

Tideline



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

Momentous Discovery!

By Ariel Ambruster and Steve Martarano

The South Bay Salt Pond Restoration Project set out 12 years ago with an ambitious plan to bring wetlands and their endangered inhabitants back to the San Francisco Bay.

An estimated 85 percent of the historic tidal marshes in the San Francisco Bay-Delta Estuary had been filled or significantly altered over the past two centuries for urban development, agriculture, and salt production. In March 2003, 15,100 acres of South Bay salt ponds were acquired, making the South Bay Salt Pond Restoration Project one of the largest tidal wetland restoration projects on the west coast.

Project managers had expected it would take several years for former industrial salt ponds to develop into a salt marsh that would attract the scarce wildlife. So in July 2015, we were surprised and elated when biologists discovered, for the first time, not only endangered salt marsh harvest mice at our first restored lands, but also a breeding pair of endangered Ridgway's rails (known until recently as California clapper rails). These species are just two of the many sensitive wildlife species the restoration project is aimed at supporting.

"We always anticipated the return of endangered species into these restored marshes. It's part of the reason we are undertaking this work," says John Bourgeois of the California State Coastal Conservancy, project leader for the South Bay Salt Pond Restoration Project. "However, the speed at which the habitat and wildlife is recovering



The salt marsh harvest mouse is one of the endangered species the South Bay Salt Pond Restoration Project is restoring habitat for. Photo: Scott Whitman

has been very surprising, even to those of us that do this for a living."

The discoveries were at the Don Edwards San Francisco Bay National Wildlife Refuge's pond A21, in the Coyote Creek delta between Milpitas and San Jose. Project partners had breached the levees of this and former salt pond A20, known collectively as the Island Ponds, in 2006 – it was our first major step to restore salt marsh.

The South Bay Salt Pond Restoration Project is a collaborative undertaking by the Don Edwards Refuge, the Coastal Conservancy, the California Department of

Fish and Wildlife, the Santa Clara Valley Water District and many others. The goal: to restore 15,100 acres of ponds, previously used by Cargill to make salt, and to maximize their benefit to wildlife while providing for wildlife-oriented recreation and maintenance of flood protection.

In those early years, managers focused most of their attention on changing water management in the ponds to support water birds. But the Don Edwards Refuge, in partnership with the Santa Clara Valley Water District, also took steps to bring back salt marsh, sending in steam shovels in 2006

continued next page

to rip open levees at the Island Ponds. That work, funded by the Water District, brought San Francisco Bay tides rushing into the formerly isolated pond waters.

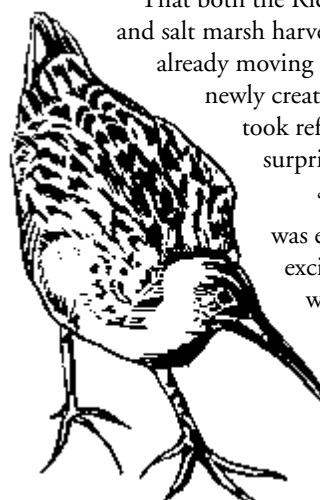
Those Bay tides carried silt, mud and other sediment that layered the pond bottoms. Over the years, enough mud accumulated to support the growth of pickleweed seedlings. In recent years, the stands of salty plants have thrived, becoming thick and extensive enough to shelter and hide furtive creatures such as mice and rails.

Although a breeding Ridgway's rail pair was discovered in July, it was not the first sighting of this species in the area. That happened a little more than year ago, when an employee with the Coastal Conservancy's Invasive Spartina Project noted the presence of a rail. It was thought that the single rail may have been a transient.

Then, in July of this year, Don Edwards Refuge biologists heard a rail mating call – indicating that a breeding pair have claimed the marsh as their home. Three days later they had trapped their first Island Ponds salt marsh harvest mice.

That both the Ridgway's rail and salt marsh harvest mice are already moving into the newly created habitat took refuge staff by surprise. "Everyone was extremely excited; it was well above our expectations for how quickly this would happen, being less than 10 years since the area was breached," said refuge wildlife biologist Rachel Tertes, who heads up the survey efforts for the refuge. "This shows that we're accomplishing what we're trying to accomplish, that if we provide habitat, the species will come."

At the time the restoration was implemented, restoration experts estimated that it would take 15 to 20 years before the habitat would be sufficiently developed to



Pond A21 in 2006 and 2014. Photo: Cris Benton

support the target endangered species. And even once the habitat is established, there is no guarantee in nature that the wildlife will show up on cue.

After setting more than 100 live-traps over three nights, biologists caught four salt marsh harvest mice during those first 2015 surveys. Biologists caught a total of 63 unique small mammals at A21, including salt marsh harvest mice, Western harvest mice, deer mice and house mice. Refuge biologists had not found any mammals at the pond before the breach, only waterfowl and shorebirds.

Tertes estimates there are at least the two Ridgway's rails on A21, and possibly more. The refuge has surveyed the pond during breeding season since 2012, but it wasn't until last summer that detection occurred, even though proper habitat and vegetation were in place.

"We were also pleasantly surprised to find deer mice during the recent surveys," Tertes said. "Though deer mice aren't rare, it was exciting for us to find a new species we generally don't catch during our small mammal trapping efforts."

Project researchers from University of California at Davis have also found a listed fish species at the site: longfin smelt – listed as threatened by the State of California and as candidate for protection by the U.S. Fish & Wildlife Service.

What is so important about a secretive mouse and bird that skulk under bushes, out of public view? One of the key goals

of the restoration is to bring back healthy populations of animals on the brink of extinction. The salt marsh harvest mouse exists nowhere else in the world aside from the edges of the San Francisco, San Pablo and Suisun bays. The rail is a sensitive indicator species of tidal wetland health. The salt marsh harvest mouse and rail are major inhabitants of the small strips of salt marsh that remain here and there around the Bay, remnants of about 15 percent of the wetlands that once surrounded the Bay's open waters.

The presence of these animals is an indication that the restored salt marsh is beginning to function well. These marshes provide many benefits beyond shelter for small animals. They cushion the shorelines from storm tides – a task that will be all the more important if climate change and sea level rise bring higher and more frequent storm surges. In addition, marshes cleanse the stormwater that drains from the uplands, filtering out pollutants. As more

uplands around the Bay are paved, more stormwater pours directly down to creeks and culverts and into the Bay, carrying greater levels of pollutants. The cleansing work of marshes can therefore become increasingly important.

These types of services were overlooked in the late 19th and early 20th centuries when most salt marsh was diked, drained and paved to create buildable land and industrial salt production ponds. Now, the Restoration Project is trying to restore those services.

The Island Ponds were 480 out of

That both the Ridgway's rail and salt marsh harvest mice are already moving into the newly created habitat took refuge staff by surprise.

about 3,000 acres of salt ponds opened to the Bay during the first phase of the restoration. During that time, the project also improved 477 acres of ponds and their islands to benefit shorebirds and water birds that use them for feeding, resting and nesting.

In the next phases of work, restoration managers are looking at launching salt marsh creation on about 3,000 more acres over the next decade on the refuge and nearby state-owned property. Managers hope to jumpstart salt marsh creation, so the wetlands can establish themselves ahead of sea level rise. If wetlands can establish, there is a greater likelihood that the marshes can grow fast enough to stay ahead of rising tides, which would otherwise erode or overflow young marshlands.

Restoration managers also plan in the next phase to begin laying down fill to create gently sloping transitional lands so

mice, rails and other wildlife have routes to escape high tides and storms. A partnership with the U.S. Army Corps of Engineers, called the South San Francisco Bay Shoreline Study, if authorized and funded by Congress, would also add 3,000 acres of wetlands restoration along with levees to protect the San Jose area around Alviso. Currently, around the Bay, salt marsh generally rests against concrete barriers that protect urban areas. These sharp edges leave no refuge for marsh critters.

