

Tideline



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

Innovative Captive-Rearing Techniques Help Preserve Endangered Santa Cruz Long-toed Salamanders

By Diane Kodama

Towards the end of the year, many people track the final countdown of months by upcoming holidays and vacations. For Ellicott Slough National Wildlife Refuge staff, the passage of October, November and December is measured by forecasted storms and the accumulation of rain water in ephemeral (seasonal) ponds throughout Santa Cruz County. During years of normal precipitation, rainfall heralds the migration of the Federally Endangered, Santa Cruz long-toed salamander and the revival of their breeding habitat. Ponds that have masqueraded as grass meadows throughout the summer, slowly fill with water, awaiting the return of the amphibians.

When night falls and the cold winter showers continue, the adult salamanders are on the move, leaving the protection of their upland hideouts. After navigating around barriers such as busy roads, and traveling distances of up to a mile, those that successfully reach a pond swim into the waters to court and lay eggs on stalks of submerged vegetation. Mission accomplished, the adults vanish into another rainy night, making their way back to the safety of their underground shelters.

In 15 to 30 days, miniscule larvae, only a centimeter in length, burst free of the gelatinous eggs, ready to hunt aquatic prey. They now have only three to five months, to grow and gain weight before undergoing metamorphosis.

As the season advances into the New



Rearing tanks lined up behind the office. Photo: Matthew Slater

Year, the ponds are dependent upon the late winter and spring storms to increase in depth and size. When spring gives way to the drier climate of summer, the waters begin to recede. Sensing the impending loss of the pond, the larvae complete their transformation. No longer fish-like in appearance with external feathery gills, they are now metamorphs (newly transformed salamanders) equipped with lungs, four sturdy legs and a defined head, torso and tail, ready to survive on land. About 1/3 the size of an adult, their first venture out of the water takes them to the closest shelter available, such as a bordering willow thicket. There, the young salamanders await a sum-

mer cloudburst or the first autumn storms to follow in the footsteps of the adults, searching for their own upland hideout to call home.

It is February of 2015, and a group of concerned managers and biologists from Ellicott Slough National Wildlife Refuge, the Ventura Fish & Wildlife Office, and the California Department of Fish and Wildlife gather on the banks of Buena Vista Pond. We all look with dismay upon its shrinking size and the staff gauge that reads less than one foot in depth.

continued next page

Tasked with managing lands for an amphibian dependent upon seasonal precipitation, we are faced with the reality of another record-breaking drought year. The pond should be at more than twice its current size and still growing. But with dry weather predicted for the remainder of

management history, we embark upon a rescue rearing operation.

Refuge staff, in collaboration with the Ventura Fish & Wildlife Office and the California Department of Fish and Wildlife, research and develop a rearing protocol to safely and effectively raise the larvae in captive conditions. With the protocol finalized and all approvals completed, we race against

ing them in buckets of pond water. They are grouped by size, as larger Santa Cruz long-toed larvae have been known to predate upon their smaller brethren. By the end of this first rescue effort, more than 100 larvae, ranging in length from one centimeter to five centimeters, have been safely captured. All of them are still several months away from undergoing metamorphosis.

The buckets are carefully transported up the hill to our rearing facilities where we begin the slow procedure of introducing the larvae to the waters of their temporary homes. After several hours of acclimatization, the buckets are finally submerged into the tubs. The larvae vigorously swim out with the current and disappear into the vegetation. All of the onlookers breathe a sigh of relief that the larvae have adapted so well. This process is repeated throughout April until each tub contains 40 to 50 larvae.

By the beginning of May, Buena Vista Pond has dried down to a puddle, unable to support aquatic life. But the promise of the next generation remains with over 400 larvae rescued.

During the first two weeks, we tend to the larvae like new parents. With no previous experience to draw upon, we hover over the tubs every day, watching at feeding time to make sure that all of the frozen blood worms are eaten and searching for any indication of problems. As the larvae noticeably begin to show signs of thriving, everyone gradually relaxes.

The water is tested weekly for dissolved oxygen, pH, ammonia and nitrates, but the vegetation and filtration/oxygen systems are doing their jobs, and the few problems detected are quickly remedied. Taking advantage of an unprecedented opportunity to observe the larvae up close, time is now spent recording behavior, growth patterns and dietary preferences.

By mid-May, the larvae in the tubs containing the largest size class at capture have grown significantly and are showing signs of transformation. The dorsal fins are receding, the gills have reduced to nubs and the camouflage coloration is darkening. In anticipation of their need for land soon, floating platforms are added to all tanks while the water levels are drawn down each week.

It is during a daily check of the platforms that, under a piece of bark cover, our first two metamorphs are discovered.



Santa Cruz long-toed salamander larva. Photo: Matthew Slater

February, it is on track to dry out several months too soon. We are in danger of losing the salamander larvae that is teeming in its waters for the fourth year in a row.

Santa Cruz long-toed's are adapted to California's regular two to three year drought cycles by being long-lived (up to 10 years), and most adults will conserve their energy and resources, during poor rainfall years, by forgoing migration. Buena Vista's population is small compared to other locations, and it has already lost three years of recruitment into the population. This combined with the fact that heavy December rains have triggered the adult migration make it clear that action is needed.

Two new management possibilities are debated: artificially adding water to the pond or attempting an emergency, captive-rearing program. It soon becomes apparent that the heavily vegetated terrain, remoteness of the pond location, and the sheer quantity of water needed to maintain the pond through July, eliminate the addition of water. So for the first time in Ellicott's

the increasingly drier weather to construct our base of operations. The Resource Conservation District of Santa Cruz County joins the rescue efforts, providing funding and assistance in the set-up of the rearing facilities.

