the dull male cares for a nest while the bright female dances off to build and stock another nest with a different male, repeating the process as often as she can manage. (We've never reported a phalarope at the lake but live in hope; they show up occasionally along the Bay shore.)

In another rare-for-us sighting, a Wilson's warbler winged its brilliant yellow way through the trees along Bellevue. We've recorded them only twice before over the years, once back in August 2018 and before that in November 2013. There are lots of tiny birds that flash yellow, but this is the one wearing a crisp black beret.

When we worked our way back to the Nature Center, the group split, half lingering on the curb while the rest crossed into Lakeside Park. “Whatcha got?” I called, looking back. “Two woodpeckers!” That was well worth returning for, but both birds had split by the time the front of the group recrossed the lawn to hear that the stay-behinds had seen both a Nuttall’s Woodpecker (the stripy-backed one) and a Downy Woodpecker (with a white patch on the back, much less often seen here). The downies are probably here most of the time, but they’re much harder to find than the Nuttall’s, which tend to toot like someone trying to blow a police whistle softly right before they fly.

The American Robins were out in force among the strawberry trees upslope from Bellevue, with several new fledglings among them. Our robins (unlike the ones in Europe, which are flycatchers) are in the thrush family, but the adults show few signs of it. Their babies, on the other hand, leave the nest with perfect thrush breasts (pale cream covered with brown spots), and it takes them two to three months to develop the clear orange we’re used to seeing.

And so across the park and through the garden, where the Scrub Jays and titmice came for peanuts but the chickadees ignored us, and past the ponds, where the Western Pond Turtle – unseen for several months – floated at the far end, away from the waterfall. It was good to see water flowing there, at least; it’s turned off almost everywhere else, including the rock in the sensory garden that usually offers an enticing trickle for passing birds.

Returning to the meeting spot, the last birders were happy to find that Hank-the-rescue-pelican, alone earlier, now had four countable visitors for company. That brought us to 37 species of birds observed, a bit down from last year’s record 42 but well into the usual range for the month: a fine end to another fine day at Lake Merritt.

August 25th Bird Walk - Fish for the Win at Lake Merritt— by Hilary Powers Golden Gate Bird Alliance Volunteer

Twenty-ish birders assembled in the Boat House parking lot for the September 4th-Wednesday Golden Gate Bird Alliance walk. We tucked up politely and comfortably in the shade, well back to keep from scaring Hank-the-rescue-pelican away from co-leader Lyla, who’d brought a cooler of fish donated by the Oakland Zoo for her. (Hank needs extra help, and the park no longer provides it.) Then the reverent cry of “Leopard Shark!!!” rang out and we all streamed over to the railings in a rush.



Photo by Lyla Arum

Striped mullet

<https://www.inaturalist.org/observations/185160503>

Maybe it wasn’t a shark; I’ve heard arguments for ladyfish and mullet (the flat-headed fish with no legs, that is). But a couple of yards out from the shore, *something* was gliding over its shadow on the sand – something narrow and dark and about the length of my arm. It lacked a shark’s high dorsal fin and it had well-marked scales instead of smooth skin, but it was wild and fishily wonderful and longer than anything any of us had spotted swimming in the lake before.

And that wasn't the end of our fishy adventures – soon after (when I was too far away to run over and get a look) I heard others call out a bat ray in the near-shore waters. It was big and needle-tailed and said to be the first one seen in the lake since the huge fish-kill last summer.

These new residents are very promising, but the lake isn't entirely recovered. We did see lots of Double-crested Cormorants and lots of Brown Pelicans fishing, and lots of American White Pelicans too – but the latter were just lounging around on an island, having returned to visit with Hank after foraging out on the bay. Apparently they prefer larger fish than they can get in sufficient numbers here, and the whatever-it-was and the bat ray are out of their range in the other direction.



Bat Ray *Myliobatis californica*: Photo by Karina Nikolina

A few coots – not seen on a walk since last March – greeted the end of summer, and we once again had one Pied-billed Grebe, seen last month also for the first time since March. In mid-winter, these two are here in large numbers; pied-bills are most numerous among the grebes, and coots sometimes seem likely to outweigh the rest of the whole bird population on the lake even though individually they're smaller than chickens.

