

# Tideline



Don Edwards / Antioch Dunes / Ellicott Slough / Farallon Island / Marin Islands / Salinas River / San Pablo Bay

## For The Love Of Snakes!

By Ashley Mertz

Since October 2012, a smattering of plywood boards suddenly appeared strewn about the landscape on the Don Edwards San Francisco Bay National Wildlife Refuge. To some, this may seem like litter but to others, this is home. Just recently, employees could be seen near one of these plywood boards staring at their hands, wide-eyed and exclaiming over a writhing worm-like creature. Often mistaken for a worm, this critter is actually a sharp-tailed snake (*Contia tenuis*) and has raised quite the ruckus at the refuge.

In August, Ashley Mertz began developing a small-scale research project designed to inventory the reptiles and amphibians at the Don Edwards San Francisco Bay National Wildlife Refuge. Prior to this project, there was very little data regarding herpetofauna populations on the refuge. Ashley's project was very simple; a total of 38 cover boards were distributed along six transects throughout the headquarters area of the refuge in habitat thought to have higher reptile and amphibian populations. Cover boards can be any thin material used as artificial refuge for target species and is a reliable method for monitoring reptile and amphibian populations. Snakes, lizards, and salamanders often use the specific microclimates found under naturally occurring objects for activities such as reproduction, aestivation (a state similar to hibernation), thermoregulation, and shedding. Once the cover boards have been left out in the elements for seven to 10 days, monitoring begins. Twice a week, the cover boards are flipped and any reptile or amphibian found

is documented.

After the cover boards were left out on the refuge for one week in October, it was time to check the cover boards. After a month of monitoring, only the usual suspects were found: western fence lizard (*Sceloporus occidentalis*), California slender salamander (*Batrachoseps attenuatus*), and



Sharp-tailed snake. Photo by Rebecca Cook/USFWS

Pacific chorus frog (*Pseudacris regilla*). By this time, biology intern Rebecca Cook had started helping Ashley with her data collection; morale was beginning to drop in the two-women research crew. As Thanksgiving approached, Rebecca agreed to monitor the cover boards while Ashley returned home for the holiday. After Thanksgiving, just as Ashley was boarding a plane from Kansas City bound for San Francisco, Ashley receives a text from Rebecca, "HOLY COW! I FOUND A SNAKE! I'm not sure what it is, but I am working on identifying it! I think it could be a sharp-tailed!"

The newly discovered snake did turn

out to be a sharp-tailed snake. This was the first account of this species at the Don Edwards Refuge. Although not particularly scarce in numbers, this species is rarely seen due to its semi-fossorial (living mostly underground in a digging or burrowing manner) nature and seasonal movement patterns. The sharp-tailed snake spends most of

its time under logs, leaf litter, and downed woody debris usually in wooded to partially wooded areas. They are also found on rocky, south-facing slopes which are thought to be crucial breeding habitat.

Feeding exclusively on various species of slugs and California slender salamanders, the sharp-tailed snake is heavily tied to surface moisture in areas with ample coverage. The tiny snake uses its "sharp tail" to immobilize its squirmy prey while sinking in its elongated teeth, which have specially evolved for consuming slugs (hence

continued next page

its name). This species spends most of its time in underground burrows but is drawn out by the rains in the fall. Even during the times of highest activity (October through April), the sharp-tailed snake is rarely seen above the surface and will often stay under the same log or rock for weeks at a time.

The sharp-tailed snake will mate in the spring and return to its underground burrow to lay its eggs in June and July. However, females may not lay eggs each year. This species remains in its burrow throughout the dry heat of summer and will

destruction, the sharp-tailed snake seems to thrive in urban backyards where they feast on the over abundant nonnative slugs. Most documented mortalities, however, are due to lawn mowers, sidewalk edgers, domestic cats, and car traffic. When threatened, the sharp-tailed snake will curl into a ball making it harder for a predator to swallow. If handled, the snake will writhe around furiously trying to squirm loose and will constantly poke the hand of whoever is holding it. If caught by a predator, this tactic could potentially save the snake's life.

The sharp-tailed snake is found throughout the Sierra Nevada Mountain

known about this elusive snake and many of the other reptiles and amphibians on the refuge. Reptiles and amphibians play a crucial role in the environment and are important bioindicators. Because of their prey choice, method of locomotion and reproductive needs reptiles and amphibians act as a sort of 'canary in a coal mine' for environmental contaminants. Disruptions in population dynamics and abundance are often first seen in herpetofauna communities before most other taxonomic groups begin to show symptoms.

Biological Science Technician for Refuges Inventory and Monitoring Program, Sharon Dulava, acknowledges that lack of data on entire taxonomic groups impedes management decisions. "The collection of data that advances our understanding of refuge ecosystems and supports decision making is a top priority for the Inventory and Monitoring Initiative." The Inventory and Monitoring Initiative, as described in *Conserving the Future*, the vision document for national wildlife refuges, supports inventories, monitoring, and research that refuges identify as critical to informing management. Knowing what species of reptiles and amphibians occur on refuges will allow managers to make better quality management decisions and is the first step to assessing potential impacts of stressors, such as climate change, to these species and the ecosystems they inhabit.

"Pilot studies are a great way of providing biologists with a baseline of information to work off of. They also serve as a template for future standardized surveys that could potentially be used at other refuges," added Dulava. Although Ashley's internship has ended, Rebecca Cook will continue to monitor the cover boards. Her project will continue providing new insight into the delicate ecosystems of the Don Edwards San Francisco Bay National Wildlife Refuge and the biodiversity supported there.

*Ashley Mertz worked as the Don Edwards San Francisco Bay National Wildlife Refuge Visitor Services Intern for seven months. Prior to working at the Don Edwards Refuge, Ashley was involved with a similar research project in Blue Springs, Missouri with the Missouri Department of Transportation, University of Central Missouri, and the Army Corp of Engineers. In January, she began an internship with Cove Wildlife Consulting LLC monitoring small-mouthed salamander, collared lizard, timber rattlesnake, and Osage copperhead populations in Missouri.*



*Ashley Mertz holding a sharp-tailed snake. Photo by Rebecca Cook/USFWS.*

return to the surface once the rains begin. This is also the time of year when young hatch from their eggs. Sharp-tailed snakes usually lay a clutch of three to eight eggs with neonates ranging from seven to 15 centimeters in length. When full-grown, adults typically measure 12 inches in length. They are easily distinguished by their light-colored ventral surface with dark rings that resemble the belly of an earthworm. Adults are generally reddish, brown, or grey in color with two lighter colored stripes running the length of the body starting from the eyes.

The sharp-tailed snake is seen most often during spring and fall which can make this species highly susceptible to disturbance during these times. Most sharp-tailed snakes are found by happenstance when excavating rocks, pulling weeds, and general yard work. Although fairly sensitive to habitat

Range. It can be found as far north as British Columbia and Vancouver Islands, as far south as San Louis Obispo, and only as far east as the eastern-most portion of Washington and Oregon. Recent research has shown that there are actually two species of *Contia tenuis*. Mitochondrial DNA has revealed that the two sharp-tailed snake species diverged around five million years ago. The two species split into a coastal assemblage and an interior Sierra Nevada assemblage. The latter is the more widespread of the two species and can be found at Don Edwards Refuge. The coastal sharp-tailed snakes have recently been renamed *Contia longicaudae*.

Although sharp-tailed snake populations throughout the Pacific Coast of the U.S are not particularly threatened, research on this species and herpetofauna in general is nonetheless significant. Very little is

# The journey begins

On a hot muggy day last September, I loaded up my two canine companions in a tightly packed car and started the long drive from one coast to the other. We meandered across the southern tier of states, taking a few detours to visit friends and stop into other refuges along our path. Seven days and 3,230 miles later, we arrived on a mild sunny day in the Bay Area. And that's where my journey begins!

My first three months as manager for the San Francisco Bay National Wildlife Refuge Complex has been a whirlwind of tours, meetings, and public events. I am enjoying every minute of it! I am constantly impressed with the diversity of challenges and opportunities that our staff, volunteers, and partners enthusiastically tackle in a collective effort to protect and conserve the Bay's wildlife and habitats.

This is no easy task when you scan every horizon and see the surrounding



## Refuge Reflections

by Anne Morkill

urban landscape, home to 8 million people and countless developments framing the Bay. Although the establishment of each of our refuges has protected important native habitats in perpetuity, this urban interface continues to bring many threats into our borders. These include non-native feral animals that prey upon native wildlife, invasive exotic plants that out-compete native plants, garbage dumping, contaminants, and unwanted wildfire ignitions, to name a few.