By mid-March, eleven 100-gallon tubs are lined up behind the U.S. Fish & Wildlife Service Buena Vista Office. Each tub is filled with water and contains a gravel or soil substrate bottom and a filtration/oxygenation system. The spiked tops of rushes and sedges, planted in the tubs, poke through the mesh lids designed to keep out predators. The facilities are ready, and not a moment too soon. For throughout the planning and set-up phases, the pond has continued to drop in depth, creating poor oxygen conditions and a significant decrease in food resources.

With dip nets in hand, refuge staff, partners and volunteers assemble around the pond to begin the process of capturing salamander larvae. Personnel estimate the total length of each larva caught before plac-

Their glossy black skin and faint orange dorsal pattern stand out against the green moss that they have burrowed into. Both are weighed and examined, passing their health checks with flying colors. The metamorphs are then transferred to a tub with moist soil, wood cover objects and live food.

On this training ground, they are given the opportunity to adjust to land and to hunt for the first time the prey they will encounter in the oak woodlands. After several days of practice they are ready, and the time has come to release the salamanders down by the dried out pond under specially prepared cover boards. With only an estimated five percent of larvae making it to metamorphosis in the wild, it is uncertain how many more metamorphs we should expect to graduate through the rearing process. So with a last draw down of water in the tubs, exposing the land at one end, we wait...

As the tiny salamander slowly marches towards the cover board, we can almost hear the celebratory notes of the graduation song, *Pomp and Circumstance*, floating on the August evening breeze. With the last



Metamorph is being weighed. Photo: Matthew Slater

flash of a tail tip through the vegetation, it disappears into the cool, dark safety that the board provides. The final release of the rescue rearing operation has concluded, and standing there, in the middle of Buena Vista, we savor the moment. For by working together, refuge staff, partners and volunteers have successfully raised and released

more than 300 young Santa Cruz long-toed salamanders back into the wild to follow in the footsteps of the generations that came before.

Diane Kodama is the manager for Ellicott Slough and Salinas River National Wildlife Refuges.

Acre for Wildlife

On the eve of the New Year, I reflected on the amazing accomplishments of our employees and partners towards our mission of conserving and restoring fish, wildlife and plants and their habitats for the benefit of present and future generations of Americans. The year 2015 was particularly notable for the overall number of acres restored to support a diversity of species and habitats on our national wildlife refuges.

Last year started out with a breach event on San Pablo Bay NWR's Cullinan Ranch Unit where 1,200 acres of former hay fields were opened to tidal waters for the first time since being diked more than a hundred years ago. Literally as we cheered for the rushing waters, flocks of shorebirds winged their way into the newly flooded area. Over the next several tidal cycles, thousands of wintering waterfowl such as canvasbacks and northern pintails settled into the unit, validating several decades of hard work by local citizens and conservation organizations to protect the unit from development and plan its restoration.

That remarkable scene was repeated

again and again throughout the year, with the restoration of 960 acres at Sears Point (which will soon be transferred to San Pablo Bay NWR) and 1,400 acres at Bair Island on Don Edwards San Francisco Bay NWR. Additionally, 400 acres of existing tidal marsh were enhanced along Sonoma Creek on San Pablo Bay NWR. These thousands of acres are a substantial contribution towards the regional goal of restoring 100,000 acres of wetlands around San Francisco Bay, which will ultimately benefit marsh wildlife such as the endangered salt marsh harvest mouse and Ridgway's rail in the face of sea level rise.

Elsewhere in the Refuge Complex, more acres for wildlife were also enhanced. Antioch Dunes NWR received another 17,000 cubic yards of donated sand, adding to the 40,000 cubic yards imported in 2014, to rebuild native sand dune habitat essential for the recovery of the endangered Lange's metalmark butterfly. While amphibian

breeding pond habitat at Ellicott Slough NWR has been severely restricted due to the drought, a novel rescue mission resulted in the successful capture, rearing, and release of more than 300 Santa Cruz long-toed salamanders into upland habitats.



Refuge Reflections

*by Anne Morkill,
Refuge Complex Manager*

Progress also continues to be made to control and eradicate invasive weeds that compete with native vegetation and reduce habitat quality for wildlife on the Salinas River, Marin Islands, and Farallon NWRs. With the San Francisco Bay National Wildlife Refuge Complex nestled within the highly urbanized and agricultural landscapes of north-central California, every one of these acres for wildlife counts!

Levee Breach Celebrates Wetland Restoration on San Francisco Bay

By Doug Cordell, Public Affairs Officer

As the morning skies cleared of threatening clouds at a December 10, 2015 ceremony in Redwood City, CA, a hundred-plus guests cheered a levee breach that reintroduced tidal water to inner Bair Island on the Don Edwards San Francisco Bay National Wildlife Refuge for the first time since the area was diked off for agriculture in the 1880s.

The breach culminates a \$7.5 million restoration project overseen by the U.S. Fish & Wildlife Service that will enable the 1500-acre site, the largest undeveloped island in South San Francisco Bay, to grow back into the marshland it was 150 years ago.

“This project is a key piece of the puzzle in restoring the lost wetlands around the Bay,” said Anne Morkill, manager of the San Francisco Bay National Wildlife Refuge Complex, which hosted the event. Morkill cited the benefits wetlands provide not only for wildlife, but in terms of water quality, reduction of flood risk, and expanded opportunities for public recreation.