The bird paddock looked a lot less horrible than in recent months, thanks to the group of volunteers who'd cleaned out the worst of the brush and trash, but the ponds were still bone dry. Reports claim it's a plumbing problem and not just a matter of keeping the taps shut to save effort, but still not good news. And the park's plumbing troubles don't stop with the ponds: *all* the public toilets are locked or boarded up (or both), which feels rather like a sign of the imminent end of the world-as-we-know-it.

Two of the tiny and normally elusive Pacific-slope Flycatchers showed up at different points, competing with the Black Phoebes for control of the bug population. But otherwise, tree birds were thin of company through most of the walk. My usual warning – if we don't find the Magic Tree (the one where the rambling mixed flock is foraging at the moment), we'll be looking at a lot of empty trees – seemed way truer than usual until near the very end.

We'd crossed Bellevue and cut uphill through the park, past the bowling greens, and through the whole Garden Center garden without picking up much of anything. But after we were back across the road and heading for the Boat House, the day's Magic Tree (which turned out to be the stone pine and the bushes under it in the meadow with the statue) spread branches full of little birds for us: two California Scrub Jays, a Bewick's Wren, and assorted goldfinches, bluebirds, titmice, and chickadees hopped happily about, unconcerned about the missing warblers, crowned sparrows, and other frequent September visitors.

All told, we observed only 31 species of birds (down from 41 last year and 40 in each of the two preceding years), but we welcomed every one of them. The weather was lovely, the fish were exciting and encouraging, and despite the difficulties and decrepitude we still managed to have a good day at Lake Merritt, where every day....

AUDUBON BIRDWALKS AT THE LAKE: Join bird expert Hilary Powers any fourth Wednesday of the month for a free “Bird walk” at the lake. Muster at the geodesic bird cage near the Nature Center at 9:30 a.m. for what are always fascinating introductions to lake birdlife. This trip happens rain or shine. It is free but advance registration is requested by Golden Gate Bird Alliance. Use this link below.

<https://goldengateaudubon.app.neoncrm.com/np/clients/goldengateaudubon/event.jsp?event=10813>

TT Editor's note: The duck ponds were built in the 1920's and are a national landmark. They supply fresh water for migratory birds which cannot drink the brackish water at Lake Merritt. All the birds need fresh water for bathing.

Community Water Quality Report

Thank you to RNCF Volunteers, Piedmont Scouts, Achieve Scholars, ORC! (Oakland Rowing Club). New Voices Are Rising fellows, Laney College students and [Rotary Nature Center Friends](#).

Water quality was tested at the LAKE MERRITT BOATING CENTER DOCK on September 23rd.

Depth 1.5 meters

Water Clarity >1.5 meters (clear, but clear is normal for this season)

Temperature: 21 degrees Celsius at the top/21 degrees at the bottom (70 degrees Fahrenheit/69 deg Fahrenheit) Normal for this time of year.

Salinity 35 parts per thousand (ppt) top/30 ppt bottom Normal, slightly stratified (top and bottom are not equal)

pH: 7 top and bottom (normal)

Dissolved Oxygen (D.O.) 4 parts per million (ppm) at the top and 5ppm on bottom. (Meets EPA standard of 5 ppm at bottom but not top).



Creek-to-Bay Day -Rotary Nature Center Friends

More Community Water Quality:



Piedmont Scout Kajsa monitors water quality at Lake Chalet dock. LMI Board President Andrew Young collect a sample for Waterboards Harmful Algal Bloom monitoring, Achieve Scholars learn about water quality September 30th.

COMING UP!

November Lakeside Chat #36: “The Mystery Oyster of San Francisco Bay” with Dr. Andrew Cohen - Friday November 3rd 7-8 pm. FREE on Zoom.

REGISTER HERE =>

<https://mystery-oyster-of-san-francisco-bay-AndrewCohen.eventbrite.com>



YouTube Recordings of recent Lakeside Chats:

October's Lakeside Chat #35 with Dr. James Carlton "**Extinction in the Ocean**" is now available.