Efforts along the South Bay shoreline are being duplicated elsewhere, such as in the North Bay at the Cullinan Ranch restoration in the San Pablo Bay National Wildlife Refuge, the Napa wetlands restoration south of the City of Napa, and at the Hamilton restoration near Novato in Marin County.

Bourgeois acknowledges that this restoration is part of a larger regional effort.

“With more wetland restoration projects happening each year, we are definitely on the path toward a healthier San Francisco Bay.”

See *San Jose Mercury News* coverage of the discoveries at <http://bayareanews/1QbQ6Du>

To view 2006 news clips of earthmovers tearing the edge of Pond A21 open, go to <http://www.southbayrestoration.org/videoaudio/> and scroll down to the bottom, under the heading March 2006 Media Clips. You can choose a Quicktime or Windows Media format to watch the video.

Ariel Ambruster is the Public Outreach Coordinator for the South Bay Salt Pond Restoration Project.

Steve Martarano is the Public Affairs Officer for U.S. Fish & Wildlife Service Bay-Delta Fish and Wildlife Office located in Sacramento, California.

A Roadmap for Wetlands

By the time this issue goes to print, you will hopefully have seen the new report, *The Baylands and Climate Change: What We Can Do*, released by the California State Coastal Conservancy. This notable report is an update to the 1999 *Baylands Ecosystem Habitat Goals* that set comprehensive targets for protecting 100,000 acres of the San Francisco Bay estuary. Produced by a multi-disciplinary team of 200 scientists and government experts (including refuge staff) on ecological restoration, climate change, watershed systems and urban engineering, the new report synthesizes the latest science and incorporates projected changes through the year 2100 to generate new recommendations for achieving healthy baylands ecosystems.

The Baylands report confronts the threat of climate change, including rising seas, extreme weather events, lowland flooding, and drought, all of which are already altering the baylands ecosystems. In addition to the rich mosaic of wildlife habitat and open space that ring the Bay, critical urban infrastructure - highways, airports, utility services, pipelines, water treatment plants - are located near the Bay's edge and are threatened by rising tides as well.

The take-home message of the Baylands report is clear - if we act quickly, we can save over 80% of our existing wetlands over the

next hundred years. The solution is to work with nature, not against it, by restoring more wetlands. Instead of relying on expensive concrete seawalls and hardened levees, the report highlights the broad consensus that wetlands provide a sustainable and resilient buffer against storms and rising seas. Wetlands knock down large waves, absorb excess water during floods, filter pollutants, as well as sustain fisheries, give sanctuary to wildlife, and provide open space for people to fish, hunt, hike, bike, and enjoy nature.

The Baylands report is a roadmap for decision-makers, communities, and land managers to guide wetlands restoration and watershed management for decades to come, and it will inform our own restoration efforts on the San Francisco Bay National Wildlife Refuge Complex. Whether you live, work, or play on the Bay, you will find information in the report about your area of interest. It has recommendations for action for the whole region, its major subregions - South Bay, Central Bay, North Bay, and Suisun Bay - and local shorelines. For more information and to review the report, visit www.baylandsgoals.org.



In Memoriam: On October 1, 2015, the Bay Area lost a conservation champion with the passing of former Congressman Don Edwards at the age of 100. In addition to his advocacy for civil and constitutional rights during his three decades in Congress, he was also passionate about the environment. Edwards wrote the legislation that established the San Francisco Bay National Wildlife Refuge in 1972, which was later renamed in his honor in 1995. On behalf of the U.S. Fish and Wildlife Service, I would like to extend our condolences to the Edwards family and express our deep gratitude for his legacy that will live on as part of the National Wildlife Refuge System.

Caspian Tern Nesting a Success!

By Cheryl Strong,
Don Edwards Refuge Biologist

This past spring and summer, the Don Edwards San Francisco Bay National Wildlife Refuge worked with the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service Migratory Bird Office to build new nesting islands for Caspian terns in the South Bay.

As originally reported in the spring 2014 issue of *Tideline*, a total of 10,000 giant bags (“super sacks”) of pea-gravel were placed on five islands: two islands in pond A16 near the Environmental Education Center in Alviso, and three islands in pond SF2 adjacent to the southwest end of the Dumbarton Bridge. We also used a sound system and decoys to lure the birds in a method known as social attraction. While this method has been very successful on a variety of species, sometimes it takes a few years for the birds to “discover” a new site and decide it is an appropriate place to nest.

However this was not the case with these Caspian terns. Caspian terns monitored by U.S. Geological Survey were first observed scouting the site on March 17 and the first nests (in pond SF2) were built by April 20. One island in each of the ponds was the preferred site for these birds.

Given the colonial nature of these birds, this was not a surprise; they like to nest near one another perhaps for the “safety in numbers” concept that provides better predator protection when large numbers of birds nest in close proximity to one another. Approximately 125 nests were surveyed on island 21 in pond SF2, and 60 nests on island 11 in pond A16.

Interestingly, there was also one lone pair nesting by themselves (and surrounded by only decoys) on island 17 in pond SF2. Overall, these two new colonies fledged at least 174 new Caspian terns to join the ranks of the refuge’s migratory bird population. At the end of September, a few fledglings are still hanging out on the refuge before they begin their first trek south for the winter.

Neither island with western snowy plover decoys and sound systems were known to have nests on them, although a pair of snowy plovers was seen prospecting for nest sites on the plover island in pond A16. Snowy plovers are uncommon in the South Bay and are considered “loosely



Pond SF2 on west side of Dumbarton Bridge.



Caspian tern decoys. Photo: Scott Whitman



Caspian tern. Photo: Michael Lufting

colonial;” therefore may not respond as well to social attraction. However, we will continue this experiment for another two years to hopefully entice them to try out these nesting islands.

Decoys and sound systems have been

removed for now, but will be replaced in February 2016 for another, hopefully successful nesting season. In addition to monitoring nests, the Don Edwards Refuge and the U.S. Geological Survey will be banding chicks in the upcoming

2016 season.

Please keep your birding eyes open for birds with leg bands and report any that you see to Cheryl_strong@fws.gov. We gain valuable information about distribution and survivorship from any re-sighted bands that are reported.

Linkin' up with Lichens

by Garima Wilson, *Environmental Education Associate – San Francisco Bay Wildlife Society*

The Golden State has a grand collection of state symbols from the tallest living thing on earth, the redwood as its state tree, to the strikingly beautiful California dogface butterfly as the state insect. Adding on the natural treasures to its collection, California now has a state lichen.

There are approximately 1,900 species of lichens in California. One of them popularly known as the lace lichen (*Ramalina menzeisii*), is common throughout California. Its lace-like appearance makes it easily identifiable. According to the California Lichen Society, on July 15, 2015, Governor Jerry Brown signed a bill designating lace lichen as the California State Lichen. The law takes effect on January 1, 2016, making California the first state to recognize a lichen as a state symbol. (californialichens.org).

Why would a state choose lichen as one of its symbols? Lichens play an important role in our environment and are considered an indicator species. They are known to be sensitive to pollutants, and the presence of certain types of lichen indicates good air quality. In addition, they provide food, shelter, and building materials for some animals, birds, and insects. Some lichens possess medicinal properties, and some are used as natural dyes.

Lichens come in an amazing array of shapes and textures and can be found tangled and hanging from trees and adhered to rocks in brightly colored patches. Another unique attribute of lichen is that it's not a single entity; rather, it is a symbiosis between two different organisms—a fungus, also known as the mycobiont, and an alga or cyanobacterium, which is the photobiont.

Out of the two components, lichens are usually named after the fungal partner. In this symbiosis, the mycobiont provides a habitat to the photobiont, and the photobiont, which contains chlorophyll, manufactures carbohydrates in the presence of light and moisture through the process of photosynthesis.

Some species of lichens can be found in a wide range of habitats. They grow on a variety of natural as well as man-made substrates. Tree trunks, rocks, soil, wooden structures, concrete surfaces are a few to

name. Other species, however, require a specific type of habitat. Biodiversity of lichens varies due to microclimatic conditions such as light, water, and nutrients.