The Bair Island project notably incorporates a number of public access features, including a pedestrian footbridge onto the site, a newly restored trail and interpretive displays. In addition, volunteers planted native plants to provide habitat for endangered species like the California Ridgway’s rail and the salt marsh harvest mouse.

Represented among the speakers at the Dec. 10 event were key partners of the Service on the restoration project, the Peninsula Open Space Trust, which helped fund the acquisition of the property, and Ducks Unlimited, the contractor on the ambitious effort. California Department of Fish and Wildlife, which manages Middle and Outer Bair Island, was also on hand to celebrate.

Perhaps most important, however, was the participation of representatives from two citizen-activist groups, the Friends of Redwood City and the Citizens Committee to Complete the Refuge, that fought a valiant, decades-long and ultimately successful battle to save the site from development.

Bair Island got its name in the 1920s from Fred Bair, who owned a home and

raised cattle on the land. In the 1940s, the Leslie Salt company acquired the property and built levees for salt-making that divided it into three sections: Outer, Middle and Inner Bair Island. In 1973 the land was again sold, to Mobil Oil, which began a large-scale development plan for the area. In response, the Friends of Redwood City and the Citizens Committee to Complete

the Refuge, together with organizations like the Audubon Society and Save the Bay, mobilized opposition. Eventually, they found a buyer for the land in the conservation community: the Peninsula Open Space Trust, which, in 1999, turned the three sections of the island over to the U.S. Fish & Wildlife Service and the CA Department of Fish and Wildlife.



A levee breach at the Dec. 10 event caps a multi-year restoration that will return the diked-off site to tidal wetlands. Photo: Julie Kitzenberger



Anne Morkill, San Francisco Bay National Wildlife Refuge Complex manager, addresses guests at Dec. 10 Bair Island restoration celebration near Redwood City, Calif. Photo: Julie Kitzenberger

Migratory Bird Treaty Celebrates 100 Years

The year 2016 marks the centennial of the Convention between the United States and Great Britain (for Canada) for the Protection of Migratory Birds (also called the Migratory Bird Treaty), signed on Aug. 16, 1916. The Migratory Bird Treaty, and three others that followed, form the cornerstones of our efforts to conserve birds that migrate across international borders.

The Treaty connects the U.S. Fish & Wildlife Service with our federal, state, private, non-governmental, tribal, and international partners, who share a long, successful history of conserving, protecting, and managing migratory bird populations and their habitats. Celebrating the centennial of the first Treaty allows us to bring

together those who have contributed to its success, and to galvanize efforts to protect migratory birds for the generations to come.

Migratory birds:

- connect people with nature and add beauty, sound and color to our world. They provide countless opportunities for enjoyment by birders, hunters, and outdoor enthusiasts and have cultural and spiritual importance.
- contribute environmental benefits, including pollination, insect and rodent control, and seed dispersal.
- are good indicators of environmental health because they are so visible and

relatively easy to study. Studying birds can give us a picture of what is going on in the world.

- play a key role in the U.S. economy, supporting recreational opportunities that create jobs and generate billions of dollars in revenue.

Come celebrate migratory birds at this year's bird festival at the Environmental Education Center in Alviso called Mama Birds in the Marsh Festival May 7. See ad and activity pages for more details.

Visit <http://www.fws.gov/birds/MBTreaty100/index.php> for more information about the Migratory Bird Treaty.

Vernal Pool Tours at Warm Springs Unit on Don Edwards San Francisco Bay National Wildlife Refuge

Sign up to receive notification of when Vernal Pool Tours are available. These popular tours to view wildflowers and endangered plants occur in an area normally closed to the public due to the sensitivity of the habitat. Tours are free of charge.

You will learn about the unique features of a vernal pool grassland, and hopefully observe the pools in what will likely be a good rain year! Participants will see endangered Contra Costa goldfields (*Lasthenia conjugens*), *Downingia pulchella*, several *Plagiobothrys*, and other native vernal pool and upland species.

Warm Springs Unit is located in south

Fremont. The walking tour will last about 1.5 to 2 hours. Total walking distance will not exceed one mile, but terrain is uneven.

To optimize the botanical beauty of the tours, we will set the tour dates three weeks before the peak bloom. Typically, tours are in April and will be conducted on one Saturday and one weekday with two tours on each day. Once dates and times are determined, you will receive email notification on how to register and driving directions. Spaces are limited.

Sign up now! Email Ivette Loredo at Ivette_loredo@fws.gov to be put on the notification list.



Volunteer Opportunities: Spring 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 Spring

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

Sunday, March 6

Saturday, March 9

Tuesday, March 26

Tuesday, March 29

Sunday, May 15

Tuesday, May 24

Volunteer orientations in Fremont will meet in the Visitor Center

Saturday, April 2 1 p.m. - 2 p.m.

Sunday, May 8 11 a.m. - noon.

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

Mama Birds in the Marsh Festival

Environmental Education Center, Alviso

Saturday, May 7, 12:00 p.m. – 3:00 p.m.

1751 Grand Blvd.

Alviso (San Jose), CA, 95002

http://www.fws.gov/refuge/don_edwards_san_francisco_bay

The eggs have hatched! Let's celebrate these new mamas!
Come with your family to experience the refuge for FREE

- ✦ guided bird walks,
- ✦ a live bird show,
- ✦ crafts for mom,
- ✦ and games.

Get up close and personal with live refuge wildlife and their
natural habitats.

