TORREYANA

THE DOCENT NEWSLETTER FOR
TORREY PINES
STATE NATURAL RESERVE

Issue 408 **June 2019**

Oceans of Plastic

by Dan Hammer

At the May TPDS meeting, Dr. Jennifer (Jenni) Brandon gave a riveting talk on plastic debris and its effect on the marine environment. Rarely if ever have I seen docents so engaged with a presentation, as evidenced by the long Q&A session and the crowd that flocked to Dr. Brandon during the break.

Dr. Brandon, a Postdoctoral Fellow at Birch Aquarium, is a biological oceanographer who got her Ph.D. studying plastic pollution in the Pacific Ocean, specifically looking at microplastics in the North Pacific Subtropical Gyre. She has created new methods for quantifying the smallest microplastics and examining how they enter the oceanic food chain. Her TPDS presentation covered the history of plastic, the nature of plastic debris, and what can be done to reduce the amounts and effects of this harmful waste.

She began with some good news: The sensational stories of gigantic "trash islands" that are "twice the size of Texas" are largely mythical. In fact, most images we see of floating islands of trash come from river mouths and shorelines. Out in the open ocean, islands of plastic trash are not that large or thick.

The bad news: What we can't see is worse. The vast majority of plastic particles in the ocean are less than 5mm – smaller than an M&M candy. And it is these tiny pieces of plastic that do the most damage to marine life.

After setting the stage, Dr. Brandon took her story back to the beginning. The first common plastic, celluloid, was invented in the 1860s as a substitute for ivory. In 1907 the first fully synthetic plastic, Bakelite, was made from coal tar. The real boom in plastic production came during World War II, and in the 1950s plastic was celebrated as a boon to homemakers who could throw away dishes rather than wash them.

Docent General Meeting

Date: Saturday, June 8, 9:00 am

Location: St. Peter's Episcopal Rec Hall, Del Mar

Speaker: Dimitri Deheyn, Ph.D., Scripps Institution of Oceanography

Topic: Light production and light manipulation in living organisms

Refreshments: Docents with last names beginning with **P-R-S** will be responsible for providing snacks for this meeting.

It didn't take long for this "throwaway culture" to begin polluting the oceans. By the early 1970s, plastics were found in subtropical gyres, the vast circular systems of currents in the Pacific and Atlantic oceans. Dumping plastic waste at sea was finally banned in the late 1980s, when 150 countries signed on to MARPOL Annex V.

Despite this progress, plastic production and disposal have continued to increase exponentially. Today about 280 million tons of plastic is produced each year, with an estimated 4.8–12.7 million metric tons entering the ocean annually and an estimated 5.7 *trillion* pieces of plastic now dumped in the world's oceans. Much of this waste circulates in gyres such as the Western and Eastern Pacific Garbage Patches.

About 90 percent of all plastic waste is *microdebris*, less than 5mm. Much of this is *nanoplastic* – tiny pieces less than 333 micrometers that usually break down from

(cont on pg. 3)

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The Torrey Pines Docent Society publishes the *Torreyana* monthly, edited by Joan Simon and Dan Hammer on alternate months, and is formatted and produced by Roger Isaacson. Submissions are due on or about the 20th day of the preceding month and may be emailed to
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FLASH From Joy Inton: Don't forget to donate your ZooNooz magazines to the Museum Shop.

President's Message
The Joy of Volunteering

People choose to volunteer for a variety of reasons. Volunteering allows us to give something back to our community, support a cause we care about, and feel like a valued member of a team. As volunteers, we meet new people, socialize, and develop relationships with those who share our values. Volunteering gives us a sense of purpose—a feeling of satisfaction. Studies have shown that when older people volunteer they live happier, healthier and longer lives.