Lichens are grouped into three broad categories: Crustose, which form as a crusty layer on rocks, soil, or trees; Foliose, which have a flat, leaf-like, lobed appearance; and Fruticose, which are tufted, or have a pendant branched appearance.

As mentioned earlier, lichens are known to be sensitive to pollutants, hence they are called bio-indicators. Some species are more sensitive to pollution while some crustose lichens are known to be highly tolerant to pollutants. The abundance of foliose and fruticose lichens indicates good air quality.

Some species of lichens can be observed at the San Francisco Bay National Wildlife Refuge Complex. The Refuge Complex offers a wide range of habitats in which different types of lichen thrive. The bridges on the boardwalk at the Alviso and Fremont locations are covered with lichens, most of which are crustose lichens. Near and at the Ellicott Slough National Wildlife Refuge, *R. menzeisii*, *Usnea sp.*, and *Parmotrema sp.*, are found in abundance. The uplands at the Salinas River National Wildlife Refuge are mostly grasslands with a few conifers in the vicinity, which are also largely covered with *Ramalina sp.* and *Usnea sp.* Their presence

indicates good air quality and a clean environment.

Learn more about lichens and see them up close on January 17 in the Know Your Lichens program. See page 11 for more information.



Lace lichen at Harkin's Slough Unit at Ellicott Slough National Wildlife Refuge.
Photo: Garima Wilson



Ramalina menzeisii at Ellicott Slough National Wildlife Refuge. Photo by Garima Wilson



A blue dasher documented by Robyn Boothby at the Antioch Dunes NWR Bioblitz. Photo: Robyn Boothby

Compiled by Colter Cook. Contributions by Melisa Amato, Diane Kodama, and Rachel Tertes.

The year 2015 has yet again been a busy one for the San Francisco Bay National Wildlife Refuge Complex. Here are just a few highlights from the Antioch Dunes, Don Edwards San Francisco Bay, Ellicott Slough, and Salinas River National Wildlife Refuges.

Antioch Dunes NWR

Antioch Dunes Refuge, partnered with Nerds for Nature and the San Francisco Bay Wildlife Society, had its first bioblitz at the Stamm Unit in July. This grassroots effort to compile an updated species list met with more than 50 enthusiastic participants from the local community. Armed with smart phones and digital cameras, citizens became scientists for the day by documenting every living thing they saw in a two-hour period. The results were uploaded onto iNaturalist.org, and 115 species were identified.

Don Edwards San Francisco Bay NWR

Monitoring of sensitive species continues on the Don Edwards Refuge. Biologists, staff, partners and volunteers conducted winter high tide airboat surveys and breeding call count surveys for endangered California Ridgway's rails; nesting surveys for threatened western snowy plovers; dipnet surveys for threatened California tiger salamanders and endangered vernal

pool tadpole shrimp; and vegetation surveys for endangered Contra Costa goldfields and other rare plants.

Highlights included:

- Documenting the continued presence of salt marsh harvest mice in Newark Slough more than 30 years after it was last trapped.
- Discovering for the first time ever, salt marsh harvest mice and breeding California Ridgway's rail in recently restored Pond A21. Pond A21, known as one of the Island Ponds, was breached in 2006 as part of the South Bay Salt Pond Restoration Project.
- Even under drought conditions, vernal pools at Warm Springs were more productive than the past four years with California tiger salamanders found in 31 ponds, vernal pool tadpole shrimp found in 50 ponds and Contra Costa



Vernal pool tadpole shrimp was surveyed at the Warm Springs Unit at Don Edwards Refuge. Photo: Scott Whitman

- goldfields found in 10 ponds.
- Confirmation of Point Reyes bird's-beak (*Chloropyron maritimum subsp. palustre*), a California Native Plant Society 1B.2 listed rare plant, in LaRiviere Marsh. This small population was first discovered on the refuge in 2010 and will now be catalogued in the Jepson Herbarium.
- Additional native plant and animal surveys conducted on Don Edwards Refuge included: Caspian tern surveys, midwinter aerial waterfowl surveys, monthly waterbird surveys, coverboard surveys for reptiles and amphibians, and the annual fall shorebird survey.

Ellicott Slough NWR

The year 2015 was a banner year for Ellicott Slough NWR's salamander breeding ponds despite the ongoing drought. Prospect Pond produced both Santa Cruz long-toed salamanders and California tiger salamanders, three years after being constructed. The continued growth and spread of the restoration plantings contributed significantly to both species being able to thrive in the pond together.

The rehabilitation work on Ellicott Pond in 2014, in partnership with the Resource Conservation District of Santa Cruz County and the Natural Resources Conservation Service, also proved successful, with water in the pond holding through August. Plenty of Santa Cruz long-toed salamanders and California tiger salamander larvae were recorded during surveys. This accomplishment is especially noteworthy, as prior to the rehabilitation work, the pond was dry for the past three years.

The big surprise of 2015 was Calabasas Pond. The pond naturally retained water through July, and surveys yielded an abundance of healthy long-toed salamander larvae. Also captured during surveys were several California red-legged frog tadpoles with well-developed legs that were close to striking out for land. The first record of California red-legged frog breeding success on the refuge!

Salinas River NWR

Refuge personnel were trained to survey for the Federally Endangered Smith's blue butterfly for the first time on Salinas River



*A Santa Cruz long-toed salamander metamorph at Ellicott Slough NWR.
Photo: Robyn Boothby*

NWR. Funding from the U.S. Fish and Wildlife Ventura Field Office and the expertise of butterfly specialist, Dick Arnold, were key in making this happen. Results from the initial surveys, conducted during the summer of 2015 show a small but healthy butterfly population calling the refuge home. Yearly butterfly and buckwheat surveys will continue to track population trends and changes in habitat.

San Pablo Bay NWR

Restoration activities on San Pablo Bay NWR dominated the year 2015. After being farmed for oat and hay for over a century, Cullinan Ranch was reconnected to the tides almost a year ago. We are excited to observe migratory waterfowl wintering in Cullinan

Ranch and we encourage the public to visit this special place for great birding, hiking, kayaking, fishing, and photography.

The Dickson Ranch Unit of Sears Point was breached on October 25, 2015. Once this restoration project is complete, Sonoma Land Trust will transfer this land to the U.S. Fish and Wildlife Service, which will add 1,000 acres of wetlands to the San Pablo Bay Refuge. This project also includes interpretive kiosks, 2.5 miles of new trails, benches, and a kayak launch.

At Sonoma Creek, the Sonoma Creek Enhancement Project will be complete in December 2015. The project will improve the hydrology of Sonoma Creek Marsh by connecting the existing inner tidal marsh to Sonoma Creek. Once the project is

complete, the marsh will be subject to more natural tidal influence, which will improve the habitat for the endangered salt marsh harvest mouse and Ridgway's rail.

Preliminary plans are being developed to restore Skaggs Island. Once restored, this project will add another 4,400 acres of wetlands to the refuge. This project will be the largest single wetland restoration project in the San Francisco Bay.

Staff at San Pablo Bay National Wildlife Refuge are excited to be providing more tours of the refuge including the new restoration projects. We will be updating our website in the months to come regarding more opportunities to visit the refuge, participate in organized tours, and volunteer. More information is available at http://www.fws.gov/refuge/san_pablo_bay.



*Endangered Smith's blue butterflies are present at Salinas River NWR.
Photo: Jared Klein*

Christmas Bird Count for Kids

at Don Edwards San Francisco Bay National Wildlife Refuge and Coyote Hills Regional Park

January 17, 2016 • 8:00 a.m. - 1:00 p.m.