For more information
call 408-262-5513



Twilight Marsh Walk Celebrates 20-Year Anniversary

One of the Don Edwards San Francisco Bay National Wildlife Refuge's most popular programs celebrates 20 years this April. Volunteers Mary and Gene Bobik, the creators of the program back in 1996, never thought they would still be doing the walk two decades later.

"I can't believe we've been doing this walk this long. And, I also can't believe that I'm never bored on any of these walks. I love seeing the refuge each month at this special time of day and it never disappoints," says Mary.

The Bobiks thought after a few months people wouldn't be interested anymore and they would discontinue the program. The Bobiks couldn't have been more wrong. Not only is the Twilight Marsh Walk regularly attended, it has garnered many repeat customers.

Rain or shine, the Bobiks meet visitors in front of the Visitor Center one evening a month to introduce or reintroduce participants to the refuge and interpret what they see. Some evenings, a gray fox may saunter by, or herons and egrets could be seen



Photo: Gene Bobik

feeding in the sloughs. Other evenings may not yield much wildlife but offer spectacular sunsets.

Sign up for the Twilight Marsh Walk this spring and congratulate Mary and Gene Bobik for their 20 years of volunteer service.

Celebrate Earth Day

at Don Edwards San Francisco Bay National Wildlife Refuge

April 23, 2016 / 11:00 a.m. to 1:00 p.m.

Join us at Ravenswood Point (SF2 Trail) in East Palo Alto for our annual Earth Day Cleanup. Help protect the wildlife and environment while enjoying the beautiful Bay views.

Gloves and trash bags provided.

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

Register at <http://www.savesfbay.org>. Call Jose Garcia at 510-792-0222 ext. 141 for more information.

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, 2015 and December 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.

Employer & Matching Gift Program

CISCO Justgive
Frontstream (United Airlines Employees)

Memorials/Honorariums

In memory of Eleanor Wheeler – avid birder – (from Patricia Barber)

Sustainer

Jon Charles Graff

Sponsor

Blossom Hill School & Frank K Parsons

Participant

Joyce E Bartlett, Phyllis Browning, Cheryl Davis, Dolores M Hansen, Kirsten Holmquist, Jeannette D Jensen, Joan Kjemtrup, Susan Kozdon, Gloria Laird, William K Nisbet, Annemarie Rosengreen, and Sue Ten Eyck

Supporter

Bluhm Family

Family

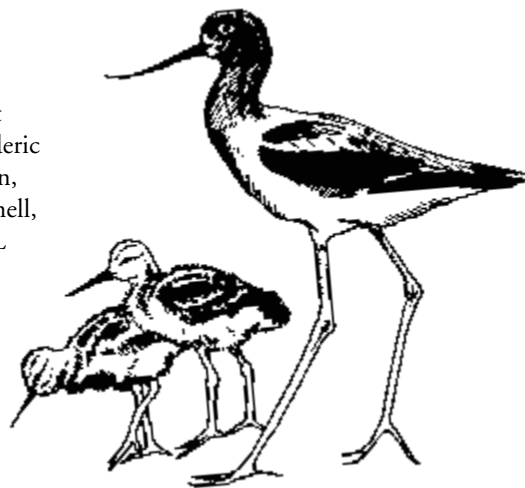
Brenda & Sheldon Baker, Joelle Buffa, Douglas & Beckie Kinghorn, Herbert Knoesel, Peer & Sue LaTourrette, Frederic H & Kirsten Nichols, Margaret Panton, Frank H Parsons, Steve Skala, Mary Snell, Linda Stegora, Jean Takekawa, Linda L Vetter, and William K Warburton

Individual

Dory Dixon, Kristen Good, Emily Nawalinski, and Penny Wells

Senior/Student

Laura Avery, Gail Bower, Patricia Carelli, Margaret Hartmann, Martha H Hartsog, William H Kapper, Bonnie Killip, Gladys E McFarland, William Milestone, Laura Nakanishi, Susan Rosenblattg, Marianne Schonfisch, David Stronck, Janet Walsh, Viola E Walters, and Lois Winter



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.

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*. Enclosed is my contribution of:

- \$20 Student/Senior \$50 Family \$100 Participant \$200 Corporation \$500 Sustainer
 \$35 Individual \$75 Supporter \$250 Sponsor \$1,000 Leader
 Check For credit card payment, please use PayPal at www.sfbws.com/donate.

Name _____
Address _____ City _____ State _____ Zip _____
Phone _____ Email _____

Thank you for your support!

San Francisco Bay Wildlife Society Quarterly Message: Help Make a Difference! Participate as a Friend of the Refuge

Help Us Save *Tideline*:

Critical Need for Volunteers at Our Nature Stores. As reported in the Summer and Fall issues of *Tideline*, the San Francisco Bay Wildlife Society Nature Stores were due to open in June at both the Environmental Education Center and the Fremont Visitor Center. The good news is we have been able to open the Nature Store intermittently at both locations.

In order to keep the Nature Stores open on a regular basis, we need volunteers to supplement San Francisco Bay Wildlife Society staff to operate the Nature Stores at either location on weekends or during the week. You can help your refuge by volunteering to staff a pop-up Nature Store for special events and at the help desks at both locations. **Net proceeds from the Nature Store fund the *Tideline's* publication. Without store sales, we fear we may need to reduce the publication of the *Tideline* soon.** Thus, we need your help!

Write
info@SFBWS.com for details!