Members of the Torrey Pines Docent Society share a common mission: to "protect, preserve, and help maintain Torrey Pines State Natural Reserve and to interpret its unique value to the public." Docent volunteers fulfill our mission by serving as Lodge hosts, Walk Leaders, Children's Program educators, TIK talkers, and in other interpretive activities. We also serve by removing invasive species, carrying out maintenance and safety projects, participating in wildlife surveys, stocking the Museum Shop, and more. We educate the public to promote respect for our Reserve and our environment.

I am proud to serve as your volunteer president, and I'd like to remind each of you to feel proud – every time you serve.

Janet Ugalde

President, TPDS

Photo Contest Is Underway!

by Roger Isaacson and David Walker

All active docents are invited to submit their best photos of TPSNR for the 2019 TPDS Photo Contest. Winning photos will be included in the 2020 Torrey Pines tide calendar.

For detailed instructions on how to submit photos to our Box.com site, please

click here for instruction PDF file.

Here are some important points:

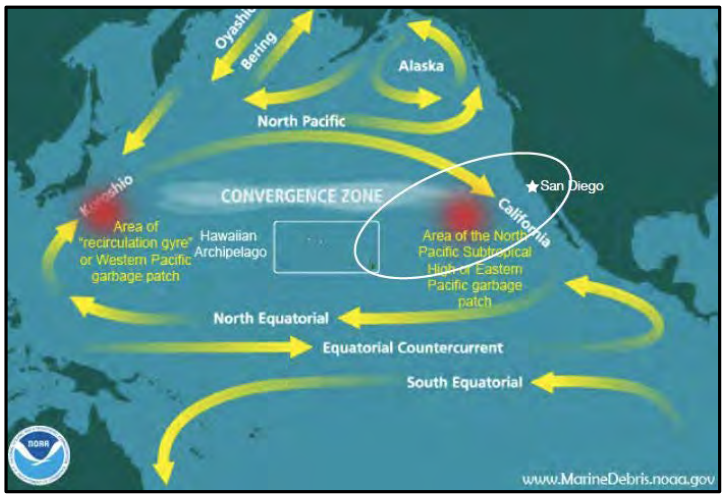
1 - The photo sharpness is more important than the pixel resolution.

2 - Calendar photos are cropped to landscape format, a ratio of 4:3. Photos taken in portrait format are hard to crop to this ratio without loss of content.

3 - Up to 15 photos may be submitted.

4 - Deadline for submission is July 13, 2019.

Have fun and good luck!



larger pieces. In addition to these fragments, nanoplastic is found in *fibers* (largely from laundered textiles), *microbeads* added to cleaning products, and *nurdles* or preproduction plastic pellets used in plastic manufacturing.

Plastic waste is a major ecological threat, particularly to the marine environment. Sea life from microplankton to whales are harmed when they *ingest* plastic debris (which commonly causes starvation when the animal feels full without being nourished), become *entangled* in plastic fishing gear, or *raft* (perch) on floating plastic (which exposes them to air and heat).

Plastic debris impacts plankton and all creatures that eat plankton. Dr. Brandon is conducting research on *salps*, filter-feeding plankton that cannot swim without eating and eat most phytoplankton in a given area. All salps eat plastic, which becomes heavier when it passes through their bodies. Salps thus become a major transport mechanism, moving nanoplastics from the surface to the deep sea.

Though plastic production and waste continue to increase (directly and exponentially), there are signs of hope. In 2016, President Obama signed an executive order banning the further production of microbeads. Many cities and some states have banned single-use plastic bags and more recently plastic straws. And ordinary people are reducing plastic waste by buying recycled plastic goods, refusing plastic straws and lids, and using their own shopping bags, lunch bags, and water bottles. Organizations such as Surfrider and the Plastic Pollution Coalition are working to strengthen regulations and increase public awareness. And concerned citizens are joining International Coastal Cleanup Day, local Surfrider cleanups, and autumn cleanups at the Tijuana River National Estuarine Research Reserve.