But this interface also provides an outstanding opportunity to reach millions of people and promote an environmental

ethic. The success of our efforts is evident in the number of volunteers and advocates that I have met so far, from our Friends groups, native plant nursery enthusiasts, volunteer docents and educators, to local community activists. My first public event demonstrated this passion for helping our refuges when more than a hundred people joined us in celebrating the Don Edwards San Francisco Bay NWR's 40th anniversary and Pond A17 breach event – and on a weekday!

So my journey continues, and I look forward to new experiences and working with you all along the path!

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Visit gardens at the Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center in Alviso and other local gardens during the

## Eleventh Annual Going Native Garden Tour

Saturday, April 20, 2013  
10 a.m. - 4 p.m. Southern Gardens

Saturday, April 21, 2013  
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Photos: Arvind Kumar, Agri Culture

# Invasive Plant Removal on Farallon NWR Remains Vital for Breeding Success of Seabirds

By Jonathan Shore, Farallon Wildlife Refuge Specialist

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On a global basis . . . the two great destroyers to biodiversity are, first, habitat destruction and, second, invasion of exotic species. *E.O. Wilson*

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The Farallon National Wildlife Refuge is renowned for its large diversity of both plants and animals. Many people may think that because of the remote nature of these islands and its closure to the general public that there is limited impact from humans. However, prior to its closure in the 1960s there had been 150 years of heavy human use by a variety of different interests. Those interests ranged from the collection of common murre eggs for food during the California Gold Rush to the United States military operations of the lighthouse and radar station during World War II. From 1939 to 1972, the United States Coast Guard lived on the island maintaining the lighthouse until it could become fully automated. In 1968, PRBO Conservation Science (formerly Point Reyes Bird Observatory) established a permanent research station on the island where they remain to this day as cooperators with the U.S. Fish and Wildlife Service. These varied activities introduced many nonnative species to the islands. Without natural competitors, these nonnative species are flourishing and causing damage to the native ecosystem. The nonnative house mouse is well-known for being the most invasive animal on the island but perhaps few are aware of the many invasive plants that the refuge is attempting to control.

The biggest adversary in the effort to control invasive plants on Farallon NWR is the New Zealand spinach (*Tetragonia tetragonioides*) plant. This plant was brought to the island as a food source which then escaped the confines of the garden. Typically, plants sprout during the winter rains and by April they can begin to dominate the landscape. If left uncontrolled, spinach plants will grow over the rock crevices that

the seabirds require to nest in. The spinach may also prevent some seabirds from digging nesting burrows. In a worst-case scenario, several seabird species such as Cassin's auklets and Ashy storm-petrels may be discouraged from breeding on Southeast Farallon Island, causing a decline in their respective populations.

Despite the relatively small size of Farallon NWR, much effort goes into invasive plant management. In 2012, 168 hours of labor went into this important task. The work can be grueling and strenuous, requiring hours of pulling plants by hand and on steep, rocky slopes. The work in 2012 was mainly completed by Wildlife Refuge Specialist Jonathan Shore and two refuge interns, Catherine Frock and Bryan White.

From January to March, Shore and Frock spent much of their time hand-pulling invasive plants primarily within or near the restricted access areas. In the restricted access area, there are far fewer invasive plants than the non-restricted areas such as where island facilities are located or where active studies are being conducted. Observations suggest that much of the invasive plant spread on the island is caused by staff and researchers tracking plants on their clothing and shoes. In order to prevent the spread of invasive plants around the island, the restricted access areas are searched and pulled at least once a year. The plants at the focus of this effort include the usual suspects of New Zealand spinach, Common mallow (*Malva neglecta*), and Goose foot (*Chenopodium murale*).

Extra care is also needed to avoid disturbing the sensitive wildlife. Between April and July, there is limited plant control effort on the island because of the huge influx of seabirds that arrive to nest on top of the ground and rocks and inside underground burrows and rock crevices. In order to limit disturbance to the nesting seabirds, many areas are not accessed, and foot traffic



Wildlife refuge specialist, Jonathan Shore, pulls New Zealand spinach in the restricted access area on the Farallon National Wildlife Refuge. Photo by Catherine Frock/USFWS

is limited to areas where there are trails and where research and monitoring is being conducted.

Herbicide application is also necessary to control invasive plants to keep up with their rapid growth. There was additional assistance from other volunteers and refuge staff who were dubbed "Team Spinach" during the annual effort to apply herbicide directly onto the invasive plants. Team Spinach begins as soon as the majority of the seabirds have completed their breeding and before the New Zealand spinach plants go to seed. This generally falls somewhere in early August. In addition to Shore and White, the team assembled for this trip included Refuge Manager Gerry McChesney, San Francisco Bay Refuge Complex Supervisory Wildlife Biologist Joy Albertson, and interns Rebecca Cook and Jennifer Taylor. This year's hand-pulling and herbicide application combined was responsible for treating 95% of New Zealand spinach on the island.

The Farallon NWR contains a diversity of invasive plants which requires a huge effort to manage and control. Equally challenging is the effort involved with maintaining this remote island field station. But the sight of thousands of auklets, storm-petrels, puffins, murre, and cormorants perched on their nests and their young chicks making the first jump into the ocean makes the effort all worthwhile.

# One Man's Vision: A Refuge on the Bay

By Doug Cordell, Public Affairs Officer

One of the unsung heroes of the decades-long effort to create the San Francisco Bay's first National Wildlife Refuge is the man who came up with the idea, a visionary Santa Clara County Planner named Art Ogilvie.

According to Florence LaRiviere, founding member of the Citizens Committee to Complete the Refuge, it was the late Ogilvie who, in the mid-1960s, first brought a group of citizen-activists together to discuss the possibility of a refuge on the Bay.

"I saw a notice in the paper one morning," she recalled. "It said something like, 'If you're worried about what's happening to the lands along the Bay, come to my office—I have an idea about how we can protect them.'"

The notice was signed by Art Ogilvie, and some 20-30 people, including LaRiviere, showed up in response. The work they began that day eventually led to a 1972 law creating the San Francisco Bay National Wildlife Refuge—later re-named the Don Edwards San Francisco Bay National Wildlife Refuge in honor of the Bay Area Congressman who introduced the legislation.

On October 31, 2012 over 100 enthusiastic supporters, including U.S. Reps. Mike Honda and Zoe Lofgren, gathered at the refuge to celebrate its 40th anniversary and recognize local heroes like Art Ogilvie who were instrumental in making it a reality.

To commemorate Ogilvie's unique contribution, a small island on the refuge in Coyote Creek was named in his honor. At the Halloween day event at the refuge's Environmental Education Center in Alviso, CA, Anne Morkill, manager of the San Francisco Bay National Wildlife Refuge Complex, presented a framed map of Ogilvie Island to Art's son, Jon, who had flown in from Arizona for the occasion.

Morkill noted that while the creation of the refuge was the result of many people's efforts, "certainly one of the most important [advocates] was Art Ogilvie."

In accepting the map of Ogilvie Island, Jon Ogilvie spoke of his father's passion for preserving the wild lands around San Francisco Bay. Speaking after the event, he expanded on his father's motivations.



*Art Ogilvie's son Jon accepts recognition of his late father's accomplishments from Refuge Complex Manager Anne Morkill.*

"My dad was a passionate preservationist. He wanted to save things for future generations."

His father's passion did not come without costs, however. As the fight to protect undeveloped lands around the Bay heated up, Art Ogilvie became something of a lightning rod.

"We used to get threatening letters in the mailbox," Jon said. "But my dad was very strong-willed. When he wanted something, he went after it."

LaRiviere noted what a singular accomplishment it was to establish a refuge on the Bay.

"There were no urban refuges at that time," she explained.

She credited Ogilvie's unusual determination with much of their success.

"He was very soft-spoken," she said, "but he had a strange ability to keep us interested in doing the legwork. Part of it was that he expected it to happen. He never said, 'We won't get it done.' He was a gentle soul, but he had a goal he was persistent in pursuing."

Following the celebration at the Environmental Education Center, attendees were shuttled to a nearby levee to see the latest step forward for the historic South Bay Salt Pond Restoration Project—a high-tide pond breaching that brought San Francisco Bay waters rushing into 130 acres of refuge land.

Jon Ogilvie was there to witness it on his father's behalf.

"It was a bit overwhelming," he said of the day's events. "But I'm highly honored. It's so wonderful to have my dad acknowledged for his contributions. How many people have that kind of impact?"



*Art Ogilvie, courtesy of the Ogilvie family.*

# SOUTH BAY BIRD FEST

SATURDAY, MAY 11, 12-3 PM



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AT THE ENVIRONMENTAL EDUCATION CENTER IN ALVISO

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# Let's Go Outside!