Give the Gift of Learning: Donate to the Yellow Bus Fund. The City of San Jose and Santa Clara Valley Urban Runoff Pollution Prevention Program fund two excellent field trip programs at the Don Edwards Refuge that teach students of all ages about the importance of wetlands, watershed health and habitat preservation. Rising transportation costs limit many schools from attending these field trips to the refuge. To support schools wanting to participate in these field trip programs at the refuge, the San Francisco Bay Wildlife Society created the **Yellow Bus Fund**. You can help increase the number of schools taking part in the refuge's field trip programs by making donations specifically to the Yellow Bus Fund. Help grow the next generation's environmental stewards!

Success!

Explore the Coast Field Trips and Outreach. Thanks to the California Coastal Commission's Explore the Coast program



Photos: Ceal Craig

for funding a \$50,000 grant to bring more school children from low-income areas to the San Francisco Bay coast to participate in our environmental education programs! Through their generous support we will be able to hire interns to help with education and outreach to underserved communities so that our San Francisco Bay, its abundant wildlife, and the work of the Fish & Wildlife Service. We were also awarded some transportation funds, and you can help match these donations with individual contributions to support our organizational costs as well. Your support helps us manage our success.

Goodbye to Sue TenEyck, Welcome Mary Deschene, and YOU on the Board of Directors? Effective in 2016, we are saying goodbye to a long-term Board of Directors member and San Francisco Bay Wildlife Society Program Administrator, Sue TenEyck. After serving the organization for more than two decades, she is beginning a well-deserved, full-time retirement. The Board of Directors, U.S. Fish & Wildlife

Service, and volunteers all join in thanking Sue for her dedication and service to the San Francisco Bay Wildlife Society and the Refuge Complex. Best wishes, Sue!

Taking Sue's place as the Program Administrator is Mary Deschene who has been writing grants and managing fund development since April 2015. Mary can be reached by email at Mary.Deschene@SFBWS.com

We have one open Board of Director position at this time and would welcome volunteers with accounting, fund development, or legal backgrounds. Write Ceal.Craig@SFBWS.com if you are interested!

Our Website: Have you checked <http://sfbws.com> out lately? Is it an information source for events and news relating to the San Francisco Bay National Wildlife Refuge Complex? Or for links to environmental news? We hope so. Recent blog posts (<http://sfbws.com/blog>) include:

- December 11, 2015: *Decades-long Bair Island Restoration Project comes to fruition* (Did you know that San Francisco Bay Wildlife Society helped fund the early planning work for the Bair Island Restoration Project?)

Other ways to get involved or learn more? Check out <http://sfbws.com> and <http://refugeassociation.org>.

Conversations on the Trail: Last, but not least, meeting other visitors on the refuge trails is always enjoyable. On January 1, I met a family of four who were frequent visitors and relished their hikes on the upland habitat trail and its connection to the New Chicago Marsh boardwalk and levees. See you out there!

As always, we welcome your inputs. Send your thoughts to Ceal.Craig@SFBWS.com

Cecilia (Ceal) D. Craig, PhD
President, SFBWS Board of Directors

Spring 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.

March

Saturday, March 5

*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. Led by Matthew Keehner. Meet in front of the Visitor Center.

*Pacific Flyway

Meet at SF2 Trailhead in East Palo Alto
12:00 p.m. - 1:30 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, why they 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 are on the eventbrite website.

Docent Training

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

If you love birds, animals, plants, rocks, or history, and want to expand and share your knowledge become a volunteer! Come to a Salt Pond Restoration Docent Volunteer training, where Park Ranger Joseph Garcia will teach you the volunteer process and what new changes are taking place within the refuge. This is a great way to learn, teach, and participate in the South Bay Salt Pond Restoration Project. Call 510-792-0222 ext. 141.

Sunday, March 6

Geology Rocks at Don Edwards 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? Want to know why some rocks look like layer cakes and others are bright orange? 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 and hand lenses are encouraged. Trail is 1.3 miles and family-friendly. Call 510-792-0222 ext. 141 for more information.

Insect Exploration

Environmental Education Center, Alviso
2:00 p.m. – 3:30 p.m.

Insects have been on this Earth for hundreds of millions of years. Come learn about the many different insects that call the San Francisco Bay Area their home. We will examine insects and learn how they've adapted to survive. Join us as we dig in the dirt and crawl through the plants in search for our six-legged friends! Be prepared to get dirty. Open to all ages, but best suited for ages 5 and up. Register at <http://eeceexploreinsects.eventbrite.com>.

Friday, March 11

Night Sky Party!

Environmental Education Center, Alviso
7:00 p.m. – 8:30 p.m.

Meet the stars of spring! Join our amateur astronomers as we 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, as it gets cold in the evening. Fun for the whole family. RESERVATIONS RECOMMENDED. Go to <http://nightskyspring.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

Sunday, March 13

*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://marshwalk.eventbrite.com> or call 510-792-0222 ext. 362.

Saturday, March 19

*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.

*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
6:30 p.m. – 8:15 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, March 20

*Returning the Tide at San Pablo Bay NWR

Cullinan Ranch Trail, San Pablo Bay NWR
10:00 a.m. – 11:30 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.

*A 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, March 26

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.

Crafts in the Outdoors: Beginning Leatherwork

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

Doing crafts outdoors is a wonderful experience! Make and tool (decorate) a small name tag for your backpack or clothing made from vegetable tanned leather. Learn how Bay Area residents used the tanoak tree for food and for making leather. This family-friendly program lets you have fun crafting your own leather item. Bring water, snacks, and appropriate clothing. This program runs rain or shine. Led by Steve Stolper. RESERVATIONS REQUIRED. Go to: <http://begleather.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

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

Sunday, March 27

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.