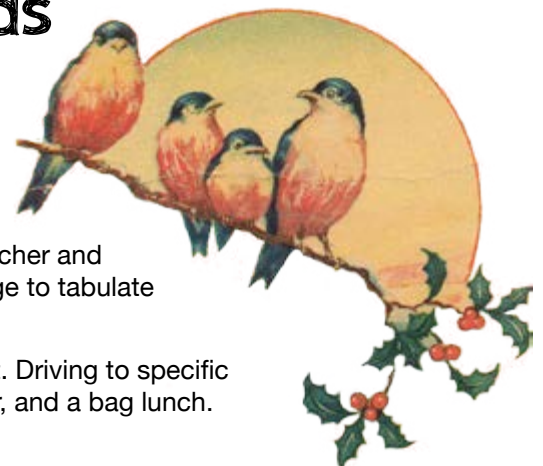
Introduce your child to birdwatching and learn how the Christmas Bird Count contributes to conservation. Go with an experienced birdwatcher and count all the birds you see. We will reconvene at the Don Edwards Refuge to tabulate our data and report our findings.

Recommended for ages 8-16. Minors must be accompanied by an adult. Driving to specific birding sites may be necessary. Bring binoculars if you have them, water, and a bag lunch.

Register at <http://xmasbirdcount4kids.eventbrite.com>.

Meet at the Visitor Center in Fremont at 2 Marshlands Rd, Fremont, CA

Partnered with Sonoma Birding, San Francisco Bay Wildlife Society, San Francisco Bay Bird Observatory, and Coyote Hills Regional Park



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 July 1, 2015 and September 31, 2015. These gifts will be used for publishing *Tideline*, capital, environmental education, habitat restoration, and interpretive programs at the San Francisco Bay National Wildlife Refuge Complex.

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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.

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*. Enclosed is my contribution of:

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I would like to receive news and updates from the San Francisco Bay Wildlife Society.

Thank you for your support!

Message from the San Francisco Bay Wildlife Society

As the year ends, a time for reflection occurs. One question we could ask is: Where have we contributed to help others? Whether you were a volunteer who donated your time this year or a donor providing money for a cause you value, helping others can be satisfying. If you are enjoying the *Tideline*, we hope you will consider helping out the San Francisco Bay National Wildlife Refuge Complex with its seven refuges.

Giving Opportunities

Give the gift of membership in the San Francisco Bay Wildlife Society! Join at <http://sfbws.com/join>. Your gift goes into the general San Francisco Bay Wildlife Society funds to support the San Francisco Bay National Wildlife Refuge Complex programs.

Donate to the Yellow School Bus Transportation Fund that provides equitable access to our Environmental Education programs for students from low-income neighborhoods. <http://sfbws.com/donate>

Help us make a connection at your company: Email mary.deschene@sfbws.com about your company's programs for community involvement and charitable giving and we'll take it from there.

Give the gift of time. You can help your refuge by volunteering to staff the San Francisco Bay Wildlife Society Nature Stores in Fremont or Alviso. Net proceeds fund this *Tideline's* publication. We need your help on weekends and weekdays. A few hours can make a difference! Write info@sfbws.com for details.

Remembering an Environmental Champion

Don Edwards, former U.S. Representative, was a leading champion for the establishment of the Don Edwards San Francisco Bay NWR, authoring a bill in 1972 to establish our first urban National Wildlife Refuge in the United States. He died in October at the age of 100. The *San Jose Mercury News* said it well: "the law preserved a broad expanse of South Bay wetlands, for fish, wildlife and public recreation – blocking the type of development that had filled in large sections of San Francisco Bay in prior decades."

The refuge was named for him in 1995 when he retired from Congress after over 30 years of service and 16 terms as a representative. [Read more here: http://www.mercurynews.com/bay-area-news/ci_28912287/former-rep-don-edwards-1915-2015].

Share your love of the environment and celebrate his legacy: The Edwards' family has suggested memorial donations to the Citizens Committee to Complete the Refuge at www.bayrefuge.org.

Other ways to get involved or learn more? Check out www.sfbws.com and refugeassociation.org. And as always, we welcome your inputs. Send your thoughts to us: info@sfbws.com

*Cecilia (Ceal) D. Craig, PhD
President, FY15-16
SFBWS Board of Directors*



Give the Gift of Membership

This winter give the gift of membership in the San Francisco Bay Wildlife Society to your family and friends.

Your donations will support the environmental education and public outreach programs at the San Francisco Bay National Wildlife Refuge Complex. Use the form on the previous page.

Remember your friends and loved ones through a donation in their name. Send a donation by December 7 and we'll send you a gift card by December 21.



Volunteer Opportunities: Winter 2016

Don Edwards San Francisco Bay National Wildlife Refuge

If you have an interest in wildlife and their conservation, enjoy working with people, and are enthusiastic and dependable, the refuge's Volunteer Program is for you! As a volunteer, you'll receive on-the-job training from staff and other volunteers in the project area you choose. Project areas are: restoration projects, information desk on weekends, interpretive programs, school field trips, and citizen science/community service.

Upcoming Volunteer Orientations for Winter

Volunteer orientations will meet in the auditorium of the Environmental Education Center in Alviso, 11 a.m. to noon.

Tuesday, January 5

Tuesday, February 9

Sunday, January 24

Saturday, February 27

Volunteer orientations in Fremont will meet in the Visitor Center

Sunday, January 3, 11 a.m. - noon

Saturday, February 13, 1 p.m. - 2 p.m.

Volunteer Requirements: attend a volunteer orientation; attend the scheduled trainings; meet the age requirements for the program. Volunteer applications provided at orientation.

Winter Activity Schedule

Children under the age of 16 must be accompanied by an adult.

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

December

Saturday, December 5

Hike the Mallard Slough Trail

Environmental Education Center, Alviso
10:00 a.m. - 12:30 p.m.

Look for birds, mammals, and animal tracks as we explore along the water's edge on this 3.7-mile nature walk. Bring binoculars and your favorite field guide to help enjoy the views. Have at least one liter of water, snacks, and appropriate clothing. This hike runs rain or shine. Led by Steve Stolper. RESERVATIONS REQUIRED. Go to: <http://hikeeectrail.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext. 104.

*Going Green: Restoration of the South Bay Salt Ponds

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 about wetland restoration and why we are doing it. Knowing the area will both increase your appreciation for the baylands and the ability to see them in whole new way. Discover plants and animals in its habitat and the best time to see them. Digital or film welcome. Led by Joseph Garcia. Register at <https://sbspp.eventbrite.com>. Call 510-792-0222 ext. 141 for more information.

Stewardship Day

Visitor Center, Fremont
9:30 a.m. - 12:00 p.m.

If you are interested in improving the refuge for visitors and for wildlife alike, join us at the Visitor Center for a stewardship project. We will do either a trash cleanup or a planting/weeding project. Dress appropriately for the task and for the weather. We will have gloves to lend and will provide the tools. Bring your own water bottle. Meet in the parking lot at the Visitor Center. Driving an additional 2.5 miles may be required since the project may be at a different location. For more information, or to make reservations, call 510-792-0222 ext. 361.

*Nature Walk for Health

Visitor Center, Fremont
10:30 a.m. - 11:30 a.m.



Take a break from your busy schedule and refresh your spirit with nature at the refuge. Take a guided nature walk on the Tidelands Trail and hear what makes this National Wildlife Refuge unique. The 1.3-mile walk traverses through endangered species habitat and offers great views of south San Francisco Bay. Meet in front of the Visitor Center.

Saturday, December 12

*Marshlands of Dreams

Visitor Center, Fremont
10:00 a.m. - 11:00 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.

Twilight Marsh Walk

Visitor Center, Fremont
4:00 p.m. - 5:45 p.m.

Cap off the day by experiencing the salt marsh at twilight on an easy stroll along Tidelands (1.3 miles) 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. Go to <https://donedwardstwilight.eventbrite.com> or call 510-792-0222 ext. 362. Led by Mary and Gene Bobik.

Sunday, December 13

*Returning the Tide at San Pablo Bay NWR

Cullinan Ranch Trail, San Pablo Bay NWR
9:00 a.m. - 10:00 a.m.