For more information on Dr. Brandon's research, check her Twitter page at @PlasticsJenni or email her at jabrandon@ucsd.edu

Links:

MARPOL: imo.org/en/OurWork/Environment/PollutionPrevention/Garbage/Pages/Default.aspx

Surfrider: surfrider.org/programs/rise-above-plastics

Plastic Pollution Coalition: plasticpollutioncoalition.org

General Meeting Minutes -- May 11, 2019

Meeting called to order at 9:00 am by President **Janet Ugalde.**

Speaker: Dr Jennifer Brandon of Birch Aquarium presented a fascinating lecture titled *Marine Debris in the Pacific Ocean.* (See the article on the front page.)

President's Report: **Janet Ugalde** announced that after seventeen years as Museum Shop manager, **Nancy Woodworth** would like to retire from the position. (Nancy was given a hearty round of applause from the docents at the meeting in appreciation for her years of excellent service to our society.) Janet stated that more than one individual might be needed to take over the position. Docents interested in the position should contact **Lynne Truong** or **Annette Ring**. Next Janet announced that **Kathy Dickey** is setting up the next CEED event at the San Diego Archaeological Center in Escondido on June 12 from 10 am to 12 pm. The application for our fall docent class is now on our website. With the hope of getting even more qualified applicants this year, a flyer was developed that **Ingo Renner** handed out. Janet made a plea for expertise in reviewing the various TPDS insurance policies, and **Thomas Holland** (Class of 2018) promptly volunteered. Janet thanked **Ann Smith Mercandetti** and all the docents who volunteered for the La Jolla Half Marathon. She also thanked **Kristine Schindler**, Halozyme Therapeutics, and the docent volunteers who participated in the April North Torrey Pines Road cleanup.

Help Needed on Weekends: **Janet Ugalde** reminded docents of the TPDS Mission Statement: *To protect, preserve, and help maintain Torrey Pines State Natural Reserve and to interpret its unique value to the public through a variety of educational programs, including guided nature walks and Lodge hosting.* Yet every week **Jan Lombardi** has to send out emails begging docents to fill empty Pubic Walk and Lodge hosting slots over the weekend. **Steve Neal** made a plea that docents consider making a commitment to fill one of those slots each month.

Vice President's Report: **Roger Isaacson** announced this year's photo contest for our 2020 TPDS tide calendar. The contest will be very similar to last year, with a cutoff date for submission of photos by July 13. Roger will send an email to all docents with the photo contest instructions in a PDF attachment. The board voted to keep the production at 250 calendars (the same as last year), and we will again have a September evening event showcasing the winners and all the photos. Next Roger announced that due to docent feedback, the board has reconsidered the position on the Torrey Circle *Nature Discovery Series* counting towards continued education. In an effort to try and staff the critical interpretive slots, the board instituted a 10-hour annual cap (towards the minimum 84-hour requirement) for continued education training that includes CEED, OAK, and the pavilion *Nature Discovery Series.* As has been the practice in the past, each continued education training event will be restricted to one hour maximum logged (logged in BI as *Training, Continued Education*), except for the docent presenter and scheduled walk leaders (logged in BI as *Training, Educator*).

Roving Interpreter Training: **Annette Ring** reminded docents that annual training for Roving Interpreter will be held today, Saturday, May 11 at 1 pm at the Torrey Circle Pavilion. **Kyle Knox** and **Ingo Renner** will give presentations, followed by time on the trail with an experienced Roving Interpreter.

General: **Ingo Renner** thanked all participating docents for a very successful Earth Day. He stated that there was record attendance, and we might want to consider a similar program one day this fall, as visitors really appreciated our Earth Day booths. Ingo suggested an all-docent survey to figure out why TPDS has problems filling weekend positions. **Steve Neal** stated that at the board meeting, Supervising Ranger **Dylan Hardenbrook** advised telling visitors that the Broken Hill trail will be completed by the end of the summer. Construction of the new North Beach lot restrooms will start after Labor Day this year, with completion planned before Memorial Day next year. Dylan stated that construction of the new upper West Lot restrooms is still a couple of years away**.** The docents present at the meeting made it clear that a couple of years away is not acceptable, and completion of those restrooms should be made a very high priority.