April

Saturday, April 2

*Going Green, the 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 a whole new way. Discover plants and animals in its habitat and the best time to see them. Digital or film cameras welcome. Led by Joseph Garcia. Call 510-792-0222 ext. 141 for more information.

*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. Led by Matthew Keehner. Meet in front of the Visitor Center.

Volunteer Orientation

Visitor Center, Fremont
1:00 p.m. - 2:00 p.m.

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.

Sunday, April 3

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 on top of the hill 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. Register at <http://donedwardsyoga.eventbrite.com> or call 510-792-0222 ext. 362. Led by Carmen Minch.

Geology Rocks at Don Edwards 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? Want to know why some rocks look like layer cakes and others are bright orange? 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 and hand lenses are encouraged. Trail is 1.3 miles and family-friendly. Call 510-792-0222 ext. 141 for more information.

Saturday, April 9

*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. 363.

*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: <https://hikeeectrail.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext. 104.

Docent Training

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

If you love birds, animals, plants, rocks, or history, and want to expand and share your knowledge become a volunteer! Come to a Salt Pond Restoration Docent Volunteer training, where Park Ranger Joseph Garcia will teach you the volunteer process and what new changes are taking place within the refuge. This is a great way to learn, teach, and participate in the South Bay Salt Pond Restoration Project. Call 510-792-0222 ext. 141.

Sunday, April 10

Let's Go Native... In Our Garden!

Environmental Education Center, Alviso
10:00 a.m. - 3:00 p.m.

Join us for a day in the native plant garden restoring habitat for Monarch butterflies, learning about leaves and lichen identification, and viewing the native California plants we grow out by the marsh. We will be providing milkweed seeds and dri-water to take home. Sign up for one or all. Event times are posted on the eventbrite link. RESERVATIONS RECOMMENDED. Go to: <http://ngnt.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

*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. Register at <http://marshwalk.eventbrite.com> or call 510-792-0222 ext. 362.

Saturday, April 16

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.

Spring 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.

Twilight Marsh Walk

Visitor Center, Fremont
6:30 p.m. – 8:15 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. 363. Led by Mary and Gene Bobik.

Sunday, April 17

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.

*Ohlone in the Marshes -Staves

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

Do you want to know more about the Native Americans that lived in the Bay Area before us? Come to the refuge to learn about the tools and games the Ohlone might have used. Play Ohlone games and take home your own customized staves. Best suited for ages 8 and up. Register at <http://eecolonestaves.eventbrite.com>

*Pacific Flyway

Meet at SF2 Trailhead in East Palo Alto
12:00 p.m. - 1:30 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, why they 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 are on the eventbrite website.

Saturday, April 23

Earth Day Cleanup at SF2 Trail

SF2 Trail, East Palo Alto
11:00 a.m. – 1:00 p.m.

Celebrate the Earth and help keep our home clean. Join us on the SF2 trail near the Dumbarton Bridge and protect wetlands and wildlife by picking up trash blown in by the winds or left by careless hands. Enjoy the beautiful home we share with the birds as we ensure their home stays safe and clean. Bring a water bottle and wear sturdy shoes. Trash bags and gloves will be provided. Register at <http://www.savesfbay.org>. Call Jose Garcia at 510-792-0222 ext. 141 for information.

Saturday, April 30

*Cullinan Ranch Walk

San Pablo Bay NWR
10:00 a.m. – 11:00 a.m.

Take a nature trail walk with Park Ranger Jose Garcia, and enjoy the abundant wildlife. Come see and be a part of the exciting transition. Learn about the breach of the levee and how the marsh land develops afterward. Observe the wonderful views and myriad of birds moving in to the new habitats. A peaceful place to enjoy and learn. Cameras welcome. An adult must accompany children. Call 510-792-0222 ext. 141 for more information. Driving directions: 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.

Jr. Refuge Ranger

Visitor Center, Fremont
11:00 a.m. - 12:30 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>.

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

May

Saturday, May 7

*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. Led by Matthew Keehner. Meet in front of the Visitor Center.

Mama Birds in the Marsh Festival

Environmental Education Center, Alviso
12:00 p.m. – 3:00 p.m.

The eggs have hatched! Let's celebrate the new mamas! Come with your family to experience the refuge for FREE guided bird walks, a live bird show, crafts for mom, and games. Spread your wings for bird conservation as you get up close and personal with live refuge wildlife and their habitats. Fun for the whole family, especially mom! No reservations necessary. Visit our website for directions. For more information call 408-262-5513.

Sunday, May 8

Volunteer Orientation

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

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.

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, May 14

*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: <https://hikeeectrail.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

JR Refuge Ranger with Nature Play

Environmental Education Center, Alviso

11:00 a.m. – 12:30 p.m.

Become a Jr. Refuge Ranger! Our Jr. Refuge Ranger program is an introduction to the Don Edwards SF Bay National Wildlife Refuge from its wildlife to its plants. You'll taste pickleweed while you learn about endangered species. Jr. Refuge Rangers will participate in several fun, hands-on activities in order to earn their badge at the end of the program. Dress in layers. We'll be going on a nature walk. Best suited for ages 8-11. RESERVATIONS REQUIRED. Go to: <http://jrranger.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

Sunday, May 15

Bay Bike Ride

Meet at the Visitor Center, Fremont

10:30 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. Register at <https://donedwardsbike.eventbrite.com> or call 510-792-0222 ext. 362 for reservations.

Saturday, May 21

*Eliot Trail Hike

San Pablo Bay NWR

10:00 a.m. – 11:00 a.m.