After 125 years, the Cullinan Ranch Unit of San Pablo Bay National Wildlife Refuge is now receiving tidal flow from the bay. After a short talk about what the refuge hopes to accomplish with the restoration, we will take a walk to view the changes. Led by Carmen Minch. Register at <http://www.returningtide.eventbrite.com>. The trailhead can only be accessed from westbound State Route 37. Head westbound on SR 37. Just after passing Walnut Avenue at Mare Island, travel 3.3 miles to the Cullinan Ranch turn-off where a large wooden kiosk is located. There is a small parking lot. If coming from the west, you must drive past the trailhead 3.3 miles. Exit at Walnut Ave, turn around and head west on SR 37.

*Salt Marsh Walk

Visitor Center, Fremont
10:30 a.m. - 12:00 p.m.

Take a walk with docent Gregg Aronson around the wetlands of the wildlife refuge and learn about their history. See examples of salt collection ponds and learn what is being done to convert them back to their original, natural salt marsh state. Hear how wildlife is affected by the two types of habitat and why it is important to control the rate of conversion from salt ponds back to the salt marshes. Binoculars and/or a camera are recommended. Go to <http://donedwardsmarsh.eventbrite.com> or call 510-792-0222 ext. 362.

Holiday Crafts!

Environmental Education Center, Alviso
1:00 p.m. - 2:00 p.m.

Spread the holiday cheer by creating fun hand-made crafts. These nature-based project ideas make great gifts and decorations. Program led by Aja Yee. Appropriate for children 6 and older. Register at <http://eecholidaycrafts.eventbrite.com>.

Animal Olympics Walk

Visitor Center, Fremont
2:00 p.m. - 3:30 p.m.



As we walk along the Tidelands Trail, we will observe and talk about the animals that call the refuge home, and challenge ourselves to move our bodies like them. Can you hop like a jack-rabbit? Establish your territory like a lizard? Or stand like an American avocet? Fun for kids and the entire family. Recommended for those who like to smile and laugh.

Saturday, December 19

*Family Bird Walk

Visitor Center, Fremont
10:00 a.m. - 12:00 p.m.

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. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 362.

*The Basics of Salt Pond Restoration

Environmental Education Center, Alviso
1:00 p.m. - 2:30 p.m.

Learn about the South Bay Salt Pond Restoration Project with Docent Karen Tu. This ambitious project seeks to restore 15,100 acres of former industrial salt ponds to a mix of wetland habitat for wildlife. An interactive talk will be held in the auditorium followed by a walk on the 0.25-mile boardwalk to view the progress thus far. For questions, call 510-792-0222 ext. 141.

Sunday, December 20

*Pacific Flyway

Meet at SF2 Trailhead in Menlo Park
11:00 a.m. - 12:30 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 birds migrate and stop along the San Francisco Bay, and to 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. Register at <https://pacificflyway.eventbrite.com>. Driving Directions: The trailhead is located in the west of the Dumbarton Bridge, on the south side of Highway 84. From the East Bay: cross the Dumbarton Bridge and exit at the Ravenswood Unit sign near the PG&E substation. Drive the frontage road east and under the bridge and back west. Parking is to your right. From the West (Menlo Park): drive Highway 84 toward the Dumbarton Bridge, exit at the Ravenswood Unit sign and drive east on the frontage road. Parking is to your left.

Saturday, December 26

Indicators that Fox are in Your Area

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Do you sometimes see paw prints in mud or scat (poop) on the trails and assume that a dog left it? It could be from something else. Come along with me and I will show you how to distinguish and identify the markings of a gray fox. Gain some insights into the fox's nature and their behavior during the walk. By the time we are through, you will have a set of "tools" you can use to identify the presence of foxes in any area that you are in. Bring a hat, binoculars, and good walking shoes. Led by Bill Leikam, the Fox Guy.

*Jr. Refuge Ranger Program

Visitor Center, Fremont

10:30 a.m. – 12:00 p.m.

Become an honorary Jr. Refuge Ranger by completing activities on the refuge. We will guide you in some of the activities that will help you earn the Refuge Ranger Badge. The rest of the activities can be completed on your own. Those who complete the activities in the booklet for your age group will receive a Jr. Refuge Ranger badge. Register at <http://donedwardsranger.eventbrite.com>.

January

Saturday, January 2

*Nature Walk for Health

Visitor Center, Fremont

10:30 a.m. – 11:30 a.m.



Take a break from your busy schedule and refresh your spirit with nature at the refuge. Take a guided nature walk on the Tidelands Trail and hear what makes this National Wildlife Refuge unique. The 1.3-mile walk traverses through endangered species habitat and offers great views of south San Francisco Bay. Meet in front of the Visitor Center.

Sunday, January 3

Volunteer Orientation

Visitor Center, Fremont

11:00 a.m. – 12:00 p.m.

Begin the New Year with a resolution to volunteer for a good cause. Come to this presentation to see if volunteering at the Don Edwards San Francisco Bay National Wildlife Refuge is right for you. Begin by learning the mission and goals of the San Francisco Bay National Wildlife Refuge Complex, its parent agency U.S. Fish and Wildlife Service, and volunteer positions currently open at the Fremont location. Presented by Carmen Minch.

Saturday, January 9

Drawbridge: A History Revealed

Environmental Education Center, Alviso

10:00 a.m. – 11:00 a.m.

An abandoned 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 people scabbling out a living? How long did it exist? Find out at this program, led by Ceal Craig. Program will be of most interest to adults interested in history or nature; children 13 and over with an adult are welcome. Space is very limited. Note: this program does not include the van tour. RESERVATIONS REQUIRED. Go to <http://dbwinter.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

*Marshlands of Dreams

Visitor Center, Fremont

10:00 a.m. – 11:00 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.

*Jr. Refuge Ranger Program

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Become an honorary Jr. Refuge Ranger by completing activities on the refuge. We will guide you in some of the activities that will help you earn the Refuge Ranger Badge. The rest of the activities can be completed on your own. Those who complete the activities in the booklet for your age group will receive a Jr. Refuge Ranger badge. Register at <http://donedwardsranger.eventbrite.com>.

Sunday, January 10

*Salt Marsh Walk

Visitor Center, Fremont

10:30 a.m. – 12:00 p.m.

Take a walk with docent Gregg Aronson around the wetlands of the wildlife refuge and learn about their history. See examples of salt collection ponds and learn what is being done to convert them back to their original, natural salt marsh state. Hear how wildlife is affected by the two types of habitat and why it is important to control the rate of conversion from salt ponds back to the salt marshes. Binoculars and/or a camera are recommended. Go to <http://donedwardsmarsh.eventbrite.com> or call 510-792-0222 ext. 362.

Marshland Homes

Environmental Education Center, Alviso

12:00 p.m. – 1:00 p.m.

Have you ever wondered where an animal lives or what it might live in? Come explore some different types of animal homes and shelters with Colter Cook. Find out why so many creatures call the Don Edwards Refuge home by solving puzzles, playing games and making your own bird nest. All ages are welcome. Register at <http://eecmarshlandhomes.eventbrite.com>.

Saturday, January 16

Hike the Mallard Slough Trail

Environmental Education Center, Alviso

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

Look for birds, mammals, and animal tracks as we explore along the water's edge on this 3.7-mile nature walk. Bring binoculars and your favorite field guide to help enjoy the views. Have at least one liter of water, snacks, and appropriate clothing. This hike runs rain or shine. Led

by Steve Stolper. RESERVATIONS REQUIRED. Go to: <http://hikeeetrail.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

Geology Walk of the Don Edward Refuge

Visitor Center, Fremont

1:00 p.m. – 2:00 p.m.

Ever wonder what the dirt on the trail is made of, what the rocks are by the shore, and how wetlands are created? Join Jose Garcia at the refuge as he deconstructs the area around you and explains how geology influences the landscape. Discover how knowledge of geology helps rebuild wildlife habitat and provides flood protection for us all. Cameras welcome. Trail is 1.3 miles and family-friendly. Register at <https://geode2.eventbrite.com> or call 510-792-0222 ext. 141.