Docent of the Month: **Kathy Dickey,** for providing excellent advertising to the public for our monthly pavilion *Nature Discovery Series* and presenting the Kumeyaay lecture for that series. Kathy frequently does the Children's Program presentation to the entire class before leading children on the hike. She also leads the monthly bird count for the Extension.

Refreshments: At June's General Meeting, docents with last names starting with letters **P-R-S** are responsible for snacks.

Meeting ended at 10:53 am.

Nature Discovery Series: Torrey Pines IS Birdy!

by Kathy Dickey

On May 18, **Marty Hales** was the fourth speaker for our Nature Discovery Series. Thirty-seven docent and visitor attendees learned about the common (and not-so-common) birds of the TPSNR upper trails. Sometimes hearing and seeing the birds can be difficult due to all the distractions of conversations among people, jets, music, trains, cars and more. Marty emphasized looking for movement (look up, down, over and into the bushes), considering the habitat and season, and listening as carefully as possible.

Marty's slideshow of the most common birds included helpful recordings of their songs and calls. She noted that the alarm call of a ground squirrel can mimic the California Towhee. We all laughed at the song of the Bewick's Wren, which sounded just like a rotary dial phone followed by the dial going backward. We also enjoyed the "typewriter" sound of the Ruby-crowned Kinglet.

Wrentits pick insects off the leaves and have a worried expression. They mate for life and stay within a small territory all year long. Spotted Towhees have red eyes and an "executioner's" black hood. They eat only insects and, like their California cousins, do the "Towhee Dance" while scratching on the ground. Female Peregrine Falcons are the bosses. Bigger than the males by about a third, they pick out which cave to make their nest in and generally lay four eggs. June is a good month to see them, when the juveniles are in flight school.

As Marty spoke, the calls of Wrentits and Bushtits joined into the presentation from surrounding bushes, and a California Towhee even walked into the pavilion for a visit with us! Afterward, we split up into three groups led by Marty, **Jack Friery,** and **Kathy Dickey** for birding walks.

Docent of the Month: Kathy Dickey

Photo by Herb Knüfken

Thanks for the surprise honor of being Docent of the Month. It's especially gratifying to me because I have loved Torrey Pines SNR for so many years.
By today's standards, I would be in big trouble at TPSNR. Really! In the 1950s and `60s, we hiked "Fat Man's Misery" trail (now called Canyon of the Swifts). I may still have my initials in the sandstone walls. In the `70s, I remember having lots of picnics at the tables near the present-day restrooms, and feeding the squirrels. We hiked to the beach almost every warm weekend and thought nothing of going off-trail. Certain spots were even well-known as "private kissing areas" when I was in high school and college. In 1979 I hiked the Guy Fleming Trail just before giving birth to my son. It was late March, and I collected some wildflowers for my dining table. I did not know better then — sorry.

I worked as a microbiologist at hospital labs in San Diego for 14 years before going into biotech at Gen-Probe. I worked with new DNA, RNA and molecular biology methods, along with invention and patent applications, resulting in nine patents with my name on them. We were very successful in the infectious disease diagnostics field. After 20 years there, I retired, and was happy to study "macro biology" (plants, animals, birds, etc.) as a docent at San Elijo and Batiquitos Lagoons, and of course Torrey Pines SNR. I also renewed big interests of mine, archaeology, and anthropology. I volunteered for eight years as a researcher at San Diego Archaeology Center. Currently, I am attending classes at Barona Reservation to continue to learn the Kumeyaay language and their cultural traditions.