Take a guided nature walk with Park Ranger Jose Garcia, and hear about the latest restoration project at San Pablo Bay National Wildlife Refuge. Learn how new and innovative levee designs enhance protection against sea-level rise and provide additional habitat for wildlife. Soak in the wonderful views and the myriad of birds using the area. Camera's welcome. Driving Directions: From San Francisco, drive east on Hwy 37. Turn south onto Reclamation Road at the stoplight at the intersection of Hwy 37 and Lakeville Hwy. From Vallejo, drive west on Hwy 37. Turn south onto Reclamation Road at the stoplight at the intersection of Hwy 37 and Lakeville Hwy. Meet at the parking lot.

*Family Bird Walk

Visitor Center, Fremont

12:00 p.m. – 2:00 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

7:00 p.m. – 8:45 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 ob-

serve 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, May 22

Insect Exploration

Environmental Education Center, Alviso

10:30 a.m. – 12:00 p.m.

Insects have been on this Earth for hundreds of millions of years. Come learn about the many different insects that call the San Francisco Bay Area their home. We will examine insects and learn how they've adapted to survive. Join us as we dig in the dirt and crawl through the plants, in search for our six-legged friends! Be prepared to get dirty. Open to all ages, but best suited for ages 5 and up. Register at <http://eeceexploreinsects.eventbrite.com>.

*A 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, May 28

Drawbridge Van Excursion

Environmental Education Center, Alviso

10:30 a.m. – 1:00 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 scabbling out a living? How long did it exist? 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 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. RESERVATIONS REQUIRED. Go to <http://draweec.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104. Note: we do not visit the town itself – we go to the closest spot that one can legally view Drawbridge.

Jr. Refuge Ranger Program

Visitor Center, Fremont

11:00 a.m. – 12:30 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>.

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 dis-

tinguish 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. Register at <http://donedwardsfox.eventbrite.com>.

Sunday, May 29

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 on top of the hill 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. Register at <http://donedwardsyoga.eventbrite.com> or call 510-792-0222 ext. 362. Led by Carmen Minch.

Geology Rocks at Don Edwards 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? Want to know why some rocks look like layer cakes and others are bright orange? 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 and hand lenses are encouraged. Trail is 1.3 miles and family-friendly. Call 510-792-0222 ext. 141 for more information.

*Bird Watching for Beginners

Visitor Center, Fremont

2:30 p.m. – 4:00 p.m.

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 for the weather and wear comfortable shoes. Led by Carmen Minch.

National River Clean-Up Day is in May!

Alviso Slough Cleanup – DATES available at <http://sloughkeepers.com/joining-sloughkeepers>

Alviso Marina through the Alviso Slough

Love to kayak? Love to clean up the environment? Why not combine the two and partner with Slough Keepers as they clean up Alviso Slough. Bring a kayak out to the upper lot's launch ramp at the Alviso Marina and be prepared to paddle through the slough and some reeds to clean up our waters. Due to the reeds, this is recommended for those who have some kayaking experience. Slough Keepers will provide garbage bags and even some garbage barges. To sign up, contact Eric Norris at sloughkeepers@gmail.com and visit www.sloughkeepers.org for more information. Space is limited to 25 kayakers.

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 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 programs are fully booked for spring 2016.

Contact the Environmental Education Staff at Fremont:

Office: 510-792-0222 ext. 475

Cell: 510-377-7269

E-mail: tia_glagolev@fws.gov

Field Trips at the Environmental Education Center in Alviso

Wetland Round-Up Field Trips

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

Staff has been 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.

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 are interested being a part of our review team please contact Genie Moore, 408-262-5513, genie_moore@fws.gov.

Living Wetlands Program

Spring 2016 programs are fully booked. For more information, and information about Fall 2016, call Aja Yee, the Living Wetlands Program Coordinator at 408-262-5513 ext. 102 or email her at livingwetlands@sfbws.com.

Living Wetlands program 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 cooperative efforts of the City of San Jose, U.S. Fish & Wildlife Service, and the San Francisco Bay Wildlife Society.

Program Offerings for 5th-12th Grades (See below for information about priority school):

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.

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.

Programs for Colleges and Universities

Guided field trips are offered at the Environmental Education Center in Alviso. Programs generally last 1 ½ hour to 2 hours. *Reservations must be made at least 8 weeks in advance of the desired field trip date.* Please contact Julie Kahrnoff, at 408-262-5513 ext. 104 or at Julie.kahrnoff@sfbws.com to make a reservation.

College instructor-led 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 8 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 to make a reservation.

Application for 2015-2016 Transportation Funds

The Yellow School Bus Transportation Fund provided by the U.S. Fish and 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.

Please refer to our website for more information: <http://go.usa.gov/3GJhm>

You may also contact Genie Moore at 408-262-5513 ext. 100 or email 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 rain-bows! 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)

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, March 20

Sunday, April 10

Saturday, May 21

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.

TIDELINE

Published quarterly by San Francisco Bay National Wildlife Refuge Complex, with funding from San Francisco Bay Wildlife Society.

Volume 39, Number 1

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.

Project Leader:Anne Morkill
 Deputy Project Leader:..... Chris Barr
 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
 Park Ranger/Outdoor Recreation Planners:.....Joseph Garcia and Carmen Minch
 Environmental Education Specialists: Tia Glagolev and Genie Moore
 Volunteer Coordinator:Paul Mueller

Law Enforcement Officer:.....Jesse Navarro
 Biologists: Joy Albertson, Christopher Caris, Susan Euing, Allison Fuller, Meg Marriott, Cheryl Strong, and Rachel Tertes

Administrative Staff: Lucinda Ballard 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. Find us at www.sfbws.com.