Twilight Marsh Walk

Visitor Center, Fremont

4:00 p.m. – 5:45 p.m.

Cap off the day by experiencing the salt marsh at twilight on an easy stroll along Tidelands (1.3 miles) 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. Go to <https://donedwardstwilight.eventbrite.com> or call 510-792-0222 ext 362. Led by Mary and Gene Bobik.

Sunday, January 17

Christmas Bird Count for Kids

Visitor Center, Fremont

8:00 a.m. – 1:00 p.m.

Are you new to bird watching or want to know how to get started? Join our Christmas Bird Count for Kids! Go out with an experienced birder to specified locations and tally all the species you see over a 90-minute period. Return to our headquarters where you and your team will summarize your findings. This is a great way to get started in the sport of bird watching, provide scientists the data of what bird was seen and where, and enjoy the outdoors. Recommended for ages 8-16. Parent(s) are needed to drive to nearby birding spots. Bring a bag lunch. Register at <http://xmasbirdcount4kids.eventbrite.com>. Call Carmen at 510-792-0222 ext. 476 for more information.

*Know Your Lichens

Environmental Education Center, Alviso

1:00 p.m. – 2:00 p.m.

Join Garima Wilson for a fun-filled learning experience about the mysterious organisms that you see hanging from the trees or growing on the rocks. You will get to observe and learn about the different species of lichens under the microscope. We will take a short walk to the boardwalk to see the lichens growing on the bridge. All ages are welcome. Register at <http://eeclichens.eventbrite.com>.

Winter Activity Schedule

Children under the age of 16 must be accompanied by an adult.

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

Saturday, January 23

*Family Bird Walk

Visitor Center, Fremont
2:00 p.m. – 4:00 p.m.

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. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 362.

Docent Training

Environmental Education Center, Alviso
1:00 p.m. – 2:00 p.m.

Would you like to become a volunteer or update your training? Come to a Salt Pond Restoration Docent Volunteer Training class where Park Ranger Joseph Garcia will teach you the volunteer process and what new changes are taking place within the refuge. Register at <http://saltpondtrain.eventbrite.com> or call 510 792-0222 ext. 141.

Sunday, January 24

*Duck Walk

Visitor Center, Fremont
11:00 a.m. – 12:30 p.m.

Hundreds of thousands of ducks winter in the San Francisco Bay every year. Hear a short talk on duck identification. Then we'll head out on the trail to try your new skills. A limited number of binoculars are available to borrow. Dress warmly. Heavy rain cancels. Led by Carmen Minch.

History of the National Wildlife Refuge System

Visitor Center, Fremont
1:00 p.m. – 1:30 p.m.

Before heading out on your walk, learn about the national wildlife refuge system in this short talk by Art Garibaldi. Hear why and how the refuge system was created, and what makes it different than a park.

Saturday, January 30

Stewardship Day

Visitor Center, Fremont
9:30 a.m. – 12:00 p.m.

If you are interested in improving the refuge for visitors and for wildlife alike, join us at the Visitor Center for a stewardship project. We will do either a trash cleanup or a planting/weeding project. Dress appropriately for the task and for the weather. We will have gloves to lend and will provide the tools. Bring your own water bottle. Meet in the parking lot at the Visitor Center. Driving an additional 2.5 miles may be required since the project may be at a different location. For more information, or to make reservations, call 510-792-0222 ext. 361.

Indicators that Fox are in Your Area

Visitor Center, Fremont
2:00 p.m. – 3:30 p.m.

Do you sometimes see paw prints in mud or scat (poop) on the trails and assume that a dog left it? It could be from something else. Come along with me and I will show you how to distinguish and identify the markings of a gray fox. Gain some insights into the fox's nature and their behavior during the walk. By the time we are through, you will have a set of "tools" you can use to identify the presence of foxes in any area that you are in. Bring a hat, binoculars, and good walking shoes. Led by Bill Leikam, the Fox Guy.

February

Saturday, February 6

*Love Your Wetlands

Environmental Education Center, Alviso
10:00 a.m. - 11:30 a.m.

Bring your cameras and walking shoes to take photos of the remarkable wetlands of Alviso. Join Park Ranger Jose Garcia on a walking tour and take photos of beautiful vistas and wildlife while learning the science behind the scenery. A fun, affordable, and informative way to spend part of a Valentine's Day weekend. Register at <http://lovewetlands.eventbrite.com> or call 510-792-0222 ext. 141.



*Nature Walk for Health

Visitor Center, Fremont
10:30 a.m. – 11:30 a.m.



Take a break from your busy schedule and refresh your spirit with nature at the refuge. Take a guided nature walk on the Tidelands Trail and hear what makes this National Wildlife Refuge unique. The 1.3-mile walk traverses through endangered species habitat and offers great views of south San Francisco Bay. Meet in front of the Visitor Center.

*The Basics of Salt Pond Restoration

Environmental Education Center, Alviso
1:00 p.m. – 2:30 p.m.

Learn about the South Bay Salt Pond Restoration Project with Docent Karen Tu. This ambitious project seeks to restore 15,100 acres of former industrial salt ponds to a mix of wetland habitat for wildlife. An interactive talk will be held in the auditorium followed by a walk on the 0.25-mile boardwalk to view the progress thus far. For questions, call 510-792-0222 ext. 141.

*Jr. Refuge Ranger Program

Visitor Center, Fremont
2:00 p.m. – 3:30 p.m.

Become an honorary Jr. Refuge Ranger by completing activities on the refuge. We will guide you in some of the activities that will help you earn the Refuge Ranger Badge. The rest of the activities can be completed on your own. Those who complete the activities in the booklet for your age group will receive a Jr. Refuge Ranger badge. Register at <http://donedwardsranger.eventbrite.com>.

Sunday, February 7

*Salt Marsh Walk

Visitor Center, Fremont
10:30 a.m. – 12:00 p.m.

Take a walk with docent Gregg Aronson around the wetlands of the wildlife refuge and learn about their history. See examples of salt collection ponds and learn what is being done to convert them back to their original, natural salt marsh state. Hear how wildlife is affected by the two types of habitat and why it is important to control the rate of conversion from salt ponds back to the salt marshes. Binoculars and/or a camera are recommended. Go to <http://donedwardsmarsh.eventbrite.com> or call 510-792-0222 ext. 362.

*Tiny Drifters

Environmental Education Center, Alviso
11:00 a.m. – 12:00 p.m.

Not interested in the Super Bowl? Have fun with plankton! Learn about the different characteristics of plankton and how they have adapted to survive. We will become planktologists for a day, collect water samples, and identify these incredible organisms under a microscope. All ages are welcome. Program led by Aja Yee. Register at <http://eectinydrifters.eventbrite.com>.

Animal Olympics Walk

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.



This unique walk focuses on wildlife we might see on the refuge. As we meander along the Tidelands Trail, we will observe and talk about the animals that call the refuge home, and challenge ourselves to move our bodies like them. Can you hop like a jack-rabbit? Establish your territory like a lizard? Or stand like an American avocet? Fun for kids and the entire family. Recommended for those who like to smile and laugh.

Saturday, February 13

*Marshlands of Dreams

Visitor Center, Fremont

10:00 a.m. – 11:00 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.

Hike the Mallard Slough Trail

Environmental Education Center, Alviso

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

Look for birds, mammals, and animal tracks as we explore along the water's edge on this 3.7-mile nature walk. Bring binoculars and your favorite field guide to help enjoy the views. Have at least one liter of water, snacks, and appropriate clothing. This hike runs rain or shine. Led by Steve Stolper. RESERVATIONS REQUIRED. Go to: <http://hikeectrail.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

Volunteer Orientation

Visitor Center, Fremont

1:00 p.m. – 2:00 p.m.

It's not too late to set goals and resolutions! Increase your quality of life with a resolution to volunteer for a good cause. Come to this presentation to see if volunteering at the Don Edwards San Francisco Bay National Wildlife Refuge is right for you. Begin by learning the mission and goals of the San Francisco Bay National Wildlife Refuge Complex, its parent agency U.S. Fish and Wildlife Service, and volunteer positions currently open at the Fremont location. Presented by Paul Mueller.

