TORREYANA

THE DOCENT NEWSLETTER FOR
TORREY PINES
STATE NATURAL RESERVE

Issue 468 **July 2024**

TP Docents "Walk the Walk"

by Joan R. Simon

There are three types of docent-led walks at Torrey Pines: Public Walks, held on Friday, Saturday, Sunday, and holidays at 10 am; Mindful Walks, every Sunday morning from 8 to 10 am; and Special Walks, which are fee-based walks scheduled by outside groups. At the June 8 general meeting, the three walks were described.

Starting off was **Ingo Renner**, who explained how he prepares for a Public Walk. First of all, he said, "I do my homework," which means going to the Reserve and speaking with docents, park aides, and visitors to keep up with the latest news. Second, he hikes the trails to find out which flowers are blooming, where the peregrine falcons are flying, where the juvenile white sharks are swimming, and whether there are sightings of gray or blue whales. Once he's picked an interesting route, Ingo brushes up on facts that will be useful in the walk (even though he knows more facts than practically anyone out there). But he cautions, "it's about a lot more than facts. Our goal as interpreters is to make Torrey Pines come alive and pique the group's curiosity." One way is by asking provocative questions and letting the visitors be "co-leaders" at times. It will help to point your discussion in directions that appeal to your listeners. "You don't always need to be in control." Another caution: You don't want to "data dump," i.e., give too many facts in a non-relatable, non-meaningful way. He encouraged leaders to read their group's body language. Wandering eyes and fidgeting are sure signs you've lost the group's attention. Reel them in by having them use their senses: smelling black sage, tasting lemonadeberries, touching yerba santa leaves. Have plenty of "fun facts" up your sleeve, such as the smell of black sage being a deterrent to insects, thereby protecting the plant.

Not all walks will be the same. Sometimes, Ingo admitted, visitors are more interested in talking to each other. Other times you'll be more of a therapist, listening to their personal problems. Above all, "be present for your walkers; this is about them, not you."

Docent General Meeting

Date: Saturday, July 13, 9:00 am

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

Speaker: Helen Kagan, daughter of "Mat" (Tsuyoshi Matsumoto)

Topic: A Pilgrimage to Torrey Pines State Reserve

Helen Kagan's talk will describe her father's surprising journey, starting in a small village in northern Japan and ending at Torrey Pines. Mat faced many challenges along the way, such as being temporarily imprisoned during WWII and teaching at a school for African-American children in Alabama in the 1940s.

Refreshments: Docents with last names beginning with **N, O, P, R** will be responsible for providing snacks for this meeting.

Next up was **Dinah Carl**, talking about Mindful Walks, which she described as an invitation to visitors to slow down, breathe in the air, and appreciate the beauty of nature through the lens of their five senses. "It's more about experiencing than learning facts," she explained. Leaders help visitors deepen their connection with nature by using all of their five senses: listening

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to bird sounds, smelling the sage plants, touching both sides of a leaf. Dinah always brings a magnifying glass to show visitors things they might not otherwise see: a bee gathering pollen from a flower, the fine detail of a leaf, or the individual grains that make up a handful of sand**.** Sharing their observations creates a sense of interconnectedness among the individual participants while broadening their perspective on nature. At the end of the walk, Dinah hopes the visitors will feel mindful, will feel awe, and will feel restored by their experience in nature.

The current members of the mindful team are **Dinah Carl** (leader), **Cres Torres**, **Lynne Truong**, **Beverly Toth**, **Nancy Novak**, **Loraine Trust**, and **Santosh Nichani**. Dinah encouraged docents to contact her if they are interested in joining the program.

Inside

The final speaker was **Stu Rosenwasser**, talking about Special Walks, which are fee-based, private docent-led walks. Participating groups can be employees of local or visiting companies (some as large as AT&T and Toyota); conference attendees, who are offered an activity away from indoor meetings and speeches (e.g., Boeing, life sciences groups); private and nonprofit organizations; and tour groups (such as Road Scholars). First, they need to obtain a permit from California State Parks ($100); then they pay the Docent Society a fee of $200 per 10 people, with a maximum of 70 per group. Docent leaders are assigned to every 8 – 10 partici-pants. We now do about 50 Special Walks a year.

Stu explained that there are a lot of similarities between Special Walks and the other walks, with a tremendous range of interest among the different groups. Road Scholars, for example, are senior learners who want to soak up as much new information as they can. Science-based groups are usually more interested in plants and geology than the average group. On the other hand, some of the groups, especially ones that have been stuck indoors at conference meetings, just want to be outside and get some exercise, or network with their fellow participants. Stu stressed that it is really important to be focused and sensitive to the needs of the group. But for even those that aren't paying much attention, you can always get them involved by sharing "fun facts," smelling the sages, or tasting lemonadeberries. Before a large group is broken up into smaller groups, the energetic hikers will be split off from those more interested in a casual walk. And if some visitors have limited physical ability, there are walks especially designed for them.

Special Walks are one of the Docent Society's biggest revenue sources. Contact Stu if you are interested in joining the group.