Enjoy! https://youtu.be/S8Gp_Ska3I8

September Lakeside Chat #34: “US/Climate Change Chaos and the effect on Native communities and Bering Sea ecology: Integrating Global Topics into Community College Curriculum” with Laney Geography Professor Mark Rauzon. <https://youtu.be/gLMnK4KmN0k>

DREDGING AND OXYGENATION: A PATH TO WATER QUALITY

An editorial by Dr. Richard Bailey

The fountains have been replaced by an aerator at the Embarcadero columns, and an oxygenation device at Grand and Harrison streets. These devices were installed as part of a City of Oakland two-year pilot study for the Lake Merritt Water Quality Management Project ⁽¹⁾ which was inspired by the 2022 fish kill. These devices will provide oxygenated water when oxygen levels drop in these pilot zone areas, which could happen if a harmful plankton bloom returns this year, or 2024. They may also alleviate the very low (0 to 3) oxygen levels which have plagued these two areas for many decades, causing dead zones, impairment of wildlife habitat, and occasional odors. Hopefully the pilot project will lead to a lake-wide system (currently unfunded) that would be automatically turned on by low oxygen sensors if a harmful plankton bloom returns. But there is no single silver bullet for water quality, and the pilot project is local and temporary. So now what? The answer is dredging; the same as it has been for over a century. These are the dates when Lake Merritt has been rejuvenated by removal of sediment from the bottom.

It has been 26 years since our Lake was last dredged (vs. an average of 11.4 years since 1893). During that time, sediment has continued to flow in from 60+ storm drain outlets, and residual biomass from decaying algae and plankton have built up at the bottom, where oxygen levels are the lowest. It is time to dredge. “Once more unto the breach, dear friends, once more” (William Shakespeare).

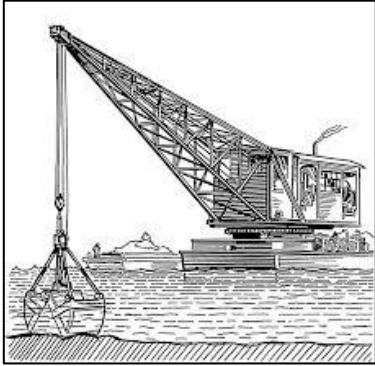
1893	Three areas (80,000 cy). Spoils used to fill wetlands and mudflats.
1899-00	290,000 cubic yards
1909-11	492,000 cubic yards (general clearing and deepening).
1921-24	900,000 cubic yards removed; refuge island created.
1934	Unknown quantity
1953	At least 35,000 cubic yards removed.
1964-5	35,000 cubic yards removed.
1972	Entire Lake dredged; seven months to complete; 50,000 scoops.
1985	Entire Lake dredged; 160,000 cubic yards; \$2,150,000
1997	Major storm drain inlets only; 25,000 cubic yards; over \$1,500,000.

Although now somewhat outdated by changes in tidal flow from removal of channel bottlenecks, the 1982 “Lake Merritt Restoration Project Final Report” created for EPA and the Water Board by CH2M Hill, Jefferson Associates, and Gary Shawley describes the definitive benefits of dredging.

But how?

Recent operations have been contracted out, cost millions of dollars, and required years-long, multi-agency permit negotiations. But this is not a huge operation as is needed for the Port of Oakland. If the City acquired or rented its own equipment to remove sediment, limited its operations to small volumes on an annual basis, obtained a multi-year permit, and found a suitable disposal location, the costs would be minimized. To be sure, there may be problems, mainly potential sediment toxicity, and a disposal site (why not use the sediments to create a wetland along the western shoreline of the peninsula in the Glen Echo arm?). Problems, yes; but a continued build-up of nutrient laden sediments leading to harmful algal blooms and fish kills, and continued listing as impaired under the Clean Water Act, are much more worrisome problems.

THIS?



<https://en.wikipedia.org/wiki/Dredging>

OR THIS?



Photo by Peggy Rehm

A variety of dredging equipment for rent or sale can be found at:

<https://eddypump.com/products/dredging-equipment>, or <https://www.usdredge.com/learn/what-types-of-equipment-are-used-for-dredging>, or many other sources (the Lake Merritt Institute does not endorse any type of equipment or vendor).