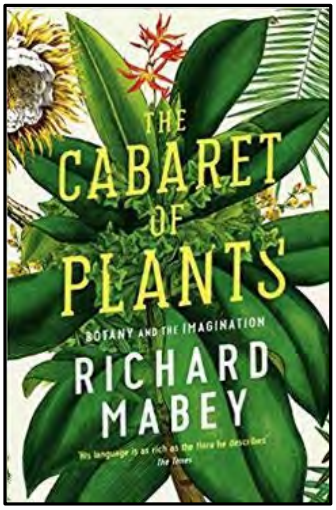
As a TP docent, I like to mix it up. I participate in the Children's Program, the TIK, Lodge hosting, training new docents, PR for events, public walks, the bird counts — anything to help our beloved Reserve.

Torrey Pines Book Club

When: Tuesday, June 11, 1:00 pm

Where: Gabrielle Ivany's home in Rancho Bernardo

What: *The Cabaret of Plants: Forty Thousand Years of Plant Life and the Human Imagination* by Richard Mabey



Amazon says:

The Cabaret of Plants is a masterful, globe-trotting exploration of the relationship between humans and the kingdom of plants by the renowned naturalist Richard Mabey.

A rich, sweeping, and wonderfully readable work of botanical history, *The Cabaret of Plants* explores dozens of plant species that for millennia have challenged our imaginations, awoken our wonder, and upturned our ideas about history, science, beauty, and belief. Going back to the beginnings of human history, Mabey shows how flowers, trees, and plants have been central to human experience not just as sources of food and medicine but as objects of worship, actors in creation myths, and symbols of war and peace, life and death…

Complemented by dozens of full-color illustrations, *The Cabaret of Plants* is the magnum opus of a great naturalist and an extraordinary exploration of the deeply intertwined history of humans and the natural world.

All TPDS docents are welcome. Meetings usually last a couple of hours. RSVP to **Gabrielle Ivany** if you plan to attend. (Check Member List for email or phone number.)

July 9: *Moby Duck: The True Story of 28,000 Bath Toys Lost at Sea & of the Beachcombers, Oceanographers, Environmentalists & Fools* by Donovan Hohn. We need a host!

A New Crop of Roving Interpreters

by Annette Ring

Roving Interpreter class was held the afternoon of Saturday, May 11. It was supposed to rain but stayed sunny and made for a perfect day for the class.

Many thanks to Ranger **Kyle Knox** and Park Aide **Ingo Renner** for teaching the two classes. Also thanks to the walk leaders – **Ingo Renner, Ken King, Cheryl Biernacki,** and **Dan Hammer** – for taking the new Roving Interpreters out on the trails to show them the ropes.

Congratulations to our class of new Roving Interpreters! They are **Phyllis Kusznier, Molly Allison, Medi Denker, Mitch Marzec, Marian Edelbrock, Jo Moeller, Cindy Wollaeger, Thomas Holland, Rosemary Wareham, Jim Levin, Sandy Levin, Nancy Richardson, Myrna Trust, Shelley Hammer, Serena Grädel, Alan Perlman, Melanie Maxon,** and **Zuzana Volny.**

The docents who refreshed their Roving Interpreter skills are **Helen Grundler, Dan Hammer, Janet Ugalde, Ann Smith Mercandetti, Greg Lafreniere, Cheryl Biernacki,** and **Mary Hohmeyer**,

Science Fair Winners Outline Their Findings

by Wayne Kornreich

This year TPDS's Greater San Diego Science and Engineering Fair judging team chose two winning projects. The project by Emily Tianshi (10th grade, Senior Division), our previous winner for the past two years, is a continuation of her work on Torrey pine needles. This year Emily looked at developing a material that mimics the water collecting abilities of Torrey pine needles. She will be presenting at the June meeting.

The other project we chose was a team effort by Eric Yang (also a winner last year) and Jack Chine (8th grade, Junior Division). Their work was a continuation of Eric's 2018 project on coastal plants and climate change. Eric hopes to be presenting at our July meeting.

