

Tideline



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

The Opportunity of a Lifetime: Executive Manager of Historic Wetland Restoration Effort Looks Back on His Tenure

The South Bay Salt Pond Restoration Project is the largest tidal wetland restoration undertaking on the west coast, much of it located on the Don Edwards San Francisco Bay National Wildlife Refuge. Executive Project Manager John Bourgeois stepped down from his position Sep. 28. Here, he looks back on the progress made during his tenure – lessons learned, and challenges and opportunities ahead.

by John Bourgeois

Having been born, raised and educated in south Louisiana, I grew up in a culture that understands the importance of wetlands—from the recreational boating, fishing and hunting that are a way of life there, to the economics of the commercial fishing industry, to the protection afforded by wetlands against storm surges and hurricanes. So when I decided I wanted a career in the environmental field, it was very natural for me to choose to study wetland ecology.

After graduate school, I took my first job with the US Forest Service doing research in the remote and pristine mangrove swamps of Micronesia. I then returned to Louisiana to work on large scale restoration projects for the Department of Natural Resources for a couple of years, and then moved over to the USGS National Wetlands Research Center.

In January 1999, my wife Susan and I made the cross-country move to the Bay Area. I had been debating between starting a PhD program or working in a more applied field. Having had a taste of both after finishing my masters degree, I was really drawn to



John Bourgeois, former Executive Project Mgr., South Bay Salt Pond Restoration Project. Photo: Judy Irving

the on the ground aspects of applied work. When we made the trip to California for my interview in November 1998, we were immediately taken by the natural beauty of the region! Our decision was made and I began working as a restoration ecologist at H.T. Harvey & Associates.

I must admit, I was a bit surprised by my first glimpse of the marshes of San Francisco Bay. I was used to working in extremely large wetland systems in remote areas that would often take hours to reach by truck and boat. I was not used to simply driving right up to a marsh site that was small enough to throw a rock across. But I soon learned that these tiny strips of marsh

were all that was left of a once mighty estuary. And being home to endangered species made them all the more important.

I also quickly recognized some of the vegetation — in particular *Spartina alterniflora* — in the fringe marshes just south of the Dumbarton Bridge (near Pond SF2) and outside the soon to be restored Cooley Landing marsh. This species of cordgrass is a dominant species in the salt marshes of the Gulf Coast, but I soon learned it was an invasive species in San Francisco Bay.

However, my education was just beginning. I was fortunate that my first large

continued next page

project in the Bay was the original restoration plan for Bair Island. This is where my crash course in Bay Area restoration planning really happened. Bair Island was the perfect microcosm of most of the issues that would later manifest in the larger South Bay Salt Pond Restoration Project.

First, I learned of the heroic efforts by citizens to protect these areas from development. I would hear similar stories echoed throughout the Bay, as determined residents fought to protect the remaining wetlands. The Bair Island project also taught me about the conflicts inherent in wetland restoration in such a highly developed estuary. The competing interests of an urbanized bay edge include: the protection of infrastructure such as power lines and sewage pipes; reduction of flood risk for neighboring homes; an accounting for important adjacent land uses, such as airports (and the potential for bird strike hazards); and the preservation of significant open space for people who live in the area and are passionate about sailing, dog walking and bird watching.

And then the 2003 salt pond acquisition happened! The massive public-private partnership put over 15,000 acres of former salt evaporation ponds in the South Bay into public ownership for the sole purpose of restoring wetland habitats. These ponds became known as the South Bay Salt Pond Restoration (SBSPR) Project. It was front page news, and our firm was part of a team selected as the technical consultants.

The SBSPR Project was set up as a multi-agency effort to restore tidal marsh habitat, reconfigure managed pond habitat, maintain or improve flood protection, and provide recreation opportunities and public access in the 15,100 acres of former salt-evaporation ponds acquired from Cargill.

The first step in that effort by the landowners (California Department of Fish and Wildlife and U.S. Fish and Wildlife Service) was called the Initial Stewardship Plan. The complex of ponds they acquired were designed with the commercial purpose of concentrating salt through evaporation, not for the provision of wildlife habitat. So these agencies had to halt the evaporation process, bring salt concentrations down, and gain some flexibility to manage these massive areas for wildlife until a final restoration



A 2010 levee breach reintroduced Bay waters to a former salt pond on the Don Edwards SF Bay National Wildlife Refuge. Photo: Judy Irving

plan could be established and implemented. With the installation of over 50 new water control structures, and even the breaching of three ponds to the Bay, the project was quickly able to double the number of birds using the ponds for habitat, breeding and migration. This early success would not become evident, however, until after several years of monitoring.