THIS?



Left: Photo by Damon Tighe

OR THIS?



Right: Photo by (2)

The answer lies in a lake-wide aeration / oxygenation system such as is now being investigated in the two year pilot project.

We need both dredging and an automatic system that would be activated immediately to counter low oxygen levels. This one-two combination punch would likely lead to removal from the EPA 303(d) list of impaired waters, and assure future Oaklanders of a healthy estuary for decades to come.

1) <https://www.oaklandca.gov/topics/lake-merritt-water-quality-management-pilot-project>

2) https://www.freepik.com/premium-vector/underwater-fizzing-air-water-oxygen-bubbles-blue-background-fizzy-sparkles-sea-aquarium-fizz-undersea-vector-texture-with-rays-sunlight_19763649.htm

Lake Merritt Hero of the Month: Paris Organist

Tortuguero - Paris is an activist. When not at Lake Merritt he is traveling abroad working to save sea turtles. He started working with sea turtles New Years of 2017 when he joined at a sea turtle conservation camp in Baja California. He was drawn by his desire to contribute to the global environmental effort and he was able to put his degree in biology to use. Paris says, "I fell in love with the concept of turtle camp conservation" so he returned for the next six years to Tortugueros Las Playaistas and from there his interest has expanded to the International Sea Turtle Society. He has attended the international symposium for the past two years, making connections with sea turtle camps internationally.

When did you first encounter Lake Merritt? "It was in 2015 shortly after moving to Oakland from Sonoma

Lake Merritt and your work with sea turtles help meet the same environmental goals? "Trash flows from Lake Merritt out into the ocean where it endangers one of our most endangered species of sea turtle, the Leatherback which forages off the coast of California." When Paris returns from his sea turtle work, he shares his inspiration by routinely offering recaps of his work with the weekly volunteers, as well as on the [Lakeside Chat #18 "Turtles in Trouble"](#).



How would you suggest folks take steps to help improve the environment near where they live? "Small daily acts are much larger than the sum of their parts. It's about more than removing one piece of trash; it's about the mindset that you can influence policy which will make change on a larger scale."

What has been the most memorable day you have spent at Lake Merritt? "The day I met an un-housed man named Justin, who I eventually helped get into permanent housing with social services. He ended up helping clean the lake for an extended period of time."

What makes Lake Merritt so unique? "It is salty water because it is connected to ocean, and in that way to the sea turtles."

If you could snap your fingers and change one thing about Lake Merritt, what would it be? "It would be to solve the mental illness problems that exist around the Lake."

If you could ask one thing from the City of Oakland, what would it be? "It would be to continue to support LMI and to show appreciation for what the organization does and what it needs. A replacement 4x4 trash gator patrol vehicle would be awesome!"

Is it necessary to be full time activist to make a difference where you work, live, or play? "It is necessary to have a certain mindset. For example, I have a dream to create an organization called Wine About Sea Turtles, which would bring the conservation world into my weekend job in the wine business."

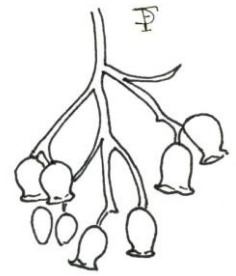
What makes you the happiest? "Fixing things instead of throwing them out makes me happy, as well as finding things around the lake that can be repurposed. For example, as one of the wooden docks fell apart in the lake, I collected the wood piece by piece to build community garden beds." His other activities around the lake include participating in the rowing team and the Boathouse Sailing into Science Program.

Paris was interviewed on Turtle Love Podcast which you can find on Turtlelovecr.org. We are so appreciative of and are grateful for Paris's expertise, creativity, positive energy and resourcefulness which he brings to weekly clean-ups. - Thank you, Paris. written by volunteers Susan Campodonico, with the help of Suzanne Gautier

In Memorium: Remembering Dr. Dianne Fristrom

Sep 3, 2023: Dr. Dianne “Di” Fristrom - geneticist, docent, dancer, photographer, naturalist – passed away in her Oakland, CA home, surrounded by family and friends. According to her children, she told everyone that they should not be sorry for her passing, because she lived a full life.” It was a generous and accomplished life.