## Be a Refuge Rambler!

Explore the Don Edwards San Francisco Bay National Wildlife Refuge with others in our walking club. It's a great way to meet new people and see wildlife while getting physically fit. Once a month from March to October, we will gather at designated times and locations on the Don Edwards Refuge (or areas adjacent to the refuge) to walk the trails together. Staff or a volunteer will be present to greet the group, check off trail passports and walk the trail. These walks will range from 1.5 - 9 miles and will be located in Fremont, Alviso, Menlo Park, Sunnyvale, Redwood Shores and Mountain View.

These walks are self-paced. Take your time to enjoy the outdoors, discover nature, and meet fellow nature-lovers. People of all ages are welcome.

Becoming a Refuge Rambler is easy and free. You are under no obligation. Complete the registration form below, or download the form on the refuge web site at [http://www.fws.gov/refuge/don\\_edwards\\_san\\_](http://www.fws.gov/refuge/don_edwards_san_)

francisco\_bay. Mail it to Carmen Minch, 1 Marshlands Rd, Fremont, CA 94555. In a couple of weeks, you will receive a Refuge Rambler patch, a trail passport, and a schedule with trail descriptions of the trails featured for 2013.

The trail passport helps keep track of all the trails you completed. If you complete 7 out of the 8 trails featured, you become a Refuge Rambler All-Star! Submit your passport in person at the Visitor Center on October 19 and receive your 2013 t-shirt. Or, you can mail your passport to the refuge by October 31 and the t-shirt will be mailed to you. All passports will be returned.

Want to join in on the fun but don't want to be a member? No problem. All trails will be advertised in *Tideline* and on our web site. Choose the trails you want to walk and show up at the designated location and time. No reservations needed. Bring your friends! There are over 30 miles of hiking trails on the refuge just waiting to be explored.



## Sign me up for the Refuge Rambler Club!

Complete the form below and receive a patch, a schedule, trail descriptions, and a passport.

Mail the form to Carmen Minch, 1 Marshlands Rd, Fremont, CA 94555

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Email Address: \_\_\_\_\_

Email is for notification of any changes to scheduling.



**Celebrate the 40th Anniversary of the Endangered Species Act and take a tour of the Don Edwards San Francisco Bay NWR's Warm Springs Unit. This unit is normally closed to the public.**

**When:** April 20, 2013

**Times:** 10:00 a.m. - 12:00 p.m. and 1:00 p.m. - 3:00 p.m.

**Description:** Come see the wildflower blooms around some of the last intact vernal pools in the East Bay! Visitors will enjoy learning about the unique features of a vernal pool grassland and about the endangered species supported by this habitat, particularly the beautiful endangered Contra Costa goldfield.

**When:** May 18, 2013

**Time:** 10:00 a.m. - 11:30 a.m.

**Description:** Take this tour on Endangered Species Day and hear how the Endangered Species Act protects threatened and endangered species like the California tiger salamander, vernal pool tadpole shrimp, and the Contra Costa goldfield. Wildflower blooms and dipping for California tiger salamander larvae will be dependent on the amount of rain received in the winter.

**Call Kirsten at 510-792-0222 ext 362 for reservations. Space is extremely limited and reservations are required. Driving directions will be emailed once reservations are confirmed.**

# Thank you San Francisco Bay Wildlife Society Donors!

*We gratefully acknowledge the following donors who have made gifts to the San Francisco Bay Wildlife Society between October 1, 2012 and December 31, 2012. These gifts will be used for publishing Tideline, capital, environmental education, habitat restoration, and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.*

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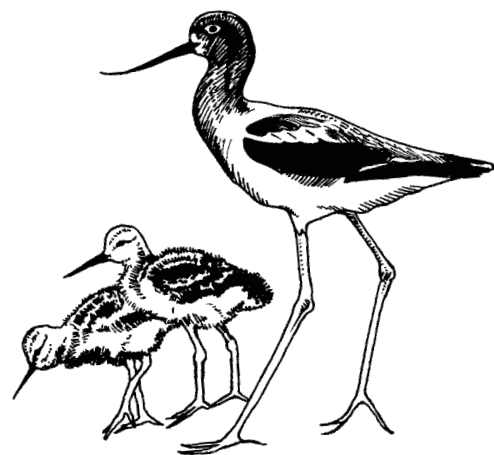
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## Help Us Help the Refuge

**Mail your donation to: San Francisco Bay Wildlife Society, P.O. Box 234, Newark, CA 94560.  
You may also become a member at [www.sfbws.com](http://www.sfbws.com).**

For a gift membership, call 510-745-8170.

San Francisco Bay Wildlife Society is a not-for-profit 501(c)(3) organization which raises money and awareness for the San Francisco Bay National Wildlife Refuge Complex.

**YES!** I want to support San Francisco Bay Wildlife Society and its programs with my membership. My dues include a subscription to *Tideline* and 15% discount at the Don Edwards SF Bay National Wildlife Refuge bookstore. Enclosed is my contribution of:

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# Watching Our Watersheds now available!

By Julie Kahrnoff

A powerful, interactive and free educational tool is now available for educators everywhere, and for visitors to the Don Edwards San Francisco Bay National Wildlife Refuge. If you're curious about the creeks, baylands, and urban drainage networks, or would like to teach your students about the local watershed, this computer program using satellite technology may be just the tool.

Watching Our Watersheds (WOW) is a project to map the creeks, urban drainage networks, watersheds, baylands, and points of interest in Santa Clara Valley. Anyone can now download these maps and view them interactively through Google Earth.

These maps have many layers including past landscapes of the San Francisco Bay. With WOW you can compare the waterways and habitats of the late 1800s to the present-day landscape. Within the maps exist points of interest such as diaries of Forty Niners who stopped in San José on their way to and from the gold mines, lists of birds and plants from early botanists and ornithologists, and some of the earliest landscape photography taken in the state. Archives were searched for every photograph, map, and manuscript

revealing aspects of the Santa Clara Valley's former ecological landscape. Each map comes with a User's Guide to navigating in Google Earth and answers to FAQs about the WOW project and the individual layers in the map. The maps cover western, central and southern Santa Clara County.

This interactive program allows educators to show pathways of urban runoff and teach about watershed health. Currently, the Living Wetlands program uses WOW in the classroom to locate the student's school to show what watershed they are in, the closest water body to the school, and the type of historical habitat they are in. It is used to teach what urban runoff is and ways to reduce it. Intern Diane Luu observed that when WOW was presented in the classroom, "the kid's eyes lit up just being able to see an aerial view of their school. It really tied in everything the students had been learning about watersheds and helped create the connection of personal responsibility". Students and teachers can add their own points of interest and personalize their own watershed map.

Go to the Santa Clara Valley Water District Website at <http://www.valleywater.org/WOW.aspx> and begin using this great resource!

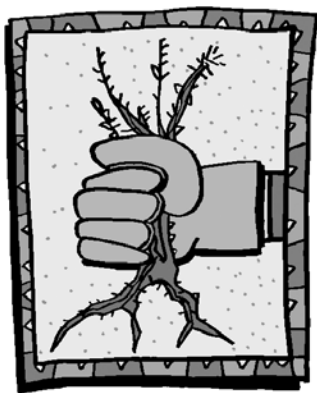
You can also visit the new computer station at the Environmental Education Center in Alviso. With touch screen capabilities you can locate your home, find your local wastewater treatment plant, or follow the storm drain in front of your school. The kiosk also offers information on storm water pollution prevention and history of the bay. The kiosk even features endangered species and illustrate where certain endemic and native species can be found.

The watershed maps were prepared by Fugro Consultants, Inc. with the San Francisco Estuary Institute, the Oakland Museum of California, CLEAN South Bay, and many other collaborators and colleagues.

Major funding was provided by the San Francisco Bay Wildlife Society, along with Santa Clara Valley Water District, Committee for Green Foothills, City of Palo Alto, Santa Clara County Creeks Coalition, and Santa Clara Valley Urban Runoff Pollution Prevention Program.

For western Alameda County watershed maps in the Google Earth format, check out the Oakland Museum of California's web site at <http://museumca.org/creeks/GIS/index.html>.

## Don Edwards San Francisco Bay National Wildlife Refuge



# Earth Day Service Day

## Saturday, April 20, 2013

### 9:00 a.m. - 12:00 p.m.

Help us protect wildlife and the environment  
while enjoying great Bay views!

Join the Don Edwards Refuge and Save the Bay at our Annual Earth Day Cleanup at Ravenswood Point in East Palo Alto. We'll supply tools and gloves. Wear sturdy shoes, a hat, and sunscreen. Prepare to get dirty and to have fun! Minors must be accompanied by an adult.