Torrey Pines Docent Society Greater Science and Engineering Fair Judging Team: Wes Farmer, Karen Lisi, Sally Whitlock, Sheldon Krueger, Wayne Kornreich

Biomimicking Torrey Pine Needles: Atmospheric Moisture Harvesting Through Alternating Hydrophilic and Hydrophobic Micro-Patterns

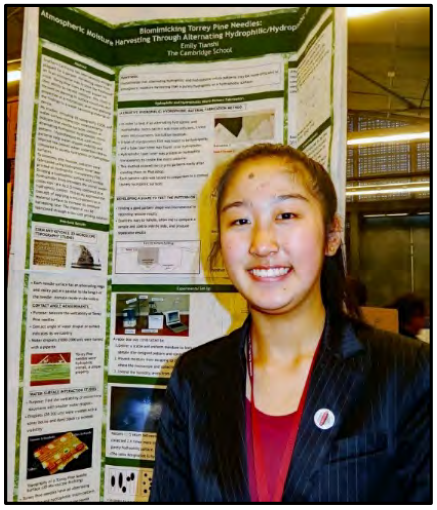
by Emily Tianshi

Globally, 1.1 billion people lack access to freshwater. Harvesting moisture from air is an innovative way to alleviate the freshwater crisis. Torrey pine tree needles are well known for their ability to harvest water from fog. This study is focused on learning its surface structures and properties at a microscopic level, identifying the characteristics that contribute to efficient harvesting, and developing an efficient moisture harvesting material or device.

3D topography, ESEM, and water-surface interaction studies indicate that needle surfaces contain an alternating hydrophilic/hydrophobic micro-pattern. I hypothesized that such micro-patterns increase water droplet mobility and improve moisture harvesting rate compared to homogenous hydrophilic surfaces.

The micro-patterns were fabricated using hydrophobic toner laser printed on hydrophilic transparency film. Dividing a hydrophilic surface with vertical hydrophobic lines increases water collection rate by 2.6 times compared to a hydrophilic control. Water droplet mobility tests indicated that it is easier for a droplet to roll off the micro-pattern than a purely hydrophilic surface. For a given droplet size, the critical angle is 21.7±9.4° less on average. At a given angle, the critical mass on the micro-pattern is much smaller than that of a uniform surface.

The periodic hydrophobic lines were observed to reshape the water droplets by repelling them and thus preventing them from expanding horizontally, which facilitates water droplets to overcome the pinning force with a smaller critical mass or roll-off angle. Hence, the droplets can travel more efficiently on the surface, which improves the moisture harvesting rate.



Emily Tianshi

Surviving Slope Survivors: Native Plants Prevalent to Beach Bluffs

by Eric Yang and Jack Chine

Torrey Pines State Reserve Correlation

As coastal flora begins to deteriorate from large sums of saline water, cliffs will begin a process of erosion, soon to become only grains of sand on coastal shores. Many of these plants, grasp onto the soil preventing further erosion. These plants create a stable and safe environment around cliffs. Without them, this Reserve may have fallen hundreds of years ago. As we continue to protect the natural environment around us, the consideration of plant protection is a large factor to protecting the Reserve given to us today.

Objectives/Goals

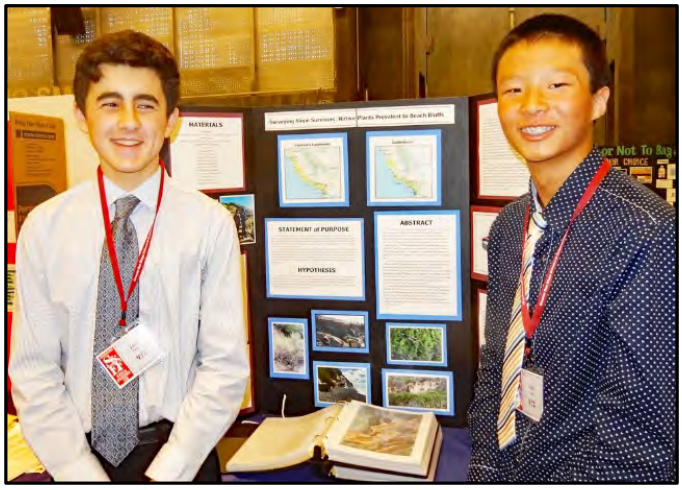
Global warming is posing risks for unstable coastal cliffs, and ocean levels have been increasing at unusual rates for the past century. If coastal flora begins to deteriorate due to the intrusion of saline water, cliffs may erode more rapidly, and soon become only grains of sand on coastal shores. Are some cliffs better protected than others? The objective of this project is to photograph our California coastal cliffs in areas such as the Torrey Pines State Reserve, and through A.I. data mining, analyze information regarding the species of plants able to protect our massive rock walls. The protection of our coastal cliffs is essential to the longevity of our still standing beauties of nature and coastal reserves for many years to come.