General Meeting Minutes, June 8, 2024

Speakers: Ingo Renner, Dinah Carl, and **Stu Rosenwasser** talked about the three nature walks offered by the Docent Society (see pg. 1-2).

Science Fair Presentations: Three projects selected for recognition from the 2024 Greater San Diego Science and Engineering Fair were presented (see pg. 7-8).

65 docents and others attended.

Business Meeting, Matt Xavier presiding.

Docent of the Month

Tsaiwei Olee, class of 2017, was named Docent of the Month. For many years Tsaiwei has been an enthusiastic Whacky Weeder, bird counter, Bee Project participant, Lodge host, and TIK volunteer. She also takes beautiful photographs of the Reserve.

BLIK/North Beach Lot Parking

Visitors to the North Beach lot pay for parking at machines near the entrance, but many expect to find hiking trails, not just a beach. Docents discussed this at the meeting and expressed concern that the fee paid at the North Beach lot did not entitle parking at the South Beach lot. (LAZ overseas the south lot, and State Parks oversees the north lot.) There is a way for visitors who pay for both lots to get reimbursed, but it isn't simple. The BLIK and South Beach kiosk attendants have forms for applying for this refund. Several suggestions to remedy this were expressed. As a result of the discussion, there is a modification (as of June 9) to the sign at the North Beach kiosk directing visitors looking for trails to the main Reserve entrance.

New Docent Training

Classes will be held at the Reserve Wednesday 9 am, a much less crowded time than the traditional Saturday. The website has applications and information on the fall training class. Please encourage people to apply.

Native Plants by Margaret Fillius

A new printing of the 4th edition has arrived at the Museum Shop. It has a waterproof cover and should be more durable. Same price as before.

Evelyn Vance

Vance has retired from the Docent Society board and as leader of the TIK. **Lisa Kakone** will organize a committee to oversee the TIK.

World Oceans Day

World Oceans Day is June 8. There is a display largely done by **Ed Saade** at the BLIK. For the high season, we now have four openings for each shift at the BLIK.

Docent of the Month: Tsaiwei Olee

Photo by Herb Knufken

It was completely by accident that I started volunteering at the Reserve.

One day after my retirement, I was walking on the trails at Torrey Pines and saw two ladies chit-chatting in the bushes. Out of curiosity I asked them what they were doing. They told me they were weeding and welcomed me to join. Those ladies turned out to be **Lynne Small** and **Steve Tarkington**. And I have been a Whacky Weeder ever since. That was nine years ago. I joined the Docent Society two years later. **Steve Neal** kindly mentored me in how to be a Lodge host when I could not weed due to a back problem. It was a delightful job to sit in the historical room and greet people from all over the world.

Later I followed Marty Hales, a former docent, in counting birds in the Reserve. In the beginning I had a hard time telling the difference between wrentits and bushtits. But Marty was very patient and connected me to various birding groups. Birding occupies a major part of my life these days, and I have traveled to various places to see different birds. Then, three years ago, **Gabriele Wienhausen** started a native bee surveying group, the WannaBees, and I joined that too. Again, during the first few trips I would often consider a hoverfly or wasp to be a bee. I still have difficulties identifying our native bees. But when **Tina Tong** extracted the entirety of the WannaBees' data from iNaturalist and compiled it into meaningful tables, all that painstaking work became worthwhile.

I am pleased to look back and see the many ways the Torrey Pines Docent Society has unquestionably broadened my horizons and given me a much richer life. It has given me a much deeper appreciation for the Reserve and the people who support it. As I continue to volunteer, I hope I can share that same learning and enjoyment with other visitors of the park.

Guy Fleming House Dedication and Fundraiser

Join the Torrey Pines Conservancy for the dedication of the recently renovated Guy Fleming House on Sunday, July 28 from 3 to 5:30 pm. There will be food, drinks, live music, and a tour of the Guy Fleming House. To purchase early bird tickets for $75 before the end of June (or $95 thereafter), click here.

Memorial Day Festivities

by Lila Beth Scott

On Saturday, May 25, California State Parks and TPDS hosted a memorable Memorial Day celebration to honor the sacrifice and loss of those who served and died in the military.

The event began with a poignant flag-raising ceremony, with the pathway leading to the Lodge adorned with American flags. **Howie Wilcox**, a veteran, welcomed guests as two members of the Turn Around for Veterans organization raised the flag in honor of this special day. "The Star-Spangled Banner" played on a look-alike vintage Zenith radio, and we all collectively held a brief moment of remembrance while the flags blew in the morning breeze. A featured highlight was a historical exhibit and presentation by Docent Society historian **Judy Schulman**. She shared her treasured collection of memorabilia from the Camp Callan days at Torrey Pines, and visitors were able to get a glimpse into the daily life of the servicemen who lived and trained here during World War II. Judy also led an informative presentation on the military history of Camp Callan, highlighting the important role it played in the war.

Turn Around for Veterans showcased their woodworking creations, including beautiful pens, bowls, vases, and birdhouses made from the wood of fallen Torrey pines. The craftsmanship and care put into these items were evident, making them valuable tokens to be cherished for years to come.