The longer term planning effort—a 50-year programmatic level strategy for wetland restoration, flood risk reduction, and public access involving a first phase of projects—was a momentous next step for the project and an exciting time for all involved. Multiple large stakeholder gatherings, local meetings, scientific strategy sessions, and technical working group consultations culminated in the creative and visionary use of adaptive management techniques to help the project come to fruition. The planning process was completed in January 2009, and its end also meant the end of my involvement as a consultant.

Later that year, the original Executive Project Manager, Steve Ritchie, resigned. In the preceding years, I had worked very closely with Steve, particularly on the final push for permits. Many of us were surprised to see him leave, as he had been the face of the project from the beginning. It didn't take long for me to decide to throw my hat into the ring, and I was pleasantly surprised when I got the call telling me that I had been selected to replace him.

I had some big shoes to fill, and it took about two years before people stopped calling me, “the new Steve.” With lots of construction on the horizon, it was a heady time for the project. For a while it seemed as if, every year, we were holding another press event to celebrate the breaching of more ponds. It was in the midst of all of this excitement and progress that I got some crazy looks from the management team members when I suggested we needed to start planning Phase Two.

The job of Executive Project Manager is not what many may think it is. The project is run by a multi-agency management team, and it is in those monthly meetings that the project truly exists and sustains momentum. As the face of the project, I often got undue credit for what is truly a team effort. What goes unseen are the mundane, day to day necessities and behind the scenes work required to advance a project that will span over decades.

When I took over for Steve Ritchie, I set three goals for myself: first, see Phase 1 constructed; second, plan for the next phase of restoration efforts; and third, get the project prepared to accept the beneficial reuse of dredged material. I naively thought the whole process would take about five years. Well, it's been nine years of hard work and we are just on the cusp of completing those final two goals. And so, as the project approaches another phase of construction, it seems like a good time to pass the baton



Aerial kite photos show marsh growth on a former salt pond in the South Bay a year and a half after tidal waters were reintroduced. Photo: Cris Benton

to someone else. Fresh ideas and new energy are always invigorating for a long term project, especially one based on the fluidity of adaptive management. Being able to provide leadership on this effort has been the highlight of my career so far, and I will always be proud of what we have set in motion.

I want to extend a sincere thank you to the many colleagues and friends who have contributed to this effort, and to those who have personally supported me during this time. But this is not goodbye. As I move back to consulting with Environmental Science Associates, I fully intend to stay involved in the restoration of San Francisco Bay and beyond.

Adapting to Climate Change: A Collective Response

Climate change has again been in the headlines with the recent release of California's Fourth Climate Change Assessment and the Fifth Assessment Report of the United Nation's Intergovernmental Panel on Climate Change. Observed changes in recent years have confirmed and even exceeded earlier predictions about how extreme weather and climate events are causing impacts on natural and human systems on all continents and across the oceans.

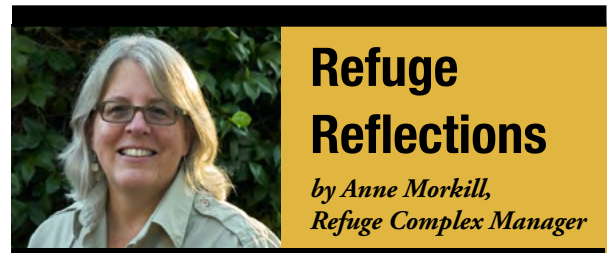
Here at the San Francisco Bay National Wildlife Refuge Complex, we are working with many partners to learn about how a changing climate may affect the species and habitats on our refuges. Sea level is rising and will rise more quickly in the coming decades; along with more winter storm events, that could flood tidal marshes more frequently on the Don Edwards San Francisco Bay and San Pablo Bay Refuges, and erode sandy beach and dune habitats on the Salinas River Refuge. Changes in wind, upwelling, and ocean productivity patterns will affect prey availability for seabirds and marine mammals that inhabit the Farallon Islands Refuge. Drought will reduce the hydroperiod of seasonal ponds that are essential breeding habitat for the Santa Cruz long-toed salamander on the Ellicott Slough Refuge. Plant phenology shifts due to changing air temperatures and rainfall patterns may affect survivorship of Lange's

metalmark butterfly larvae at Antioch Dunes Refuge, or reduce nesting success of herons and egrets at Marin Islands Refuge. The combined effects of climate change with other stressors, such as invasive species and pollutants, are likely to have new types of impacts on ecosystems.