**RESERVATIONS REQUIRED** at [www.savesfbay.org](http://www.savesfbay.org).  
Please call (408) 262-5513 ext. 106 for more information.

# Spring Activity Schedule

## March

### Saturday, March 2

#### \*Marshlands of Dreams

Visitor Center, Fremont

10:30 a.m. – 11:30 a.m.

Join Paul Mueller on a 1-mile walk of the LaRiviere Marsh Trail to find traces of the past. Prior to marsh restoration, learn how Californians utilized the area for farming, quarrying, salt production, and transportation.

#### \*History of the Salt Pond Restoration Project

Environmental Education Center, Alviso

2:00 p.m. – 3:00 p.m.

Attend an illustrated history of the who, what, when, where, why, and how of the South Bay Salt Pond Restoration Project. The presentation includes a hands-on visual demonstration of how marsh protects us from flooding. All ages are welcome. Presented by Joseph Garcia. Call 408-262-5513 ext. 106 for more information.

#### Twilight Marsh Walk

Visitor Center, Fremont

5:00 p.m. – 6:30 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands (1 1/3 mile) Trail. At the setting of the sun we will observe the beginning of nature's night shift. Come discover the sights, sounds, and smells of the refuge as night descends. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext 363. Led by Mary and Gene Bobik.

### Sunday, March 3

#### California Phenology Workshop

Environmental Education Center, Alviso

10:00 a.m. – 11:00 a.m.

Come learn how seasonal changes affect migration patterns, breeding, budding and blossoming. In this phenology workshop, you can put your citizen science skills to work and monitor the growth of native plants. RESERVATIONS RECOMMENDED. Call Julie at 408-262-5513 ext.104.

### Saturday, March 9

#### A Trip Back in Time

Visitor Center, Fremont

10:30 a.m. – 12:00 p.m.

Revive the vanishing knowledge of the history of the Don Edwards San Francisco Bay National Wildlife

Refuge grounds by strolling the trails with docent Ray Studer. Using a collection of old photographs, the last vestiges of a way of life such as salt production, the old railroads, and homes can be traced back to the 1850s that led to the construction of the town of Newark in 1876.

### Sunday, March 10

#### Story Hunters - Part 1

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Discover what stories lie hidden on the Don Edwards Refuge in this series by Art Garibaldi. After a brief introduction on how to use our GPS units, we'll give you a set of coordinates that will lead you to the landmarks that embody the rich human history that helped shaped refuge lands. GPS units are available for loan. Call 510-792-0222 ext. 363 for reservations.

### Saturday, March 16

#### \*Going Green - South Bay Salt Pond Restoration

Environmental Education Center, Alviso

10:00 a.m. – 11:00 a.m.

Join an interpretive walk to photograph the wildlife and wetlands in the South Bay Salt Pond Restoration Project. Learn and be part of history of the wetlands restoration. Knowing the area will both increase your appreciation for the baylands and the ability to see them in a whole new way. Discover plants and animals in its habitat and the best time to see them. Led by Park Ranger Joseph Garcia. Call 408-262-5513 ext. 106 for reservations.

#### Waterfowl Watch

Environmental Education Center, Alviso

1:30 p.m. – 3:00 p.m.

What's the difference between a duck and a goose? Come to the Environmental Education Center to find out! You'll learn more about our local quackers and honkers. Then join us on a leisurely walk to see which ducks are residing at the refuge this year. Open to all ages. Led by Jennifer Fraga. Call Debra at 408-262-5513 ext. 102 for reservations.

#### \*Family Bird Walk

2:30 p.m. – 4:30 p.m.

Visitor Center, Fremont

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 363.

#### Night Sky Party!

Environmental Education Center, Alviso

7:30 p.m. – 9:00 p.m.

Meet the stars of Spring! Join our amateur astronomers to learn about constellations. Make a star chart and then venture outside to view the night sky through a telescope. Afterwards, warm up with some hot chocolate. Bring your own binoculars or spotting scopes if you have them. Dress warmly. Fun for the whole family! Program will go on sprinkling rain or shine. Heavy rain cancels. RESERVATIONS REQUIRED - Call Debra at 408-262-5513 ext. 102.

### Sunday, March 17

#### Bay Bike Ride

Visitor Center, Fremont

10:00 a.m.

Go on an 11-mile bike ride with docent Gregg Aronson along Marshlands Road and on the Shoreline Trail to observe birds and the occasional leopard shark! Pass through several habitat types along the way including salt marsh, salt pond, and the bay. The paved and dirt trails are almost flat and trail and hybrid bicycles highly recommended. Helmets are required. Recommended for more experienced bicyclists. Program cancels if it rains the day before and the day of due to mud. Call 510-792-0222 ext. 363 for reservations.

### Sunday, March 24

#### Nature Drawing for Kids

Visitor Center, Fremont

10:30 a.m. – 12:30 p.m.

Does your child have an interest in the arts? Introduce your child to outdoor sketching in this workshop by Travis Turner and increase their observations skills. We will learn how to draw what we see by incorporating common shapes, and learn about color value. We will then head out onto the trail and practice the various techniques. Paper and pencils will be provided. This program takes place outside. Dress warmly. Rain cancels. Kids age 7-12 only! Call for reservations at 510-792-0222 ext. 363. Minors must be accompanied by an adult.

#### \*Bird Migration Walk

Ravenswood Unit (SF2), Menlo Park

2:30 p.m. - 4:00 p.m.

Our wetlands are an important stop on the Pacific Flyway, a major bird migration route. Stroll with docent Laurel Stell to learn why the birds migrate and why they stop along the San Francisco Bay. Let's spot the birds in action. Trail is easy and level. All ages and abilities welcome. Meet at the SF2 trail parking area on the west side of the Dumbarton Bridge. For information and directions, call 408-262-5513 ext. 106.

### Saturday, March 30

#### Coyote Creek Lagoon – 4.0 miles roundtrip

Fremont, Driving Directions Below

9:00 a.m.

**Let's Go Outside!**

Meet new people while getting fit and healthy! This is the 1st walk featured in the Refuge Rambler club. This trail is a compacted gravel levee that is flat and level.

The walk is self-paced and you may turn back at any time. You do not need to be a Refuge Rambler to join this walk. See page 7 to learn more about the Refuge Rambler Club. No reservations are needed. Hats, water, and sunscreen are strongly recommended. A Refuge Representative will be there to greet you. Directions: The south trailhead can be reached by taking the South Fremont Blvd/Cushing Pkwy exit from I-880 in Fremont. Drive south on Fremont Blvd. until it dead ends. There is a parking lot on the right next to 48481 Fremont Blvd. Meet in the parking lot. There are no restroom facilities on this trail.

**\*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.**

Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

**\*Beginning Bird Watching**  
**Environmental Education Center, Alviso**

**9:30 a.m. – 11:00 a.m.**

Ever wonder what birds we have in our very own community? This will be a great way to learn about many local and migratory birds. Ceal Craig will start with a slideshow indoors to show you how to recognize the regulars, then borrow binoculars and take a walk to try out your new skills. All ages welcome. Reservations required. Call Debra at 408-262-5513 ext. 102.

**The Remarkable Gray Fox**

**Visitor Center, Fremont**

**2:00 p.m. – 3:30 p.m.**

What is a typical annual lifecycle of a gray fox? What makes them different from all other foxes? Gray foxes are highly successful survivors. We will observe their habitat during our walk and learn the answers to these questions and more. Good walking shoes recommended. Led by The Fox Guy – Bill Leikam.

# April

## Saturday, April 6

**\*Going Green - South Bay Salt Pond Restoration**

**Environmental Education Center, Alviso**

**10:00 a.m. – 11:00 a.m.**

Join an interpretive walk to photograph the wildlife and wetlands in the South Bay Salt Pond Restoration Project. Learn and be part of history of the wetlands restoration. Knowing the area will both increase your appreciation for the baylands and the ability to see them in a whole new way. Discover plants and animals in its habitat and the best time to see them. Led by Park Ranger Joseph Garcia. Call 408-262-5513 ext. 106 for reservations.

**Twilight Marsh Walk**

**Visitor Center, Fremont**

**6:30 p.m. – 8:00 p.m.**

Experience the salt marsh at twilight on an easy stroll along Tidelands (1 1/3 mile) Trail. At the setting of the sun we will observe the beginning of nature's night shift. Come discover the sights, sounds, and smells of the refuge as night descends. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext 363. Led by Mary and Gene Bobik.