The military history of San Diego has been intricately linked with the city's expansion and progress. The military has played a pivotal role in the local economy, culture, and community. Today, there are more than 115,000 active-duty service members in San Diego, and over 350,000 defense-related jobs. For a few short years during World War II, the military's presence was strong throughout the Reserve. Soldiers trained for war and lived among the trees we protect today. This event served as a meaningful and educational tribute to those who have served and sacrificed for the United States of America and their ties to the Reserve we all love.

CEED Beach Party!

Rather than an educational event for July, the CEED team is organizing a beach get-together and music jam! Come enjoy social time with docent friends and Reserve staff. We will eat dinner and watch the sunset together.

When: Wednesday, July 24, 6-8 p.m.

Where: South Torrey Pines State Beach

What to bring: A chair, utensils, beverage, and anything you might like to eat or share.

The Docent Society will provide pizza (vegetarian, cheese, and meat).

If you have a musical instrument, please bring it!

You do not need to RSVP, just show up, AND you can bring one significant other.
Questions? Contact Lisa Kakone or Mukesh Mehta

What's On the Beach? Spiny Lobster Exoskeletons

article and photos by Kathy Dickey

As you stroll our beach, chances are good that you will come across exoskeletons (or parts of them) of various types of arthropod crustaceans – crab, shrimp, and lobster. The most obvious, because of its size and reddish color, is the California spiny lobster (*Panulirus interruptus*), also called langosta, red lobster, and rock lobster.

California spiny lobster is found from Monterey, California to the Gulf of Tehuantepec, Mexico. Adults live in rocky areas at depths of up to 213 feet, while juveniles live in shallower waters with dense vegetation up to 15 feet. There is an annual migration in the winter months to deeper water to avoid storms.

Adults are usually 12 to 16 inches long and weigh about two pounds, although a few grow to 36 inches long and 30 pounds! The photos below show a typical exoskeleton on the beach, about 12 inches long, and another partial huge one now shown at the BLIK that was once about 30 inches long. Sadly, the lower tail part of the big, impressive shell (called a carapace) was eaten by mice when the BLIK was closed.

Spiny lobsters, unlike their eastern relatives, lack large claws on their first pair of legs. They have long, spine-covered antennae. Spines cover the hard body, too, and the under margins are particularly dangerous. If threatened, the lobster draws its tail to its underside and zooms backward to safety in a rock crevice. A very interesting feature is that they communicate to each other with sound. When threatened, they can produce a loud rasping sound by rubbing their antennae together. The sound startles most predators, giving the lobster time to escape. Predators include California sheephead, giant sea bass, cabezone, sharks, octopuses and sea otters. Also, of course, humans like me, who adore cooked lobster meat dipped in melted butter.

Nocturnal creatures, lobsters are omnivores, feeding on prey such as mollusks, worms, and sea urchins. Spiny lobsters rely on their well-developed senses to find food. Their large, stalked eyes help them see in the low light of the ocean floor, and their super-sized antennae are great for picking up scents and vibrations in the water. Since they have no claws, they use their spiky front legs to capture and eat their food. By controlling the populations of animals that can damage coral reefs, they are important members of the marine ecosystem.

Spiny lobsters molt their exoskeletons depending on their age and size, and all their hard parts are shed off during the process. Young lobsters within the first five to seven years can molt up to 25 times. As they grow older, the adults molt about once a year (males) or every two years (females). The adults may live up to 30 years, and possibly even 50 years. To molt, the lobster creates a new soft shell under the old one. Once it molts, it takes about two days for the new shell to begin to harden. The total hardening process may take up to 19 days, depending on the water temperature (warmer temperatures help).

Reproduction for spiny lobsters involves a complex two-year cycle. Once it matures, at around 2.5 to 5 years old, the male deposits a sticky sperm packet, called a spermatophore, directly from his gonopore to a soft window on the female's sternum. The male gonopore is adorned with a "penile process," which is straight and serrated. After mating, the female carries fertilized eggs on pleopods (forked small swimming legs) on her abdomen until they hatch, with between 120,000 and 680,000 carried by a single female. The eggs begin as coral red but darken to a deep maroon as they develop. When she is carrying the eggs, the female is said to be "berried." The eggs are ready to hatch after ten weeks. The larvae that hatch (called *phyllosoma* larvae) do not resemble the adults. Instead, they are flat, transparent animals around 14 mm (0.55 in) long and thin as a sheet of paper. The larvae travel vast distances, feed on plankton, and grow through ten molts into ten further larval stages, the last of which is around 1.2 to 1.3 inches long. The full series of larval molts takes around

seven months; when the last stage molts, it metamorphoses into the *puerulus* state, the final larval stage, still transparent. Those larvae eventually settle to the sea floor when the water is near its maximum temperature. Here, they metamorphose into miniature lobsters. The diet of the new juveniles is varied, but includes amphipods and isopods, together with coralline algae. If available, the juveniles prefer to eat tiny crabs and surf grass.

Fishing for lobsters is prevalent along the coast, usually using special nets or baited lobster traps. The collected spiny lobsters must be at least 7.9 inches, and no more than seven can be caught in one day. Commercial fishermen along the California coast caught a total of 580,000 pounds in the 2007/2008 season.