Board of Directors

President:Ceal Craig
 Vice President:..... Terry Smith
 Treasurer: John Bradley
 Secretary: Cheryl Davis
 Directors: Debra King, Christopher Kitting, Karen Natoli-Maxwell, and Varon Smith

Staff

Interpretive Specialist:..... Julie Kahrnoff
 Education Specialist:.....Aja Yee
 Program Administrator: Mary Deschene

Tideline is On-Line Visit our web sites at

http://www.fws.gov/refuge/antioch_dunes
http://www.fws.gov/refuge/don_edwards_san_francisco_bay
http://www.fws.gov/refuge/ellicott_slough
<http://www.fws.gov/refuge/farallon>
http://www.fws.gov/refuge/marin_islands
http://www.fws.gov/refuge/salinas_river
http://www.fws.gov/refuge/san_pablo_bay



Follow us on Facebook:
 San Francisco Bay NWR Complex

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
DON EDWARDS SAN FRANCISCO BAY
NATIONAL WILDLIFE REFUGE
1 Marshlands Road
Fremont, CA 94555

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

FIRST-CLASS MAIL
POSTAGE & FEES PAID
U.S. Fish & Wildlife Service
Permit No. G-77

SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE COMPLEX

SPRING 2016
Volume 39, Number 1

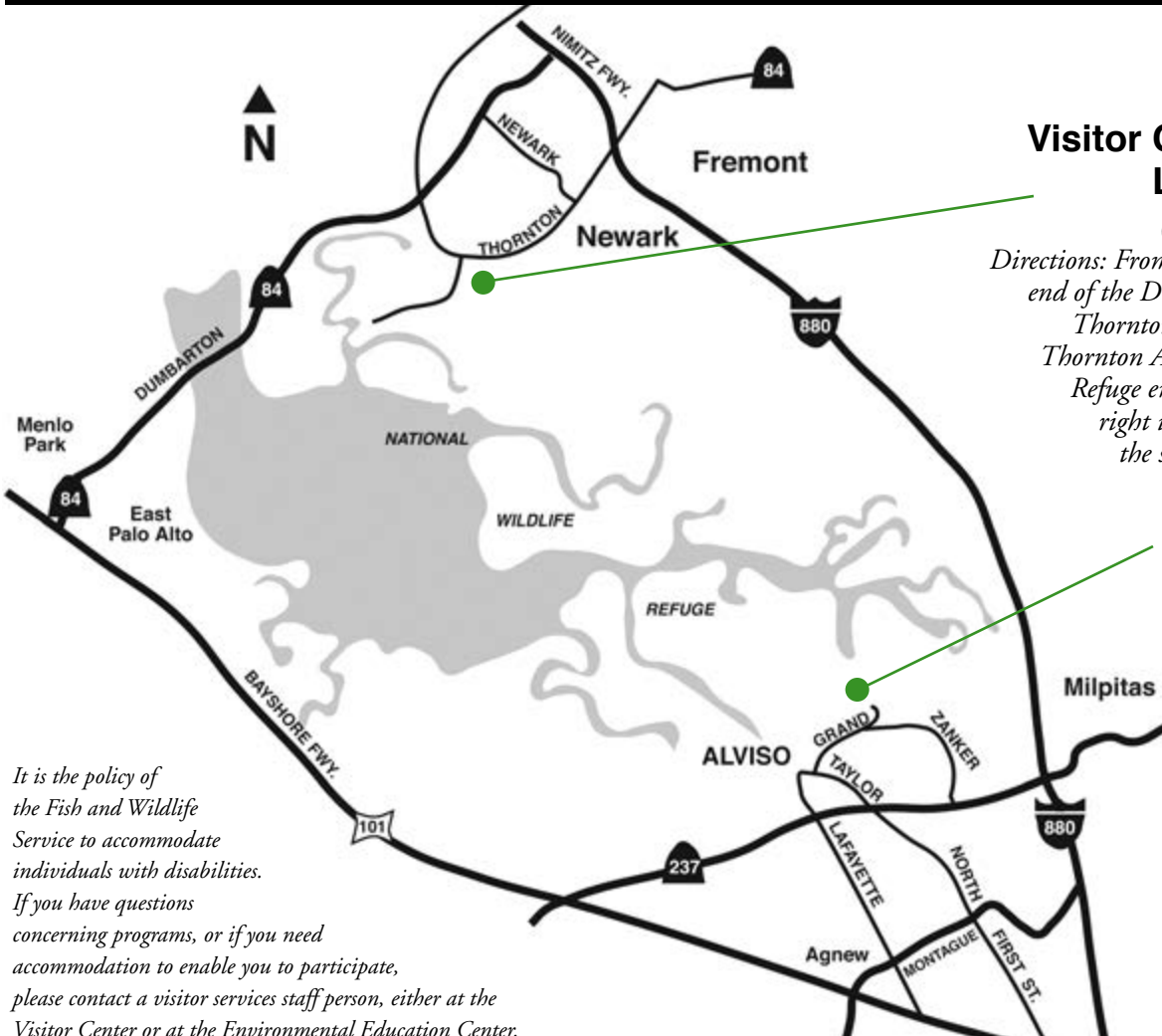
Tideline



Inside This Issue

- 1-3 Long Toed Salamanders
- 4 Levee Breach
- 5 Vernal Pool Tours
- 6 Bird Day
- 7 Celebrations
- 9 Wildlife Society Message
- 10-13 Spring Activities
- 14-15 Field Trips to the Refuge

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.