Results

After reviewing more than 2200 photographs taken along San Diego's coastline, we have identified multiple plant species able to thrive on coastal bluffs. California Sagebrush was often found residing on the cliffs. Its drought tolerant aspect sometimes allowed it to be the only plant on the driest, south-facing slopes. Of the cliff side plants we identified, 22% were California Sagebrush, 19% were Black Sage, 17% were Goldenbush, 14% Coyote Brush, 8% California Buckwheat and 7% were invasive species. Lemonade Berry (at 2%), Toyon Berry (at 2%), and Laurel Sumac (at 4%) were also observed on the cliff walls in fewer numbers.

Conclusions/Discussion

It seems that plants with an ability to tolerate drought and endure high levels of salt spray are more likely to survive on California coastal cliffs. Certain coastal plants, such as the California Sagebrush, have relatively shallow and fibrous roots, allowing them to utilize soil moisture efficiently. The roots also help bind the soil, a characteristic useful in hilly cliffs and restoration sites. These excellent adaptations make California Sagebrush and other native species we documented natural protectors of our coastal cliffs.



Jack Chine and Eric Yang

Photo News Briefs

Cactus talk by Pao Chau, May 8, 2019

Torrey Pines Association (TPA) Guy Fleming House Public Tour April 27, 2019. History stories by former Ranger Bob Wohl.
Photo by Kathy Dickey

La Jolla Half Marathon

by Ann Smith Mercandetti

Photos by Bruce Montgomery and Joan R. Simon

Sunday morning, April 28, and the La Jolla Half Marathon began from the Del Mar Fairgrounds at 6:30 am, a half hour earlier than previous years. And who was already at TPSNR by THAT time of the morning? Why, TP docents **Medi Denker, Betsy Seible, Jo Moeller, Debby Sherman, Mark Embree, Helen Grundler, Joan Simon, Marian Edelbrock, Lorraine Stein, Sandy Levin, Annette Ring, Lillian Lachicotte, Bruce and Patty Montgomery, Linda Zlotnik, Irene Larrimore, Phyllis Kusznier,** and **Nancy Novak**, *of course*!! The clouds hung in, so it was a comfortable morning with no hot sun for both the runners and the docents. The docents were super, supporting the runners with GREAT encouragement, and the runners responded with many *Thank you*s. This year, in an effort to have even less trash left in the Reserve, we used the Whacky Weeders' buckets with "Recycle" and "Land Fill" signs on them. That worked well, too!! It was a positive, great morning!!

As has become my habit, I walked the road, first to the south to see the docents stationed in that direction, then back toward the parking lots, down the hill, and back up. With only a quarter to a third of this year's runners having already passed, I noticed a runner sitting on the road behind the last car where we docents park, fussing with his socks. As I was moving closer, I asked him if there was anything I could do to assist him, then realized he was missing part of one leg, that his prosthesis was lying on the road beside him. He responded lightly that he was "just making the Six-Mile Adjustments" necessary at that distance. I noticed he was wearing a red USMC T-shirt, asked him if he was in the Marine Corps. His response was "Yes," and I shared with him I had taught on the Camp Pendleton Marine Corps base for 22 years. HE thanked me, and then *I* needed to walk on.