References provided by author upon request.

PORTS: A California State Parks Online Program

by Laura Chaing, Senior Interpretive Park Aide

Did you know that TPSNR is part of an online program that provides free educational resources for teachers and students? PORTS – Parks Online Resources for Teachers and Students – provides learning opportunities through over 55 California state parks. Presenters cover various themes and topics through on-demand programs featuring live interaction with students, as well as broadcasting livestream with larger audiences.

Senior Interpretive Park Aides Zuzana Volny, Lila Scott, and Laura Chaing may be seen around the Lodge on weekday mornings setting up a tripod and shark puppet for the "Jaw-some Great Whites" program. In this presentation, students learn about the great white shark nursery at Torrey Pines State Beach and great white shark adaptations. Across the 2023-2024 school year, Torrey Pines has reached over 2,700 students through this program. Not all of these students live near the ocean, so virtual opportunities provide access to locations and topics some students may not otherwise have.

As part of the PORTS program, Torrey Pines has also participated in PORTScast, the broadcasting livestream. For World Oceans Week (June 3-8), Laura teamed up with Cryssie Moreno, a State Interpreter focused on sea level rise and marine protected areas. Our Reserve is right next to the beach, and as sea levels rise, we will be increasingly impacted by weathering and bluff collapses, decreased beach access, and flooding risk in Los Peñasquitos Lagoon. In addition to access and safety concerns, Laura discussed the impact on local wildlife such as grunions, which require sandy beaches to reproduce and lay their eggs. Cryssie showed global examples of the impact of sea level rise in cities such as Jakarta, Indonesia, where sea walls are only a band-aid solution to the ever-worsening problems of flooding and public safety.

Coastlines are ever changing as a result of sea level rise and other global factors. Community science projects such as CoastSnap utilize photos taken by visitors with smartphones and allow researchers to track changes. To participate, follow directions outlined on CoastSnap's website or visit the North Outlook on the Guy Fleming Trail, where there is a CoastSnap installation with a QR code. Click here for April 2023 *Torreyana* article on CoastSnap.

Though the recorded webinar has not yet been posted to the CA State Parks PORTS YouTube account, there is still plenty to watch and learn about. For more information about PORTS, click here.

Science Fair Winners

*Three projects from the 2024 Greater San Diego Science and Engineering Fair were selected for recognition by the Docent Society science fair team (**Wayne Kornreich**, leader, **Karen Lisi, Robert James, Kimberley Gambling, Leigh Fenly,** and **Kathy Dickey**). **Kimberly, Leigh, Karen,** and **Robert** also served as mentors for the students' presentations at the June Docent Society meeting. Here are their abstracts:*

Is Your Sunscreen Really Safe for the Ocean

Mia Bi, La Jolla Country Day School, 7th grade

This project aimed to understand whether sunscreens labeled "reef-safe" or "reef-friendly" are truly safe for sea life, such as algae. If not, could a concentration-dependent negative impact on algae be observed? The premises were that even if sunscreens were labeled with inorganic oxides listed in their active ingredients, they could still be harmful to sea life, such as microalgae.

The microalgae, *Dunaliella tertiolecta*, were grown in seawater for 14 days in six different bottles. Two sunscreens were tested – Reef-Repair ("reef-safe") and Coral Isles ("reef-friendly") – at three different concentrations of sunscreen to seawater (1%, 5%, and 10%), plus two control bottles with no sunscreen in them, for a total of eight bottles. Both sunscreens contained only zinc oxide and titanium dioxide as active ingredients.

The dependent variable was the chlorophyll level in each of the eight test bottles, which was measured in relative fluorescence units (RFU) using a Trilogy machine every other day. Higher RFU indicates that there is more chlorophyll, meaning more algae.

The outcomes were that algae in the "reef-safe" conditions grew better than in "reef-friendly" conditions (e.g., 27401 RFU vs. 10616 RFU in the 5% concentration bottle). However, even compared to "reef-safe" conditions, RFU was highest for the control and decreased as the concentration of the sunscreen increased. "Reef-friendly" conditions showed a similar pattern, with RFU decreasing from control to 5% to 10% concentration. The 1% reef-friendly bottle contracted mold and was challenging to interpret. Results, therefore, support the first hypothesis: Even if sunscreens are labeled as "reef-safe" or "reef-friendly," they could still harm marine organisms because they still contain chemicals that are unfamiliar to the organisms' environment. The second hypothesis was also supported: If the concentration of sunscreens is higher, then the damage to algae growth will be more severe. More tests in future research would be needed to be conclusive and to establish benchmark minimum concentrations for toxicity.

Synthesizing Living Materials for Coral Reef Regeneration

Steven Chen, Pacific Trails Middle School, 8th grade

Coral reefs support a cornucopia of biodiversity, with an economy worth over $30 billion and affecting one billion people. Coral reefs also serve as natural barriers for hurricane storm surges. However, ocean temperatures have been rising dramatically over the last couple of decades, killing vast swaths of corals all over the world from the Great Barrier Reef in Australia to the reefs in the Red Sea.