Drawbridge: A History Revealed

Environmental Education Center, Alviso

2:00 p.m. – 3:00 p.m.

An abandoned 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 people scrabbling out a living? How long did it exist? Find out at this program, led by Ceal Craig. Program will be of most interest to adults interested in history or nature; children 13 and over with an adult are welcome. Space is very limited. Note: this program does not include the van tour. RESERVATIONS REQUIRED. Go to <http://dbwinter.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

Sunday, February 14

History of the National Wildlife Refuge System

Visitor Center, Fremont

1:00 p.m. – 1:30 p.m.

Before heading out on your walk, learn about the national wildlife refuge system in this short talk by Art Garibaldi. Hear why and how the refuge system was created, and what makes it different than a park.

Saturday, February 20

*Pacific Flyway

Meet at SF2 Trailhead in Menlo Park

2:00 p.m. - 3:30 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 birds migrate and stop along the San Francisco Bay, and to 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. Register at <http://pacificflyway.eventbrite.com> or call 510-792-0222 ext. 141. Driving Directions: The trailhead is located in the west of the Dumbarton Bridge, on the south side of Highway 84. From the East Bay: cross the Dumbarton Bridge and exit at the Ravenswood Unit sign near the PG&E substation. Drive the frontage road east and under the bridge and back west. Parking is to your right. From the West (Menlo Park): drive Highway 84 toward the Dumbarton Bridge, exit at the Ravenswood Unit sign and drive east on the frontage road. Parking is to your left.

*Family Bird Walk

Visitor Center, Fremont

2:00 p.m. – 4:00 p.m.

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. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 362.

Twilight Marsh Walk

Visitor Center, Fremont

4:30 p.m. – 6:15 p.m.

Cap off the day by experiencing the salt marsh at twilight on an easy stroll along Tidelands (1.3 miles) 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. Go to <https://donedwardstwilight.eventbrite.com> or call 510-792-0222 ext. 362. Led by Mary and Gene Bobik.

Sunday, February 21

*Duck Walk

Visitor Center, Fremont

10:00 a.m. – 11:30 a.m.

Hundreds of thousands of ducks winter in the San Francisco Bay every year. Hear a short talk on duck identification. Then we'll head out on the trail to try your new skills. A limited number of

binoculars are available to borrow. Dress warmly. Heavy rain cancels. Led by Carmen Minch.

*Taste of the Refuge

Visitor Center, Fremont

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

Saturday, February 27

Stewardship Day

Visitor Center, Fremont

9:30 a.m. – 12:00 p.m.

If you are interested in improving the refuge for visitors and for wildlife alike, join us at the Visitor Center for a stewardship project. We will do either a trash cleanup or a planting/weeding project. Dress appropriately for the task and for the weather. We will have gloves to lend and will provide the tools. Bring your own water bottle. Meet in the parking lot at the Visitor Center. Driving an additional 2.5 miles may be required since the project may be at a different location. For more information, or to make reservations, call 510-792-0222 ext. 361.

Fossils and Flumes

Environmental Education Center, Alviso

11:00 a.m. – 12:30 p.m.

Fossils and Flumes help teach children about the South Bay Salt Ponds Restoration Project. Park Ranger Jose Garcia brings fossils from Triassic wetlands he collected in eastern Montana to show the similarities to wetlands today. We'll learn what their function is in nature. Interactive flumes allow for a hands-on experience of how wetlands protect the surrounding area from flooding. Register at <https://ffec.eventbrite.com> or call 510-792-0222 ext. 141.

Indicators that Fox are in Your Area

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Do you sometimes see paw prints in mud or scat (poop) on the trails and assume that a dog left it? It could be from something else. Come along with me and I will show you how to distinguish and identify the markings of a gray fox. Gain some insights into the fox's nature and their behavior during the walk. By the time we are through, you will have a set of "tools" you can use to identify the presence of foxes in any area that you are in. Bring a hat, binoculars, and good walking shoes. Led by Bill Leikam, the Fox Guy.

Sunday, February 28

*Ohlone in the Marshes - Rope

Environmental Education Center, Alviso

1:00 p.m. – 2:30 p.m.

Did people live here 10,000 years ago? How did they survive without stores? Come learn about the Ohlone Native Americans and how they lived off of the land. Take a walk through the marsh, and go shopping in the Ohlone grocery store. Taste an Ohlone pickle and learn how to make rope. Best suited for ages 9 and up. Program led by Aja Yee. Register at <http://eectulerope.eventbrite.com>.

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, Living Wetlands, and Watershed Watchers 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 Workshop. The 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 a Field Trip Workshop.** Location of activities and trail conditions may vary. Please call for accessibility information.

Field Trips at the Learning Center in Fremont

Wetland Round-Up Field Trips – Field trip dates will be offered March – May, 2016. Details about scheduling a spring 2016 field trip will be posted on our website on **Tuesday, November 17, 2015.**

Contact the Environmental Education Staff at Fremont:

Office: 510-792-0222 ext. 475

Cell: 510-377-7269

Email: tia_glagolev@fws.gov

Wetland Round-Up Field Trip Workshops

The workshop dates will be announced online with the Field Trip Registration information (see above).

Field Trips at the Environmental Education Center in Alviso

Wetland Round-Up Field Trips (K - 6th grade) – The field trip lottery will not be offered for spring 2016.

Due to a staffing shortage and the need to revise our programs to support the Next Generation Science Standards we have decided **not to offer the field trip lottery** at our Alviso location this spring.

Staff will be reviewing and revising activities to support the Next Generation Science Standards. The new activities will be designed for K-2nd grade and 3rd – 4th grade. **Updates and materials for review will be posted on the website starting in January 2016.**

We value your participation in the Wetland Round-Up Field Trip Program. We are excited about sharing our new activities and we want your feedback.

If you want to learn more, please contact Genie Moore, 408-262-5513, genie_moore@fws.gov.

Programs for Colleges and Universities

Guided Field Trips are offered at the Environmental Education Center in Alviso.

Programs generally last from 1 ½ hour – 2 hours. *Reservations must be made at least eight weeks in advance of the desired field trip date.* Contact Julie Kahrnoff, at 408-262-5513 ext. 104 or at Julie.kahrnoff@sfbws.com to make a reservation.

Self-guided Tours are also allowed at the Environmental Education Center in Alviso.

All college instructors planning this type of field trip must make a reservation at least eight weeks in advance of the desired field trip date. If your group size is over 25 you will need to acquire a Special Use Permit from our Headquarters office in Fremont. Please contact Genie Moore at 408-262-5513 ext. 100 or at Genie_moore@fws.gov, or Julie Kahrnoff at 408-262-5513 ext. 104 or at Julie.kahrnoff@sfbws.com.

Living Wetlands Program

Living Wetlands provides a 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 their local wetlands. Living Wetlands is an environmental education program offered at no cost through the coopera-

tive efforts of the City of San Jose, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society.

Program Offerings for 5th – 12th grades:

Due to funding restrictions: First priority will be given to schools in the following districts: Alum Rock Union Elementary, East Side Union High, Franklin-McKinley Elementary and San Jose Unified. Second priority will be given to schools in San Jose, Milpitas, Santa Clara, Saratoga, Monte Sereno, Los Gatos, Campbell, and Cupertino.

Integrated Field Trip Program – 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 including hands-on activities and demonstrations. There is a limitation to 60 students per field trip, and a 1:10 chaperone to student ratio is required.

Classroom Presentations – Presentations include an in-depth look at the habitats of the south bay along with the pathways of indoor and outdoor water use. Students will have a better understanding of the role they play in the health of their watershed and what personal actions they can take to help. The presentation takes approximately one hour. Please contact us for specific classroom presentation needs.