The good news is that there is a growing collective effort by local governments, regional agencies, nonprofits, and other stakeholders to take actions that advance climate adaptation and resilience. The San Francisco Bay Conservation and Development Commission's Adapting to Rising Tides project is a comprehensive portfolio of planning guidance, mapping tools, and information to help communities address the specific challenges of climate change. San Mateo County's Sea Change provides in-depth assessment of coastal hazards and invites the public to participate in developing plans and policies for emergency response and protection strategies. Our Coast, Our Future is an interactive online mapping tool to visualize and anticipate shoreline vulnerabilities to sea level rise and storms along California's coastline.

These tools are informing our efforts to identify vulnerabilities and implement management actions on our National

Wildlife Refuges to conserve wildlife and habitats in a changing climate. They are also useful for helping you explore how climate change may affect your own home, business, or favorite refuge.



Illustrative Insights on Antioch Dunes

by *Constance Roberts*

In a 1953 issue of *Life* magazine, nestled between yellowed ads for ironing boards and RC soda, lies an intricately rendered, eye-catching series of biological illustrations by Swiss artist and entomologist Walter Linsenmeir. The subject of the illustrations and their accompanying article, “A Communal Life on the Dunes,” is the rich community of insect inhabitants native to the 140,000 year old glacially formed Antioch Sand Dunes.

Beyond their arresting beauty, the illustrations ignite an instinctive combination of uneasy fascination and acute alertness. An airborne red velvet ant, rust colored and woolly, hovers above a yellow helmeted june beetle grub munching on a root in its subterranean layer. A giant, blimp-like sand wasp stares at the reader with two sets of eyes: a beady pair of wide-set sulphur orbs atop two ruby gemstones. An adult spineless cuckoo wasp delivers dinner to her grubby larva beneath the sand. The segmented body of a sapphire blue cricket wasp feeds on



the deceased carcass of an unfortunate field cricket.

Today, the illustrations represent the potential biodiversity of an unlikely space. What we might assume to be barren ground, devoid of life, is, on closer look, a vast and varied universe with a unique evolutionary and natural history. We are reminded that life will find a way to adapt,

and ultimately flourish, in almost any space provided – if given the chance.

The illustrations also signify what was, what is, and perhaps most critically, what could be. Of the over 40 species represented in the illustrations, at least seven are no longer found on the refuge, and many more are found in a fraction of the numbers they once were. The resources consumed by human development, including massive amounts of sand harvested from the site for bricks, accounts for much of that loss. Today, biologists at Antioch Dunes are working to rehabilitate what has been lost of the habitat in order to give endemic species a fighting chance.

If the illustrations were to be rendered again—say, in 50 years—what would be on the pages? It is the hope of the National Wildlife Refuge System that they would be as brimming with dazzling eyes, wings and petals as the 1950’s illustrations – even if they do make our skin crawl. The actual fate of the dunes, as we know, is up to us.

Constance Roberts is the Visitor Services intern for the San Francisco Bay National Wildlife Refuge Complex.

A Survey for Our Readers

We need your help! Why do you read *Tideline*? How can we improve it? Do you prefer electronic or paper, or both? What are the more important parts of *Tideline* to you? Answering questions like these will help us serve you better. Thank you in advance for completing our survey. The inputs will be anonymous unless you choose to share your contact information. You can find the survey here: <https://www.surveymonkey.com/r/TidelineUse2018>



Donations to the San Francisco Bay Wildlife Society support environmental education.

Black Friday...

Cyber Monday...

#GIVINGTUESDAY™

November 28, 2018

#GivingTuesday is a global day of giving when people around the world contribute to and promote the causes they care about. Supporting the SF Bay Wildlife Society on Giving Tuesday is as easy as 1-2-3:

- 1) Donate to support the environmental and educational mission of the San Francisco Bay Wildlife Society
- 2) Apply for your employer matching gift (if available)
- 3) Share your support on your social networks using the #GivingTuesday hashtag

www.sfbws.com/donate



San Francisco Bay Wildlife Society Quarterly Message

REFLECTIONS: *Why we volunteer for the Refuge Complex:* When I retired from engineering I became aware of the Environmental Education Center (EEC) on the Don Edwards San Francisco Bay National Wildlife Refuge, near my prior workplace. I approached the EEC Director, Genie Moore, and asked about volunteering. Thus began my now 18 years of volunteering for the Refuge and later the Society. Two needs caught my passion: education and birds.

First, the EEC is an education center in the middle of marshes and upland that provides people of all ages an opportunity to learn about wildlife habitats. During my time as a docent at the EEC, I grew to love the history of the Refuge, most notably Drawbridge. Seeing that abandoned and sinking town over ten years led me to collaborate on a book with a photographer who had visited the site in the 1970s, Anita Goldwasser. Published in June 2018, *Sinking Underwater, a ghost town's amazing legacy* can be purchased at the Fremont and Alviso Nature Stores or at our website: www.sfbws.com. All proceeds benefit the Society and the Refuges we support.