The objective of this project was to synthesize a living material that can be used to fabricate a living construct to help coral reef restoration. A distinctive advantage of the living construct is that it is composed entirely of biocompatible hydrogel, which holds cells in its pores and allows them to grow.

The first step to building the construct was to design the shape according to coral structures found in nature. Using TinkerCAD, two types of constructs were designed, which were modeled after *Favia* and *Stylophora* coral polyps.

Next, a hyaluronic acid (HA) hydrogel solution containing live brown algae cells was prepared. Brown algae cells live in symbiosis with coral cells in nature. It was necessary to encapsulate the algae cells into the construct to enable cell growth.

The next step was to print out the constructs using a 3D printer. The printing parameters were optimized to fabricate the polyps. Finally, the finished polyps were moved into a cell culture medium (mimicking sea water) and allowed to grow for several days, during which the cell viability of the polyps were measured by a fluorescence microscope. An Optical Coherence Tomography scan was also used to produce a three-dimensional view of the cell growth in the construct.

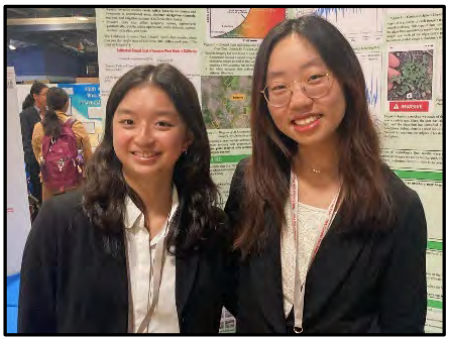
The results showed that over two weeks, the cell density increased by 95.55% in the *Favia* construct and 83.85% in the *Stylophora* construct. Both types of polyp constructs

were indeed capable of supporting cell growth. These were exciting and promising results towards creating coral reef regeneration.

Today's Technology for Today's Environment – Using AI to Enhance Invasive Plant Removal

Minghui (Gracey) Yao and Sophie Zeng, The Bishop's School, 10th grade

Invasive species are among the largest threats to global biodiversity, second only to habitat loss. They cause multiple degrees of extinction and collapse within our ecosystems, fueling wildfires and degrading water quality. Spending for the removal and control of invasive plants cost the U.S. over $26 billion a year. Increased volunteer participation would greatly help to reduce the number of invasive plants, but the average person does not know what hundreds of different invasive species look like or the proper procedure for removing them.



This research project aims to develop an AI algorithm that identifies the most common invasive plant species in local communities as a tool for volunteers, breaking down the knowledge barrier to invasive plant removal, starting with San Diego County.

The algorithm uses a convolutional neural network. This neural network was trained using several thousand expert-confirmed invasive plant images from the Calflora and Bugwood image databases. Through dozens of tests and detailed tuning, it accumulated a top-3 accuracy of 80-90%. We utilized data analyzation and visualization methods, such as confusion matrices, to gauge the model's performance and adjusted it accordingly.

Environmental protection experts from the San Diego River Park Foundation, California Invasive Plant Council, and San Diego Parks and Recreation confirmed our conclusion that AI tools, such as the one developed in this research, will revolutionize and greatly streamline their work. Once implemented into a mobile app, this algorithm will equip volunteers with an accessible tool that allows for greater efficiency and scalability in removing invasive plants.

Girl Scouts Join the Junior Ranger Program

by Zuzana Volny, Senior Interpretive Park Aide

Earlier this year, I was delighted when a Girl Scout troop leader approached me about having her girls join our Junior Ranger program. They were especially eager to learn about our juvenile great white sharks, which made the opportunity even more exciting.

When they arrived in late May, I had the pleasure of teaching them about the fascinating adaptations of white sharks and the concept of biomimicry, explaining how we have utilized these adaptations for our own advancements. We then embarked on a walk to the Guy Fleming Trail in hopes of spotting a shark. Although no sharks made an appearance, we were thrilled to witness many blue whale spouts and playful dolphins, leaving the girls enchanted by the experience.

It was a joy to see their curiosity and enthusiasm, and I look forward to more opportunities to share the wonders of marine life with our Junior Rangers!

Dusky-footed Woodrat

by Joann Sandlin

Range

The dusky-footed woodrat (*Neotoma fuscipes*) lives mostly along the Pacific coastal area from the Yukon and Northwest Territories south to western Honduras. Other species of woodrats are found in many areas of the United States. The range of these species overlap as they seek their preferred environment: chaparral for the dusky-footed woodrat, oak woodlands for the big-eared woodrat, and cactus for the desert woodrat.

Joann Sandlin with the woodrat model at the TIK. See article in the July 2022 *Torreyana*.

Habitat

Dusky-footed woodrats, also known as pack rats, usually live in wooded and brushy areas. They construct their homes mostly from the twigs and branches of vegetation that they carry in their mouth to the sites. They collect shiny objects as well as a variety of other small objects they find and keep in their middens. Typically, woodrat homes are built around the base of a tree or large bush, which provides solid support. These houses may be as large as six feet tall and nine feet wide. They contain a variety of passageways, exits, and entrances as well as chambers for birthing, pantries for food, and middens. Woodrats have a well-developed sense of ownership, and each house is the property of a particular rat. Scent stations around the house signal which rat is the owner, who will defend it from intruders.