We never know whose paths will cross ours when we go to Torrey Pines State Natural Reserve. We may even meet a young hero, who chooses to share his positive attitude, and his big smile**…**

About 5000 runners ran up the park road.

Patty Montgomery with one of the many posters informing the runners about TPSNR.

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Bird of the Month: Northern Harrier

by Jack Friery; photo by Herb Knüfken

Our featured bird this month is the **Northern Harrier**, *Circus hudsonius*. The Northern Harrier is a slim, long-tailed hawk with a distinctive white rump patch. Watch for it as it glides low over the Torrey Pines lagoon in search of its favorite foods: rodents, rabbits, and songbirds.

There are several things that are unusual about this hawk. The female is noticeably bigger than the male, as is common with most raptors. But there's more—the species exhibits sexual dimorphism: the female is brown, with streaky breast and flanks, while the male is a cast-iron gray color. And both sexes have an owl-shaped face. As with owls, the face shape helps concentrate sound, since the Northern Harrier hunts not only by sight but also by sound. It listens for the scurrying of mice and other small mammals as it soars over marshes and grassland.

Sources: allaboutbirds.org/guide/Northern_Harrier/overview; audubon.org/field-guide/bird/northern-harrier; globalraptors.org/grin/SpeciesResults.asp?specID=8366.

Torrey Pines Docent Society Bird Survey: May 2019

Number of species: 74
(+2 other taxa)
Uncommon birds in **bold**

Gadwall 14
Mallard 13
Ruddy Duck 3
California Quail 3
Eared Grebe 1
Western Grebe 61
Eurasian Collared-Dove 3
Mourning Dove 47
Vaux's Swift 6
White-throated Swift 5
Anna's Hummingbird 54
Allen's Hummingbird 27
Calliope Hummingbird 1
hummingbird sp. 9
American Coot 1
Whimbrel 3
Long-billed Curlew 2
Western Gull 9
California Gull 173
gull sp. 50
Royal Tern 4
Elegant Tern 2
Common Loon 3
Double-crested Cormorant 12
Brown Pelican 147
Great Blue Heron 5
Great Egret 16
Snowy Egret 9
Black-crowned Night-Heron 1
Osprey 1
Cooper's Hawk 5
Red-tailed Hawk 7
Downy Woodpecker 2
Nuttall's Woodpecker 7
Peregrine Falcon 3
Pacific-slope Flycatcher 7
Black Phoebe 6
Cassin's Kingbird 14
Warbling Vireo 16
California Scrub-Jay 10
American Crow 33
Common Raven 19
Northern Rough-winged Swallow 33
Barn Swallow 2
Cliff Swallow 12
Bushtit 111
House Wren 10
Marsh Wren 2
Bewick's Wren 25
Blue-gray Gnatcatcher 1
California Gnatcatcher 9
Wrentit 52
Western Bluebird 1
California Thrasher 10
Northern Mockingbird 11
House Finch 61
Lesser Goldfinch 55
Lawrence's Goldfinch 2
American Goldfinch 2
Golden-crowned Sparrow 3
Savannah Sparrow 9
Song Sparrow 35
California Towhee 38
Spotted Towhee 27
Yellow-breasted Chat 9
Red-winged Blackbird 12
Brown-headed Cowbird 1
Orange-crowned Warbler 11
MacGillivray's Warbler 1
Common Yellowthroat 30
Yellow Warbler 1
Townsend's Warbler 1
Hermit Warbler 2
Wilson's Warbler 8
Black-headed Grosbeak 5
Lazuli Bunting 3

Observers:
Frank Wong, Andy Rathbone, Tina Rathbone, Marty Hales, David Walker, Deborah Walker, Herb Knüfken, Kathy Dickey, Nancy Richardson, Robert Turner, Manolo Turner, Gary Grantham, and Anonymous

View this checklist online at ebird.org/view/checklist/S56493588

Herb Knüfken's amazing photo gallery, including many birds, may be found here: pbase.com/herb1rm

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