The Tidings remembers Dianne for her special love of Lake Merritt. Dianne contributed her enthusiasm for nature, technology skills, and her artistic talents to the development of programming at the Rotary Nature Center, working with local naturalists and the California Center for Natural History. As a founding member of the Community for Lake Merritt after the closure of the nature center in 2017, she encouraged local environmental educators and city officials to revive the interpretive center for all of Oakland at the Rotary Nature Center in Lakeside Park envisioned by the founding naturalists.



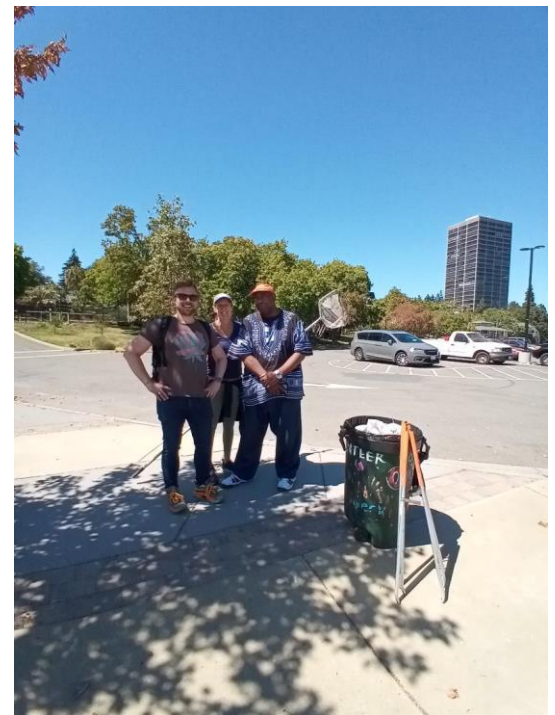
Dianne's artwork for Trees of Lake Merritt flyer, 2017 CA Center for Natural History

Recently, Dianne wrote the introduction to birds of Lake Merritt for the City of Oakland's [Lake Merritt Jewel of Oakland](#) page contributing her own photographs. She made an [google maps guide to the trees of Lakeside Park](#). Her generous donation to Oakland Parks and Recreation and Youth Development in 2019 specifically for the Rotary Nature Center made possible recent structural improvements to the building and several grand reopenings. Thank you, Dianne, for your contributions and your shining example of service to nature and the community. (Full obituary at end of the email issue).

THANK YOU, VOLUNTEERS!

Gensler group (adults)

Oakland Military Institute (middle school)





Please direct questions and comments to The Tidings Editor, Katie Noonan, at ktnoon@aol.com.

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Dianne Fristrom – Remembrance

Shared by her son Jamie Fristrom

Sep 3, 2023: Dr. Dianne “Di” Fristrom - geneticist, docent, dancer, photographer, naturalist – passed away in her Oakland, CA home, surrounded by family and friends.

Di was born in Sydney Australia, the daughter of Thelma and David King, and sister to Graham. She grew up in a duplex with few amenities – no car, no refrigerator, no indoor toilets – but even then, she was able to indulge her interests. She co-opted the bathroom to develop photographs; she painted murals on the walls. Her father also encouraged her early interest in biology, catching tadpoles in order to watch them turn into frogs, catching cicadas to identify the “green grocers” and “black princes”. She kept silk worms in a show box and fed them leaves from a mulberry tree, so that she might later unwind the silk from their cocoons. She even had a pet lizard named “José Gecko” after the similarly named Spanish dancer.

Art and biology would continue to be her interest throughout her experiences at Burwood Girls High. Approaching graduation, she wanted to go to art school, but her teacher, Mrs. Pinkas encouraged her to enter the biology program at the University of New South Wales. She was one of the first two women to graduate from UNSW with a degree in the sciences, also completing the honors and teaching programs. Her funding came with an agreement to teach children for three years, so after she graduated, she promptly got on a plane and fled the country. UC Berkeley offered her asylum, where she completed her Ph.D. in. She never gave up her Australian citizenship or her accent, she became a permanent resident after marrying her graduate advisor, James W. Fristrom and having two children, Ted and Jamie.