Woodrat houses are enduring structures that may be occupied in succession by dozens or more generations of rats. Some houses located in areas protected from the weather may be hundreds of years old. These old houses usually have crystallized lower layers due to urine deposited over many generations of rat occupants. Archeologists often analyze the contents of these crystalized levels to learn about past environments.

Physical Characteristics

Both male and female dusky-footed woodrats are approximately eight inches long, with furry tails that are also eight inches long. Their basic color is light brown with variations toward tints of buff and pink. They molt each year. They have whiskers, and their ears are large and rounded as well as hairy. Their claws are short, sharp, and curved downwards. The incisor teeth of babies are curved outward to enable suckling. The adult incisor teeth are very sharp to enable cutting twigs and branches. Their teeth continue to grow as they are worn down.

Reproduction

Most females are reproductively active in April and May. During the breeding season, males dash about the various neighborhood nests in search of sexually receptive females. After mating, the female is intolerant toward the male and ejects him from the house. The suckling young are dependent on the mother until the time of weaning, which occurs about three weeks after they are born. When young rats leave the maternal home, they usually take up residence in the nearest unoccupied usable house.

Behavior

The dusky-footed woodrat is a nocturnal animal. This species travels equally well over ground and through bushes and trees. However, they need a path with overhead cover to avoid being seen by predators, including owls, hawks, bobcats, and coyotes. When a woodrat travels across leaves, it walks slowly, lifting one leg at a time. In contrast, it will run across a trail composed of branches. This difference probably occurs because running across leaves causes a crackling noise that may attract predators.

Sometimes males fight when they encounter each other, but it is more common for woodrats to be friendly. Friendliness between individual woodrats is usually seen when their houses are adjacent to each other.

The woodrats have well-developed sanitation habits. They keep the birthing chamber clear of feces and store the fecal pellets in a lower level of the structure or outside it. For personal cleanliness, dust bathing is a common practice involving spreading the legs and pushing the abdomen against the soil. Dusky-footed woodrats also lick their fur for cleanliness.

Food

The dusky-footed woodrat is a vegetarian and typically feeds on the tender green portions of plants. They derive most of their water from the plants they consume. Separate chambers are used to store other edible greenery and food stuff such as seeds and nuts. They eat and hunt for food throughout the night.

Woodrats store several kinds of food in chambers in their house. One chamber typically will be for storing toyon leaves until they are free from toxins. They also collect bay laurel leaves to line the nest where their babies are born and nursed. They chew the edges of these leaves to release toxins that keep fleas off the babies.

Communication

Among the vocal sounds made by woodrats are an alarm chatter, a shrill squeal of rage, and a distress squeal. Conversations between woodrats are in small squeaks. In response to possible danger, a woodrat will communicate alarm by rattling its tail against a piece of wood.

***Author's Note*:**

When I went through docent training in 2022, I was shown a woodrat nest near the parking lot next to the Lodge. The docent training manual had a brief paragraph about the woodrat, and this nest looked like just a pile of sticks. I wanted to know more, so I went online. In addition to several studies with small samples, I was lucky to find The Dusky-footed Woodrat *by Jean M. Linsdale and Lloyd P. Travis, Jr. This book summarizes the results of a ten-year study of 580 woodrats living on 1,600 acres in the Hastings Natural History Reservation in Carmel Valley, California. I wanted to share what I had learned and decided to make a small imitation of a woodrat nest, but with a removable top so visitors could see inside and learn more about woodrats. My mentor,* ***Frank Burham****, helped me with the design and construction of this nest, and we now show it on Saturdays near the TIK.* ***Ingo Renner*** *saw it and asked us to make a smaller one that could be displayed in the Lodge. It gets so much use that Frank is frequently asked to make repairs to it.*

Ed also found a wealth of educational ideas and curriculum from NOAA, which is in a giant notebook available at the BLIK for docents to consult.

The following Saturday (June 15) was just as busy and equally fun. We had a large group of Afghan refugee children who were attending a camp called Bridges. They made a day trip to the Reserve and beach, and brightened our day with their enthusiasm, questions, and games.

Fellow docents, come join us. There is plenty of room. We are making a concerted effort to have at least one seasoned docent staff each shift. If there is enough interest, we hope to be able to extend hours, especially for the summer.

World Oceans Day at the BLIK

by Rosemary Wareham

World Oceans Day was celebrated at the BLIK (Beach/Lagoon Interpretive Kiosk) on Saturday, June 8 with eight docents hosting: **Malana Tabak, Gabriele Wienhausen, Molly Allison, Allan Heryet, Ed Saade, Mary Makowski, Marian Edelbrock** and **Rosemary Wareham**. It was great fun! Hundreds of people and lots of families from all over the San Diego area – and indeed from all over the world – stopped by. The children played games and examined specimens. They sprayed "rain" on the watershed model and asked myriad questions. Adults did the same. They read material for extended periods of time, asked more questions, and a few taught us quite a bit. Everyone was so highly engaged.

Thanks to **Ed Saade**'s research and choice of materials, we now have fabulous information related to oceans, estuaries and lagoons for displays, interpretation, and education.