## Sunday, April 7

**\*Bird Watching for Beginners**

**Visitor Center, Fremont**

**9:30 a.m. – 11:30 a.m.**

Thousands of birds winter on the Don Edwards Refuge every year. In this beginner's program, we will go over the use of binoculars, how to use a bird guide, and identify the birds we see on the trail. Recommended for ages 10 and up. Dress warmly and wear comfortable shoes. Heavy rain cancels. Led by Carmen Minch.

**Animals After Dark**

**Environmental Education Center, Alviso**

**1:00 p.m. – 2:30 p.m.**

As night descends and we fall into a deep slumber, some creatures are just waking up. Learn how these fascinating animals are specially adapted for the night

environment. RESERVATIONS RECOMMENDED  
– All ages are welcome. Call Julie at 408-262-5513 ext. 104.

## Saturday, April 13

**A Trip Back in Time**

**Visitor Center, Fremont**

**10:30 a.m. – 12:00 p.m.**

Revive the vanishing knowledge of the history of the Don Edwards San Francisco Bay National Wildlife Refuge grounds by strolling the trails with docent Ray Studer. Using a collection of old photographs, the last vestiges of a way of life such as salt production, the old railroads, and homes can be traced back to the 1850s that led to the construction of the town of Newark in 1876.

**\*History of the Salt Pond**

**Restoration Project**

**Environmental Education Center, Alviso**

**2:00 p.m. – 3:00 p.m.**

Attend an illustrated history of the who, what, when, where, why, and how of the South Bay Salt Pond Restoration Project. The presentation includes a hands-on visual demonstration of how marsh protects us from flooding. All ages are welcome. Presented by Joseph Garcia. Call 408-262-5513 ext. 106 for more information.

**\*Family Bird Walk**

**2:30 p.m. – 4:30 p.m.**

**Visitor Center, Fremont**

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 363.

## Sunday, April 14

**Intro to Nature Drawing for Teens and Adults**

**Visitor Center, Fremont**

**10:30 a.m. – 12:30 p.m.**

Learn the basics of sketching nature. We will learn how to draw with negative shapes and shadows, and how to use color and light to add dimension. We will discuss how the changing horizon lines can offer depth. There will be opportunities to practice these techniques on the trail. Paper and pencils will be provided. Dress for the weather. Program begins in the pavilion. Program is for ages 13 and up. Call for reservations at 510-792-0222 ext. 363. Led by Travis Turner.

**Story Hunters - Part 2**

**Visitor Center, Fremont**

**2:00 p.m. – 3:30 p.m.**

Discover what stories lie hidden on the Don Edwards Refuge in this series by Art Garibaldi. New coordinates will lead you to two new landmarks that embody the rich human history that helped shaped refuge lands. We'll begin with a brief introduction on how to use our GPS units. GPS units are available for loan. This program is open to everyone. Call 510-792-0222 ext. 363 for reservations.

# Spring Activity Schedule

## Saturday, April 20

**Earth Day Service Day**

**Ravenswood Point, East Palo Alto**

**9:00 a.m. – 12:00 p.m.**

Help protect wildlife! Join the refuge and Save the Bay for our annual Earth Day Service Day. For more information, call 408-262-5513 ext. 106. RESERVATIONS ARE REQUIRED. Please reserve your spot through [www.savesfbay.org](http://www.savesfbay.org). Minors must be accompanied by an adult.

**\*The Rebirth of a Former Salt Pond - An Earth Day Gift**

**Ravenswood Unit (SF2), Menlo Park**

**1:00 a.m. – 3:00 p.m.**

Docent Jane Moss will lead you on a 1-mile walk through the ever-changing panoramas surrounding a former salt pond. Welcome the return of nesting shorebirds and learn about the exciting ways this area is being reshaped as wildlife habitat. Trail is easy and level. All ages and abilities welcome. For information and reservations, call 408-262-5513 ext. 106.

**Wildflower Drawing for Families and Adults**

**Environmental Education Center, Alviso**

**11:00 a.m. – 12:30 p.m.**

Increase your confidence in drawing and learn skills to help you draw what you see. We will begin inside with exercises designed to help you learn more about flowers while learning to draw lifelike representations. We will then go outdoors, weather permitting, and draw flowers in the wildflower garden. Wildflowers will be brought inside in the event of rain. We will provide materials, but if you have a sketch pad, pencil, and a portable set of colored pencils or watercolors, bring them along. Appropriate for ages 8 to adult. Children, please bring an adult with you who would like to participate. Adults without children are also welcome. All skill levels welcome. Call Debra at 408-262-5513 ext. 102 for reservations.

## Sunday, April 21

**Bay Bike Ride**

**Visitor Center, Fremont**

**10:00 a.m.**

Go on an 11-mile bike ride with docent Gregg Aronson along Marshlands Road and on the Shoreline Trail to observe birds and the occasional leopard shark! Pass through several habitat types along the way including salt marsh, salt pond, and the bay. The paved and dirt trails are almost flat and trail and hybrid bicycles highly recommended. Helmets are required. Recommended for more experienced bicyclists. Program cancels if it rains the day before and the day of due to mud. Call 510-792-0222 ext. 363 for reservations.

**\*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.**

**Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513**

# Spring Activity Schedule

## \*A Taste of the Refuge

Visitor Center, Fremont

11:00 a.m. - 12:30 p.m.

Take a guided walk on Tidelands Trail and discover which plants are edible or have medicinal uses. We'll taste some of these plants on the refuge, or in commercially made products. Led by Carmen Minch.

## \*Chompers and Stompers

Environmental Education Center, Alviso

2:00 p.m. - 3:30 p.m.

Ever wondered why birds come in so many shapes, sizes, and colors? Come and find out why some birds exhibit wacky behaviors. We will examine different bird specimens in action. RESERVATIONS REQUIRED - All Ages are welcome. Call Julie at 408-262-5513 ext. 104 for reservations.

## Saturday, April 27

### Ravenswood Trail - 4 mile-loop

Meet at the Trailhead in Menlo Park.

Directions Below

9:00 a.m.

Let's Go  
Outside!

Meet new people while getting fit and healthy! This is the second walk featured in the Refuge Rambler club. This trail in Menlo Park is four miles, flat, and level.

The walk is self-paced and you may turn back at any time. You do not need to be a Refuge Rambler to join this walk. No reservations are needed. Hats, water, and sunscreen are strongly recommended. Refuge staff will be there to greet you at 9 a.m. Directions: Ravenswood Trail is on the west side of the Dumbarton Bridge. From the East Bay, cross over the Dumbarton Bridge and exit at the Ravenswood Unit sign. Drive east 0.3 miles on the frontage road until you see a brown metal gate and the Ravenswood Trail Sign. From Menlo Park, drive Hwy 84 toward the Dumbarton Bridge. Exit at the Ravenswood Unit sign and drive east on the frontage road. Cross under the bridge and back west 0.6 miles until you see the brown metal gate and refuge sign.

## Explore the Weep

Environmental Education Center, Alviso

10:00 a.m. - 1:00 p.m.

Join microbial ecologist Dr. Wayne Lanier on a short van ride to study microbial communities. The Weep is a shallow persistent pond fed by seepage. Throughout the year, it undergoes very wide swings in salinity and the result is a uniquely rich microbial community

of Cyanobacteria, Archeobacteria, Diatoms, Dinoflagellates, and protozoa. We will compare Weep salinity changes to tide-driven salinity changes measured by Student Scientists in LaRiviere Salt Marsh ponds in Fremont. Boots are recommended! Ages 10 and up. RESERVATIONS REQUIRED - Call Debra at 408-262-5513 ext. 102.

## All About Owls

Environmental Education Center, Alviso

1:30 p.m. - 3:00 p.m.

Learn all that you've ever wanted to learn about owls here at the refuge. Where do owls eat? How do we not hear them when they flap their wings? Are owls the brainiacs of the bird world? Through an interactive presentation and owl pellet dissection, we'll find the answers to all these questions. Led by Paul Bridges. Call Debra at 408-262-5513 ext. 102 for reservations.

## The Remarkable Gray Fox

Visitor Center, Fremont

2:00 p.m. - 3:30 p.m.

What is a typical annual lifecycle of a gray fox? What makes them different from all other foxes? Gray foxes are highly successful survivors. We will observe their habitat during our walk and learn the answers to these questions and more. Good walking shoes recommended. Led by The Fox Guy - Bill Leikam.

## Sunday, April 28

### Nature Yoga

Visitor Center, Fremont

10:00 a.m. - 11:30 a.m.

Enjoy the benefits of Yoga outdoors with great views of the salt marsh. Through story and postures, learn what attracted people and wildlife to the Bay. There will be a short hike to the site from the Visitor Center. Bring a yoga mat. A limited number of mats are available to borrow. Wear comfortable clothing. Consult with your doctor before participating. All ages and abilities welcome. Reservations are required. Rain cancels. Call 510-792-0222 ext. 363. Led by Carmen Minch.