She managed being a working mother by often having the kids by her side. They played on the floor of the Mulford hall lab while she worked with microscope and pipette. She brought them to Hungary when Jim helped to set up a genetics department. She took them to Australia during their sabbatical, and to numerous conferences. Holidays were a special time, whether it was hosting lab parties for Christmas, or making elaborate costumes for the kids on Halloween. She sewed them Jawa outfits with near perfect robes, gloves, and black balaclavas. She wired the costumes up with little lamps below the eyes, which – truth be told – left the children half blind and stumbling in the dark. Somehow this made them look even more authentic. Her craftiness was contagious. She painted the kitchen; the kids painted a cardboard house outside. She worked at a drawing table with fine-black pens, stencils, and press on letters; the kids worked in the kitchen with Ed Emberly’s drawing books. She took ballet lessons; the kids ... kept drawing cats.

She described herself as “less a scientist than someone who used art to do science,” but the two were far from being mutually exclusive. In university, she painstakingly cross-hatched diagrams of parasites that lived half of their lives in cockroaches and half in rats. She illustrated *The Principles of Genetics* by Fristrom and Speith. She had electron microscopy photos on the cover of *Cell* magazine and *Development*.

She thought her biggest contribution to the field had to do with visualizing the ways in which cells moved drosophila larva transformed into fruit flies. In the 70s, cells were understood to be firmly bound to one another, but she speculated on a form of zipper like cohesion that would allow them to separate and move. This was largely speculative until 2019, 42 years after she published the article, when she received the following letter:

Dear Prof Fristrom,

I wanted to send you a copy of our new paper on Drosophila limb morphogenesis, which follows up on your original descriptive work and your hypotheses of convergent-extension and cell flattening in driving limb elongation. Your papers and reviews were a crucial foundation for our study. Furthermore, as far as I can tell, you are the first person to propose that

planar polarization of contractile acto-myosin filaments could be responsible for convergent-extension and tissue elongation in any organism.

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We admit, we don't really understand what most of that means. But some part of every one's lives is a mystery to their children. It's part of what makes them seem larger than life.

She half retired at the age of 50, or as Di described it, "Jim knew I would work in the lab anyway, so he no longer needed to pay me with grant money". However, her hours were more flexible, and she chose to do with her free time what most retirees do. She developed a CD-based App for identifying wildflowers of Northern California with botanists John Game and Glenn Keator. The photos were culled from her hikes through the Bay Area and the larger California Area, particularly in the Trinity Alps. The Josephine Creek Lodge had become Jim and Di's home away from home – or work away from work, as they often brought department members there on retreat. "Is Di all right?" her friends would often ask. She would often be lagging behind on the trail, or simply found face down in a field, trying to get the best angle on a flower photo. Prairie Smoke or Poppy.

She marketed the CD to local nature organizations, but her career as app developer was hindered by the fact that smart phones didn't exist yet.

When Jim retired, they moved to Oakland, on the brink of Lake Merritt, the first wildlife refuge in North America. She became a volunteer at the Oakland Museum down the street, and she organized trips for them to the Upper Klamath, New Mexico, and even Antarctica. After Jim's death, she invested herself in getting the Rotary Nature Center of Lake Merritt reopened. The main exhibit hall now shares her name, in honor not only of her financial support, but on her ability to dispatch rats from the basement. (Legend has it, at least one was dispatched with a hammer). Through covid and her final years, she continued to walk the lake, giving family and friends impromptu tours. We will remember her fondly for naming all the birds, every grebe and gull. We also remember, with somewhat less enthusiasm, the squishy invertebrates like the Sea Hare she found in 2016 and never stopped talking about.

The last two years, a pair of barn owls returned to the locust tree just outside her condo. There were reports of another sighting the month she died. There's an old superstition that when a barn owl flies away, it takes a life with them. Di couldn't abide superstition, but still she left. She left behind Jamie, who still likes to draw, and Ted who still owns her old Pentax. She leaves behind two granddaughters, Sofi and Zara. She told everyone that they should not be sorry for her passing, because she lived a full life. But she will be missed anyway, by her family and her friends from the lab, the museum, the nature center, her dance class, in the country she was born, and everywhere she has travelled.