CEED: Cabrillo National Monument and Old Point Loma Lighthouse

by Mukesh Mehta

Fourteen docents attended the June 13 CEED walk, which was part of a reciprocal event with Cabrillo National Monument. Cabrillo volunteers had been given a tour of Torrey Pines earlier in the month.

We were greeted at the Visitor Center by Sandy Hernandez, Park Ranger/Volunteer Coordinator; Hannah Marquez. a Cabrillo volunteer; and two other tour guides. We first walked over to the large statue of Juan Rodriguez Cabrillo (photo right), where we had a clear view of the Point Loma Lighthouse as well as panoramic views of downtown San Diego, Coronado, and Tijuana.

We learned that Juan Rodriguez Cabrillo arrived in San Diego in 1542 on a ship named *San Salvador*. It is thought that he and his crew landed at Ballast Point, on the east side of Point Loma. In 1949 the government of Portugal donated a statue of Cabrillo, which was made of sandstone. It was susceptible to weathering, and over time it deteriorated. In 1988 the original statue was replaced by the one displayed today, which is made of limestone.

In 1850, California became the 31st state admitted to the Union. With a growing population and increased sea traffic in the San Diego area, there was a need for a lighthouse near the southwestern boundary of the United States. The tip of Point Loma, at about 420 feet above sea level, was the site chosen for the new lighthouse, because its light could be visible for 23 to 30 miles offshore on a clear night. The Point Loma Lighthouse (photo above right) was built in 1854 and went into service in November 1855. Unfortunately, because of its high altitude, the lighthouse was often obscured by fog. In 1891, a new lighthouse was built closer to sea level, and it is now occupied by the U.S. Coast Guard. The highlight of the trip was climbing up to the top of the old lighthouse. Because it was under repair, we had to enter the lighthouse in groups of four, and everyone was required to wear a hard hat.

Cabrillo National Monument is visited by thousands of people each year. We have a second trip planned in the fall to see the tidepools.

Yellow Mariposa Lily

by Rhea Bridy

Golden streaked beauty
delicate butterfly or
demitasse tea cup.
Hope and Harmony
rely on your tough
hardy bulb, deep in
sandy slope and
graceful spirit.

Creature Feature: Western Side-blotched Lizard

by Laura Chaing, Senior Interpretive Park Aide

Warm, sunny days bring so much life to Torrey Pines, especially when it comes to reptiles. They can be skittish and quick, but if you approach them slowly and carefully, you may be able to observe their behavior and markings. One such lizard found at Torrey Pines is the Western side-blotched lizard (*Uta stansburiana elegans*), distinguished by a dark blotch along its sides, just behind its forelimbs.

Lizards are commonly seen on rocks, sandy slopes, or structures; oftentimes they bask in the sunlight, demonstrate their skill in performing push-ups, or run around eating ants and other small invertebrates. Female side-blotched lizards are often brown and white, with a mix of blotches and stripes. Male side-blotched lizards are more colorful than females (see photo), often featuring speckles of blue and yellow, with colored throats. Side-blotched lizards come in three different color morphs, each linked to different heritable behaviors related to mating strategies. While their color morphs and patterns can vary, side-blotched lizards will always have their dark side-blotch marking.

Side-blotched lizards have orange, blue, or yellow throats:

Orange-throated males are stronger than other males and tend to fight blue-throated males. They do not form strong pair bonds with females.

Yellow-throated males are smaller than the other two but have a coloration that mimics female side-blotched lizards. This allows them to approach females near orange-throated males and mate with female lizards while the larger male lizards are distracted.

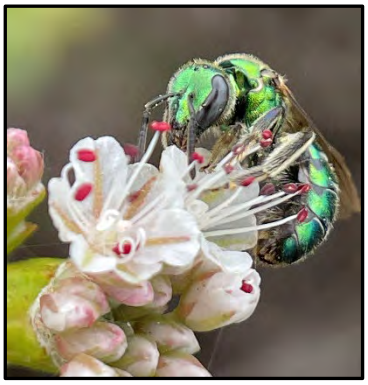
Blue-throated males are smaller than orange-throated males and are not able to compete with them, but they are larger than yellow-throated. They form strong pair bonds so female lizards that mate with blue-throated males are less likely to mate with yellow-throated males.

These differences create a "rock-paper-scissor" triangle in which each color variation of side-blotched lizard has a different mating strategy to best one color but not the other. In this case, orange beats blue, blue beats yellow, and yellow beats orange. So when hiking the trails, look out for lizards. If you find several, consider whether you might be observing some of these behavior dynamics right in front of you.

Bee of the Month: Peridot Sweat Bee

article and photo by Robert James

Someone shouts on the trail at the Reserve, "There's a green bee!" The peridot sweat bee (*Augochlorella pomoniella*), another of our native bees in the family Halictidae, is the color of the shiny emerald gemstone. It occurs through most of California and east to New Mexico. To distinguish it from the similar Texas striped sweat bee (*Agapostemon texanus*) that also occurs here, look for the dark eyes (inner margins have a notch) and the uniformly green-colored abdomen.