### Life at the Bottom of the

### Food Chain

Visitor Center, Fremont

10:00 a.m. - 12:00 p.m.

Wetlands microbes are often called "the lungs of the earth." Explore the dynamics of microbial communities in LaRiviere Marsh ponds. Join microbiologist Wayne Lanier, PhD for a brief presentation; then a microscope hike to LaRiviere Marsh where we will sample and view the most ancient creatures on earth. See how they produce the oxygen we breathe and take up the carbon dioxide we produce. Discover how tides and salinity shape these vital communities. We will also have a research report from three Student Scientists who have measured varying pond salinity since September. Easy short hiking level. Ages 9-90 years. Call 510-792-0222 ext. 363 for reservations.

# May

## Saturday, May 4

### \*Going Green - South Bay Salt Pond Restoration

Environmental Education Center, Alviso

10:00 a.m. - 11:00 a.m.

Join an interpretive walk to photograph the wildlife and wetlands in the South Bay Salt Pond Restoration Project. Learn and be part of history of the wetlands restoration. Knowing the area will both increase your appreciation for the baylands and the ability to see them in a whole new way. Discover plants and animals in its habitat and the best time to see them. Led by Park Ranger Joseph Garcia. Call 408-262-5513 ext. 106 for reservations.

### A Trip Back in Time

Visitor Center, Fremont

10:30 a.m. - 12:00 p.m.

Revive the vanishing knowledge of the history of the Don Edwards San Francisco Bay National Wildlife Refuge grounds by strolling the trails with docent Ray Studer. Using a collection of old photographs, the last vestiges of a way of life such as salt production, the old railroads, and homes can be traced back to the 1850s that led to the construction of the town of Newark in 1876.

### Twilight Marsh Walk

Visitor Center, Fremont

7:00 p.m. - 8:30 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands (1 1/3 mile) Trail. At the setting of the sun we will observe the beginning of nature's night shift. Come discover the sights, sounds, and smells of the refuge as night descends. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext 363. Led by Mary and Gene Bobik.

## Sunday, May 5

### Bay Bike Ride

Visitor Center, Fremont

10:00 a.m.

Go on an 11-mile bike ride with docent Gregg Aronson along Marshlands Road and on the Shoreline Trail to observe birds and the occasional leopard shark! Pass through several habitat types along the way including salt marsh, salt pond, and the bay. The paved and dirt trails are almost flat and trail and hybrid bicycles highly recommended. Helmets are required. Recommended for more experienced bicyclists. Program cancels if it rains the day before and the day of due to mud. Call 510-792-0222 ext. 363 for reservations.

### \*A Taste of the Refuge

Visitor Center, Fremont

11:00 a.m. - 12:30 p.m.

Take a guided walk on Tidelands Trail and discover which plants are edible or have medicinal uses. We'll taste some of these plants on the refuge, or in commercially made products. Led by Carmen Minch.

**\*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.**

Visitor Center, 2 Marshlands Road, Fremont - (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso - (408) 262-5513

## Saturday, May 11

### **SOUTH BAY BIRD FEST!** Environmental Education Center, Alviso 12:00 p.m. – 3:00 p.m.

Join us for a day of exploration as we celebrate our feathered friends with guided walks, games, crafts, face painting, and various other activities. Explore avian antics in a LIVE BIRD SHOW showcasing bird behavior. Get up close and personal with real refuge birds and their habitats on the Flying Frenzy Expedition and learn how you can help birds. Don't miss our annual bird-brained bash! Everything is FREE! Fun for the whole family. No reservations necessary. Visit our website for directions. For more information contact Debra at 408-262-5513 ext. 102 or Julie at ext. 104.

## Sunday, May 12

### **\*Mother's Day Beginning Bird Watching** Environmental Education Center, Alviso 9:30 a.m. – 11:00 a.m.

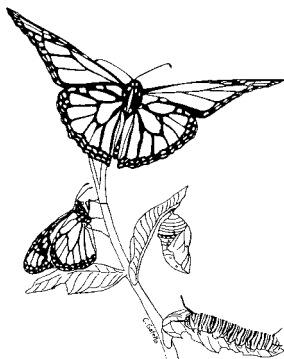
Come join us for a special Mother's Day Beginning Bird Watching. This will be a great way to spend time with family and learn about many local and migratory birds. We'll start with a slideshow indoors to learn how to recognize the regulars, then borrow binoculars and take a walk to try out your new skills. All ages welcome. Program is led by Ceal Craig. Call Debra at 408-262-5513 ext. 102 for reservations.

### **Nature Drawing for Kids** Visitor Center, Fremont 10:30 a.m. – 12:30 p.m.

Does your child have an interest in the arts? Introduce your child to outdoor sketching in this workshop by Travis Turner and increase their observations skills. We will learn how to draw what we see by incorporating common shapes, and learn about color value. We will then head out onto the trail and practice the various techniques. Paper and pencils will be provided. This program takes place outside. Dress warmly. Rain cancels. Kids age 7-12 only! Call for reservations at 510-792-0222 ext. 363. Minors must be accompanied by an adult.

### **Story Hunters - Part 3** Visitor Center, Fremont 2:00 p.m. – 3:30 p.m.

Discover what stories lie hidden on the Don Edwards Refuge in this series by Art Garibaldi. New coordinates will lead you to two new landmarks that embody the rich human history that helped shaped refuge lands. We'll begin with a brief introduction on how to use our GPS units. GPS units are available for loan. This program is open to everyone. Call 510-792-0222 ext. 363 for reservations.



## Saturday, May 18

### **National River Cleanup Day** Environmental Education Center, Alviso 10:00 a.m. – 12:00 p.m.

Come help out with urban runoff pollution prevention as we join others around the world in an effort to keep our rivers clean. Together with other concerned citizens, we'll pick up trash and tidy up a local body of water. Come with a hat, sunscreen, and a great attitude and we'll provide the rest. Space is limited, so call Debra at 408-262-5513 ext. 102 for reservations and location information.

### **Drawbridge Van Excursion** Environmental Education Center, Alviso 1:30 p.m. – 4:00 p.m.

There's a ghost town in the San Francisco Bay? That's right! Nestled on an island in the salt marshes of South San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful town full of nature lovers, or a rip-roaring town full of two-fisted rowdies? Find out at this program led by Ceal Craig. We'll start with a slideshow, and then take a short van excursion to view Drawbridge across Coyote Creek. Program is intended for adults and space is very limited. RESERVATIONS ARE ESSENTIAL. Call Debra at 408-262-5513 ext. 102. (Note: we do not visit the town itself – we go to the closest spot that one can legally view Drawbridge.)

### **Endangered Species Day** Warm Springs Unit, Fremont 10:00 a.m. - 11:30 a.m.

Did you know that 2013 is the 40th anniversary of the Endangered Species Act? Register for this exclusive tour of our normally closed Warm Springs Unit. This unit specifically protects threatened and endangered species like Contra Costa goldfields, vernal pool tadpole shrimp, and California tiger salamanders. Hear how the Act protects these species and more. Wildflower blooms and dipping for California tiger salamander larvae will be dependent on the amount of rain received in the winter. Space is extremely limited due to the sensitive habitat. Call 510-792-0222 ext. 362 for reservations and driving directions.

## Sunday, May 19

### **Nature Yoga** Visitor Center, Fremont 10:00 a.m. – 11:30 a.m.

Enjoy the benefits of Yoga outdoors with great views of the salt marsh. Through story and postures, learn what attracted people and wildlife to the Bay. There will be a short hike to the site from the Visitor Center. Bring a yoga mat. A limited number of mats are available for borrow. Wear comfortable clothing. Consult with your doctor before participating. All ages and abilities welcome. Reservations are required. Rain cancels. Call 510-792-0222 ext. 363. Led by Carmen Minch.

### **\*Butterfly Garden Scavenger Hunt** Environmental Education Center, Alviso 11:00 a.m. – 12:30 p.m.

Do you have an eye like a hawk? Do you have a nose like a fox? If you want to know how you compare, come and see if you can find the wonders of nature in the hunt of a lifetime. Prove your naturalist skills as you use your newfound tools to make a craft. RESERVATIONS RECOMMENDED – All Ages are welcome. Call Julie at 408-262-5513 ext. 104.