For more information, or to make a reservation, call Aja Yee, the Living Wetlands Program Coordinator at 408-262-5513 ext. 102 or email her at aja.yee@sfbws.com

Application for 2015-2016 Transportation Funds

The Yellow School Bus Transportation Fund provided by the U.S. Fish & Wildlife Service and San Francisco Bay Wildlife Society was created to help Title 1 schools and schools with proven hardships to access the Wetland Round-Up and Living Wetlands Field Trip Programs in Alviso and the Newark Slough Learning Center in Fremont.

Refer to our website for more information on the fund, and how to apply:

<http://go.usa.gov/3GJhm>

You may also contact Genie Moore at 408-262-5513 ext. 100 or at genie_moore@fws.gov

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. Children under the age of 16 must be accompanied by an adult. Badges are not provided.

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

Please email Julie to make a reservation and customize your visit at Julie.kahrnoff@sfbws.com.

Into the Wild Adventure (Formerly Webelos Naturalist Badge)

The Webelos and Arrow of Light Adventures present "Into the Wild." Similar to the previous naturalist badge we will 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.

Daisies Journeys

Journeys: 5 flowers, 4 stories, 3 cheers for animals (Sessions 1-6) Between earth and sky (Sessions 1-5)

Brownies Journeys and Badges

Journeys: WOW! Wonders of Water. Life can't exist without water, neither can rainbows! Water does so much for you. Can you return the favor? On this journey you will take action by discovering how to love water, save water, and share water. Badges earned: Household Elf Badge (from WOW badge activity set) - make a natural cleaner, log on ways to save water, clean up trash, discover natural filters. Hiker Badge - go over trail map, leave no trace, detective hike with birds.

Juniors Journeys and Badges

Journeys: Get Moving! Are you prepared to use your energy to save the planet? On this Journey, you'll find out how to reduce your energy use, make buildings energy efficient, and create a plan to fix an energy problem in your community. Badges earned: Gardner (from Get Moving badge activity set) - outdoor garden, native plant garden design, seasonal plants, seeds and soil, plant own native plant to take home. Animal Habitats (from aMUSE badge activity set) - puppet show, habitat exploration, bird house construction, endangered wetlands and animals, clean ups.

Cadette Journeys

Breath (Sessions 1 & 3)
Saturday, February 20

Girl Scouts World Thinking Day

Saturday, February 20
Environmental Education Center, Alviso
1:00 p.m. – 3:00 p.m.

Be part of the global community! February 22 is World Thinking Day. On this day, girls honor their sister Girl Guides and Girl Scouts by taking time to give thanks for their international friendships and recognizing that Girl Scouts of the USA is part of a global community. We invite you to explore and celebrate the meaningful connections that make our lives better. Making positive connections matters because it helps us to be happy. But what does it mean to feel truly connected? Come to the refuge for a guided discussion. RESERVATIONS REQUIRED. Go to <http://gswtd.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104 (Note: badges are not provided).

Youth Group Programs at the Refuge Headquarters in Fremont

The Refuge Headquarters offer Webelos programs for up to 15 Webelos. To register, call 510-792-0222 ext. 362 or at <https://donedwardswebelos.eventbrite.com>. Programs led by June Smith.

Webelos Adventure Into the Wild

Sunday, January 10
Saturday, February 27
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.

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Editor: Carmen Minch

To receive *Tideline*, email 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.

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Deputy Project Leader: Chris Barr
Wildlife Refuge Specialist: Anna Fisher
Don Edwards Warm Springs Unit Manager: Ivette Loreda
Farallon Refuge Manager: Gerry McChesney
Farallon Wildlife Refuge Specialist: Jonathon Shore
North Bay Refuges Manager: Don Brubaker
North Bay Wildlife Refuge Specialists: Melisa Amato and Louis Terrazas
Monterey 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 Jesse Navarro

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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. Find us at www.sfbws.com.

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Tideline is On-Line Visit our web sites at

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WINTER 2015-2016
Volume 38, Number 4

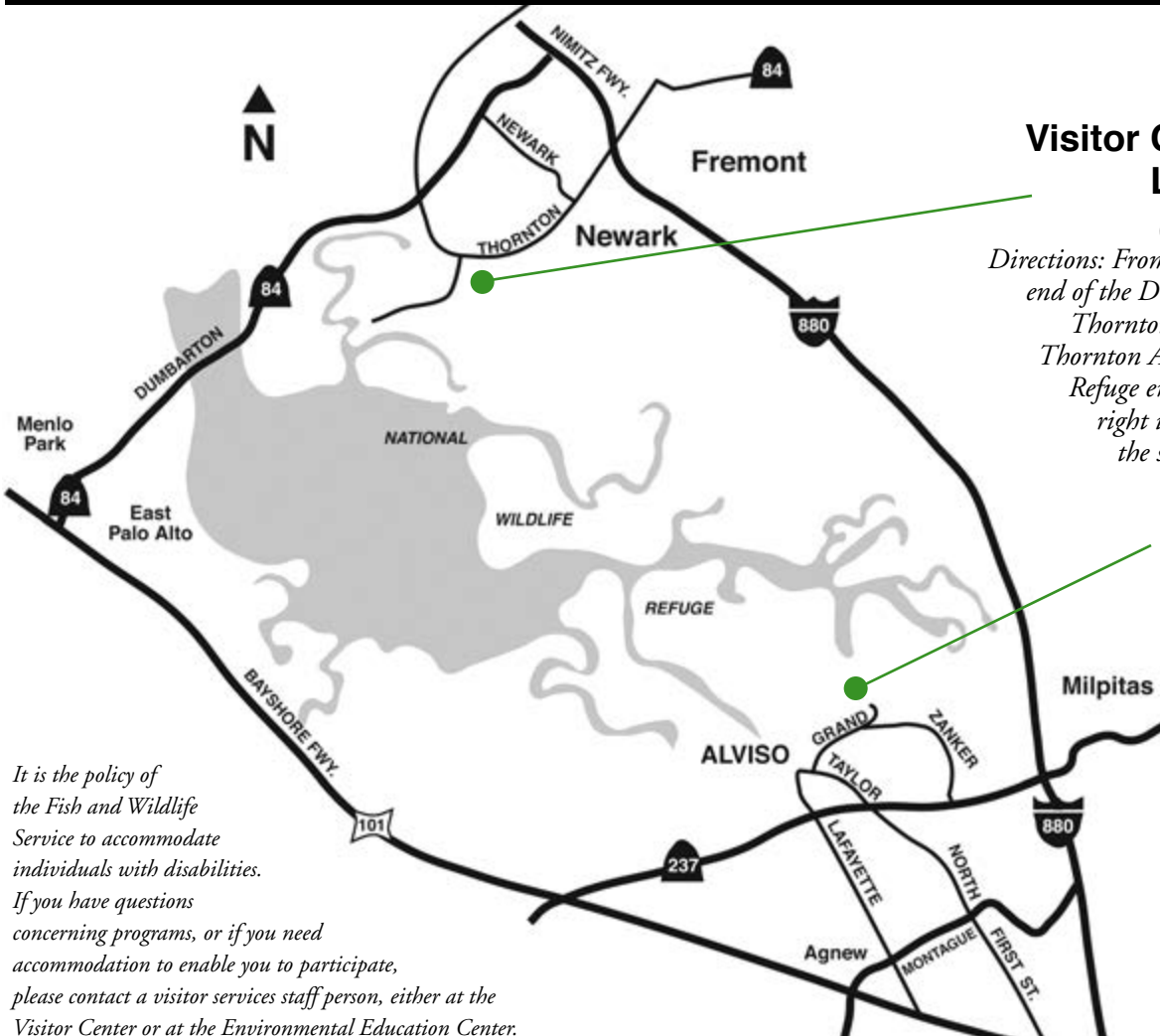


Tideline

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Antioch Dunes / Don Edwards / 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 US-101, exit on CA-237 toward Mountain View/Alviso. Turn north onto Zanker Road. Continue on Zanker Road for 2.1 miles to the Environmental Education Center entrance road (a sharp turn at Grand Blvd.).

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.