The peridot is more commonly seen in the spring and through the fall at the Reserve but can be encountered nearly the entire year. Though small (7-9 mm, just longer than a grain of rice), they contrast with flowers as they gather pollen and nectar or are just resting. As a generalist species, peridots can be found on different blooms collecting pollen and nectar, especially sunflowers, coast morning glory, suncups, and even California buckwheat as they perform their crucial pollination services.

As you may know from earlier articles, most of our native bees are solitary, but the peridot is a type of social ground nester with a queen, workers, and males. Many colonies may even aggregate to nest in the same area. Flat or slightly sloped areas of generally bare soil are used. In the spring, after spending the winter underground, a fertilized female (foundress) emerges to build a new nest, frequently leaving it to collect pollen and nectar and returning to lay eggs. After the mother's early phase of nest-building, her daughters develop into adults and take over the duties of gathering pollen and nectar in the summer. The foundress remains in the nest laying eggs. The last brood develops by the fall and includes new queens and males. The new queens from that final brood mate, overwinter, and become the foundresses of the next year.

As our WannaBees know, peridot are quick fliers compared to many other native bees. Thus, they are a challenge to photograph. This may be why they are probably underrepresented in iNaturalist observations (inaturalist.org/observations?place_id=4605&taxon_id=82525) compared with other species that WannaBees report on from trails. So, the next time you are hiking in the Reserve, pull out your phone and snap a photo of these beautiful gems (and the flower they are associated with) and post it to iNaturalist. Also, just as important, show your sightings on the trail to visitors to help advocate for pollinator protection while enhancing their experiences at the Reserve.

References are available upon request.

Torrey Pines Book Club

We will continue to meet via Zoom at our regularly scheduled time. Please notify **Annette Ring** if you plan to participate or if you need any extra help getting connected.

When: Tuesday, July 9, 1:00 pm

What: *The Glitter in the Green: In Search of Hummingbirds* by Jon Dunn

Amazon says:

Hummingbirds are a glittering, sparkling collective of over three hundred wildly variable species. For centuries, they have been revered by indigenous Americans, coveted by European collectors, and admired worldwide for their metallic plumage and immense character. Yet they exist on a knife-edge, fighting for survival in boreal woodlands, dripping cloud forests, and subpolar islands. They are, perhaps, the embodiment of evolution's power to carve a niche for a delicate creature in even the harshest of places. Traveling from the cusp of the Arctic Circle to islands near Antarctica, acclaimed nature writer Jon Dunn encounters birders, scientists, and storytellers in his quest to find these beguiling creatures, immersing us in the world of one of Earth's most charismatic bird families.

All TPDS docents are welcome. Meetings usually last an hour and a half.

August 13: *The Elephant Whisperer* by Lawrence Anthony

Torrey Pines Docent Society Bird Survey: June 2024

Number of species: 68 (+2 other taxa)

Gadwall 2
Mallard 9
Surf Scoter 20
California Quail 3
Pied-billed Grebe 1
Mourning Dove 28
White-throated Swift 11
Anna's Hummingbird 23
Allen's Hummingbird 8
hummingbird sp. 3
Long-billed Curlew 2
Western Gull 13
California Gull 4
Caspian Tern 6
Elegant Tern 4
Royal Tern 5
Brandt's Cormorant 3
Double-crested Cormorant 9
cormorant sp. 1
Brown Pelican 67
Snowy Egret 5
Green Heron 1
Great Egret 3
Great Blue Heron 11
Osprey 2
Cooper's Hawk 1
Red-shouldered Hawk 2
Red-tailed Hawk 6
Nuttall's Woodpecker 8
American Kestrel 1
Peregrine Falcon 6
Western Flycatcher 2
Black Phoebe 6
Say's Phoebe 2
Ash-throated Flycatcher 23
Cassin's Kingbird 3
Hutton's Vireo 2
California Scrub-Jay 13
American Crow 5
Common Raven 18
Tree Swallow 1
Northern Rough-winged Swallow 11
Barn Swallow 1
Cliff Swallow 1
Bushtit 58
Wrentit 72
Blue-gray Gnatcatcher 1
California Gnatcatcher 2
House Wren 17
Bewick's Wren 10
California Thrasher 13
Northern Mockingbird 5
Western Bluebird 5
House Finch 64
Lesser Goldfinch 18
Dark-eyed Junco 5
Savannah Sparrow 1
Song Sparrow 43
California Towhee 58
Rufous-crowned Sparrow 5
Spotted Towhee 59
Yellow-breasted Chat 9
Hooded Oriole 3
Red-winged Blackbird 9
Brown-headed Cowbird 1
Orange-crowned Warbler 38
Common Yellowthroat 19
Yellow Warbler 1
Black-headed Grosbeak 3
Blue Grosbeak 1

Observers: *Kathy Brav, Robert Turner, Manolo Turner, Russian Balagansky, Marci Rimlinger, Dave Rimlinger, Nancy Stalnaker, Dinah Carl, Gabriele Wienhausen, Robert James, Marty Hales, Nancy Richardson, David Walker*

Herb Knufken's photo gallery includes many birds: pbase.com/herb1rm

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