# Spring Activity Schedule

### **Intro to Photo Taking Techniques** Visitor Center, Fremont 1:00 p.m. – 3:00 p.m.

Take photographs that will have a bigger impact by learning the basics of composition, framing, and metering. A short slideshow on simple photo taking techniques will be followed by a walk on the trail to practice those techniques. Bring your point-and-shoot camera, cell phone, SLR, or even a cell phone/tablet with a camera if you have one. Limited number of point-and-shoot cameras available to borrow. Call 510-792-0222 ext. 363 for reservations. Led by José Garcia.

## Saturday, May 25

### **Newark Slough Trail – 5.8 miles roundtrip** Visitor Center, Fremont 9:00 a.m.

**Let's Go Outside!**

Meet new people while getting fit and healthy! This is the 3rd walk featured in the Refuge Rambler club. This trail is compacted dirt, flat and level. The walk is self-paced and you may turn back at any time. You do not need to be a Refuge Rambler to join this walk. Go to [http://www.fws.gov/refuge/don\\_edwards\\_san\\_francisco\\_bay](http://www.fws.gov/refuge/don_edwards_san_francisco_bay) to learn more about the Refuge Rambler Club. No reservations are needed. A Refuge Representative will be there to greet you. Hats, water, and sunscreen are strongly recommended.

### **\*History of the Salt Pond Restoration Project** Environmental Education Center, Alviso 2:00 p.m. – 3:00 p.m.

Attend an illustrated history of the who, what, when, where, why, and how of the South Bay Salt Pond Restoration Project. The presentation includes a hands-on visual demonstration of how marsh protects us from flooding. All ages are welcome. Presented by Joseph Garcia. Call 408-262-5513 ext. 106 for more information.

### **The Remarkable Gray Fox** Visitor Center, Fremont 2:00 p.m. – 3:30 p.m.

What is the typical annual lifecycle of a gray fox? What makes them different from all other foxes? Gray foxes are highly successful survivors. We will observe their habitat during our walk and learn the answers to these questions and more. Good walking shoes recommended. Led by The Fox Guy – Bill Leikam.

**\*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.**

**Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513**

# Field Trips to the Refuge

## General Education Program Information

We offer FREE field trip programs at two sites at the Don Edwards San Francisco Bay National Wildlife Refuge. Wetland Round-Up field trip programs are offered at our Headquarters in Fremont, and Wetland Round-Up and Living Wetlands are offered at the Environmental Education Center in Alviso. These programs actively involve teachers, adult volunteers, and students in investigating the diverse habitats and wildlife at the refuge. The hands-on, small-group activities are designed to teach basic ecological concepts and to introduce endangered species, migratory birds, and wetland habitats to the students. *All programs have been correlated to the appropriate State of California Education Standards.*

Educators and adult leaders conduct their own field trips after attending a Field Trip Training or Workshop. The Trainings and Workshops allow you to design and conduct your own field trip. In addition, adult volunteers must be recruited to lead the activities at the different learning stations and to chaperone the rotation groups of students. We provide easy to follow “scripts” for each station, but both “leaders” and “chaperones” are strongly encouraged to attend a Field Trip Workshop. New teachers must attend the New Teacher Training. It is our policy that lead educators must attend a workshop every third year. Location of activities and trail conditions may vary. Please call for accessibility information.

## Field Trips at the Learning Center in Fremont

Explore the habitats of the refuge! Investigate the creatures of the mudflats, collect plankton from the slough, and taste the pickleweed from the marsh. This field trip is designed for grades K-6, for up to 65 students. **Our field trip program is fully booked for spring. Please contact us for more information.**

Contact the Environmental Education Staff at Fremont:

Office: (510) 792-0222 x 475 Cell: (510) 377-7269

E-mail: [ee.hq.intern@gmail.com](mailto:ee.hq.intern@gmail.com)

## Field Trip Workshop Dates at the Learning Center in Fremont

Tuesday, February 26, 4:00 p.m. – 7:00 p.m.

Wednesday, March 27, 4:00 p.m. – 7:00 p.m.

Thursday, April 25, 4:00 p.m. – 7:00 p.m.

Please call the Environmental Education Intern at (510) 792-0222 x 475 to reserve your place and for further information.

## Field Trips at the Environmental Education Center in Alviso

**Wetland Round-Up Field Trips** - Investigate the butterflies in the butterfly garden, taste pickleweed in the salt marsh, or discover the creatures that live in the slough water on a Wetland Round-Up Field Trip. This field trip program is designed for up to 65 students in grades K-6. **Our field trip program is fully booked for spring.**

Please call the Environmental Education Intern at (408) 262-5513 ext. 103 for more information.

## Field Trip Workshops

Teachers that have not yet attended a field trip workshop **must** attend one of the following **workshops** listed below. We highly recommend that Parent Leaders and Chaperones attend the workshop and **strongly encourage** returning teachers to attend the workshop with their parent volunteers.

## Field Trip Workshop Dates at the Environmental Education Center in Alviso

Thursday, February 28, 4:00 p.m. – 6:00 p.m.

Thursday, March 21, 4:00 p.m. – 6:00 p.m.

Thursday, April 18, 4:00 p.m. – 6:00 p.m.

**For more information call the Environmental Education Staff at Alviso: (408) 262-5513 ext. 103 or email: [eec.refuge@hotmail.com](mailto:eec.refuge@hotmail.com)**

## Living Wetlands Education Program

The Living Wetlands Program provides first-hand learning environment for students and educators to explore the topics of watershed health, wetlands, and habitat preservation. Activities and presentations focus on the relationship between personal habits and their effects on local wetlands. Living Wetlands is an environmental education program offered at no cost through the cooperative efforts of the City of San Jose, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society.

## Living Wetlands Program Offerings:

**Integrated Field Trip Program (5th – 12th grades):** This program incorporates multiple activities related to wetlands and watershed health. Participating classes will receive one pre-classroom presentation from Living Wetlands educators, a field trip to the Don Edwards Refuge, and one post-classroom presentation. All include hands-on activities and demonstrations. For the Integrated Program, participating classes must be from the following cities: San Jose, Alviso, Milpitas, Santa Clara, Saratoga, Monte Sereno, Los Gatos, Campbell, and Cupertino. There is a limitation to 60 students per field trip, and a 1:10 chaperone to student ratio is required.

**Classroom Presentations (5th – 12th grades):** Currently there are three classroom presentation activities available: Watersheds and Wetlands; Mysteries of Wastewater Treatment; and Marsh Lab Study. Each of these presentations takes approximately one hour. Please contact us for specific classroom presentation needs.

**Field Trip and Guided Tours for other Schools, Colleges, Universities, and related organizations:** General presentations and guided tours are available and are generally 1.5 hours in length.

Educators are encouraged to contact us to discuss options for customizing field trips and classroom presentations. Reservations for the Living Wetlands program are on a first-come basis. For more information, or to make a reservation, call Julie Kahrnoff, the Living Wetlands Program Coordinator at 408-262-5513 ext. 104 or email at [livingwetlands@sfbws.com](mailto:livingwetlands@sfbws.com).

# Scout and Youth Group Programs

The Don Edwards San Francisco Bay National Wildlife Refuge offers free hands-on, programs for youths. During the programs participants learn about endangered species, migratory birds, wetland habitats, and the relationship between personal habits and their effects on the San Francisco Bay. These programs are designed to meet badge/patch requirements of Scout Groups, but anyone can participate. Because of the popularity of such programs, reservations are required. **Badges are not provided.**

Below are the names, dates, and descriptions of the programs. Programs at the Environmental Education Center are sponsored by the Santa Clara Valley Urban Runoff Pollution Prevention Program and the San Francisco Bay Wildlife Society.

## Youth Group Programs at the Environmental Education Center in Alviso

Note: Ratio of 1 adult per 5 children maximum. Space is limited to 20 people, including siblings. Once the program is full there will be a waiting list. Call Debra at 408-262-5513 ext. 102 for reservations.

### Saturday, March 30

#### Webelos Naturalist Badge Environmental Education Center, Alviso 2:00 p.m. – 4:00 p.m.

Anyone out there need to earn a Naturalist badge? We've got the program that's right for Webelos! Learn about birds, migration, flyways, food chains, human impact, and the importance of wetlands. Then take a walk and use our binoculars to spot birds in the wild.

### Saturday, April 6

#### Junior Girl Scout Wildlife Badge Environmental Education Center, Alviso 10:00 a.m. – 12:00 p.m.

Calling all Junior Girl Scouts of Santa Clara County! Anyone out there need to earn a Wildlife badge? We've got the program just for you! Come to the wildlife refuge and learn about features of different creatures, observe animal behavior, see how you can help wildlife, and so much more. Take a walk to explore the habitats at the south end of the bay.

#### Brownie Eco-Explorer Try-It Patch Environmental Education Center, Alviso 2:00 p.m. – 4:00 p.m.

Come and learn about habitats, food chains, and how you can help wildlife. Then take a walk to explore the habitats at the South Bay. We'll have a special craft to round out the day. Space is limited to 20 people and program fills quickly.

### Saturday, April 27

#### Webelos Naturalist Badge Environmental Education Center, Alviso 10:00 a.m. – 12:00 p.m.

Anyone out there need to earn a Naturalist badge? We've got the program that's right for Webelos! Learn about birds, migration, flyways, food chains, human impact, and the importance of wetlands. Then take a walk and use our binoculars to spot birds in the wild.

## Youth Group Programs at the Refuge Headquarters in Fremont

The Refuge Headquarters offer Webelos programs for up to 15 Webelos. Call 510-792-0222 ext. 363 for reservations. All programs are led by June Smith.

### Sunday, March 24 Saturday, April 13 Sunday, May 5

#### Webelos Naturalist Program 10:00 a.m. – 12:30 p.m.

Attention Webelos! Earn your naturalist badge in just 2.5 hours. During this hike, learn about birds, flyways, food chains, and the importance of wetlands. Bring your binoculars, or borrow one of ours.

### PLEASE NOTE CONSTRUCTION AT THE ENVIRONMENTAL EDUCATION CENTER:

The salt ponds (A16 and A17) adjacent to the Environmental Education Center will be undergoing construction for the South Bay Salt Pond Restoration Project. Restoring A16 and A17 will create 130 acres of tidal marsh habitat and 240 acres of shallow water foraging habitat for migratory birds, including nesting islands. *Thank you for your patience during this exciting restoration project!*

## TIDELINE

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### Volume 35, Number 1

Editor: ..... Carmen Minch

To receive *Tideline*, email [carmen\\_leong-minch@fws.gov](mailto:carmen_leong-minch@fws.gov), or write to: *Tideline*, San Francisco Bay National Wildlife Refuge Complex, 1 Marshlands Rd, Fremont, CA 94555

### San Francisco Bay National Wildlife Refuge Complex

Administered by the U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex exists to preserve wildlife habitat, protect threatened and endangered species, protect migratory birds, and provide opportunities for nature study. Seven refuges are managed from the headquarters in Fremont: Antioch Dunes NWR, Don Edwards San Francisco Bay NWR, Ellicott Slough NWR, Farallon NWR, Marin Islands NWR, Salinas River NWR, and San Pablo Bay NWR.

Project Leader: ..... Anne Morkill

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Don Edwards Refuge Manager: ..... Eric Mruz

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Don Edwards Warm Springs Unit Manager: ..... Ivetta Loreda

Farallon Refuge Manager: ..... Gerry McChesney

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North Bay Wildlife Specialist: ..... Louis Terrazas

South Bay Refuges Manager: ..... Diane Kodama

Public Affairs Officer: ..... Doug Cordell

Refuge Planner: ..... Winnie Chan

Chief of Visitor Services: ..... Jennifer Heroux

Park Ranger/Outdoor Recreation Planners: ..... Joseph Garcia and Carmen Minch

Environmental Education Specialists: ..... Tia Glagolev and Genie Moore

Volunteer Coordinator: ..... Paul Mueller

Law Enforcement Officers: ..... Jared Klein and Chris Wilson

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Susan Euing, Allison Fuller, Meg Marriott,

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Administrative Staff: ..... Lucinda Ballard,

Patricia Compton, and Ellen Tong

Maintenance Staff: ..... Juan Flores, James Griffin,

Calvin Sahara, Michael Springman, and Ed Van Til

### San Francisco Bay Wildlife Society

A nonprofit 501(c)(3) cooperating association established in 1987 to promote public awareness and appreciation of San Francisco Bay and fund education and outreach programs at San Francisco Bay National Wildlife Refuge Complex.

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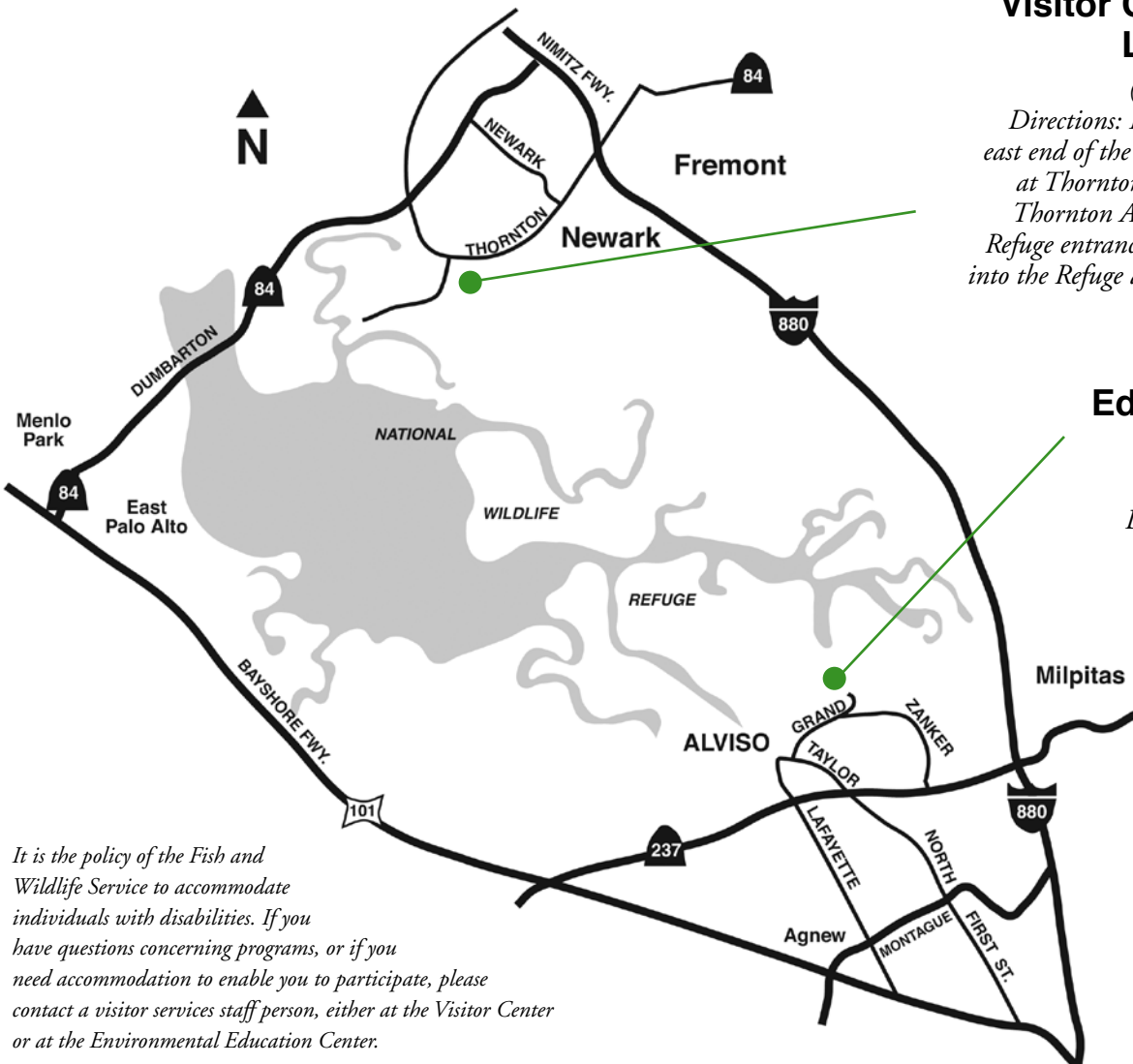
# Tideline



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Don Edwards / Antioch Dunes / Ellicott Slough / Farallon Island / Marin Islands / Salinas River / San Pablo Bay



## Visitor Center, Fremont Learning Center

(510) 792-0222 ext. 363  
*Directions: From Highway 84 (at the east end of the Dumbarton Bridge), exit at Thornton Avenue. Travel south on Thornton Avenue for 0.8 miles to the Refuge entrance on the right. Turn right into the Refuge and follow the signs to the Visitor Center.*

## Environmental Education Center, Alviso

(408) 262-5513  
*Directions: From I-880 or Highway 101, exit on Highway 237 toward Mountain View/Alviso. Turn north onto Zanker Road. Continue on Zanker Road to the Environmental Education Center entrance road (a sharp right turn at Grand Blvd.) The distance from 237 to the entrance road is 2.1 miles.*

*It is the policy of the Fish and Wildlife Service to accommodate individuals with disabilities. If you have questions concerning programs, or if you need accommodation to enable you to participate, please contact a visitor services staff person, either at the Visitor Center or at the Environmental Education Center.*