Next, birds – ambassadors, harbingers, and forecasters. When I started birding in 2000, the Refuge provided many opportunities for bird-watching. So many memories! ... A blue-winged teal paddling in Artesian Slough, a brown pelican diving into the same waters; northern harriers gliding low over the

surrounding marsh. Avocets and black-necked stilts making their presence known with high pitched calls, warning me away from their nests. Red-necked phalaropes swishing up invertebrates to eat. All these birds depend on the Refuge and need us as stewards to help protect their homes and migration resting stops.

I volunteer hoping my passion for education and stewardship will help these refuges be available for the next generations, so they can have these experiences too. I look forward to hearing your stories. Please write me and share them. (Ceal.Craig@sfbws.com)

RECENT HIGHLIGHTS: In September, the Society met with Refuge staff to learn about the San Francisco Bay National Wildlife Refuge Complex Strategic Plan. Six conservation targets were presented: Coastal Dune Ecosystem (Salinas River NWR); Marine Island Ecosystem (Farallon Islands NWR); Pajaro River Watershed (Ellicott Slough NWR); Tidal Marsh Ecosystem, Vernal Pool Grassland, and Waterbirds (Don Edwards San Francisco Bay NWR). Also presented were four human well-being targets: Wildlife Dependent Recreation; Mental & Physical Well-Being; Culture, Community and Heritage; and Increased Knowledge and Awareness. The Society is now studying the targets to compare to the Society's Strategic Plan developed in 2017. Next steps will be fundraising, grant administration, public outreach, and volunteer recruitment to better support our Refuges.

GIVING TUESDAY & YEAR END GIVING PLANS: See the information on page 4 about Nov. 28, Giving Tuesday. And as we approach the end of 2018, please consider the Society (and thus the Refuge Complex) in your giving plans. The Society can be found online at Benevity.com, through Amazon Smile, and other corporate donation programs. You can donate or become a member via PayPal at our website (www.sfbws.com), send a check, or call us (contact info below) for other ways to help.

VOLUNTEER OPPORTUNITIES: If you prefer to give time instead of money, we need you! There are a variety of opportunities to get involved, such as invasive vegetation removal and assisting with wildlife surveys.

Other volunteer roles: staffing the nature stores at Fremont (Refuge headquarters) and Alviso (EEC), joining the Society's Board of Directors, or serving on a Board working committee. Contact the Society's Program Administrator, Mary Deschene at Mary.Deschene@sfbws.com or 510-792-0222 ext. 364 for more information and upcoming orientation dates!

Explore our website, www.sfbws.com to learn more about our programs. Visit the National Wildlife Refuge Association website, refugeassociation.org, to learn about challenges facing Refuges across the country. We look forward to staying in touch and getting you involved! See you in the marshes.

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

Sinking Underwater: a ghost town's amazing legacy

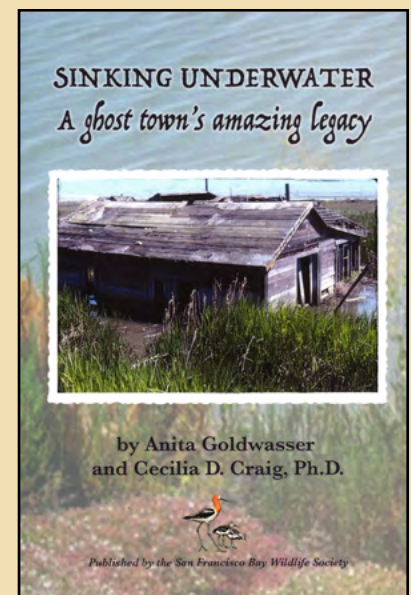
By Anita Goldwasser and Ceal Craig

Available now at the Don Edwards NWR Nature Stores
2 Marshlands Road, Fremont, Wed-Sat 11 a.m.-4:30 p.m.
1751 Grand Blvd., Alviso, Sat 10 a.m.-5 p.m.

Proceeds benefit the
San Francisco Bay Wildlife Society.
15% discount for Society members!
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San Francisco Bay
Wildlife Society



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 and September 30, 2018. These gifts will be used for publishing *Tideline*, environmental education, habitat restoration, and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.

Senior/Student

Gail Bower, Ann Dee Clemenza, Thomas Federico, Pat Gordon, Lee Hartman, William Milestone, Nancy Milligan, Martha Morrell, Joanne Preston, Connie Simone

Individual

Norton Bell, John B Bowers, Susan Kozdon, Joyce Lewis, Julie A Paccioretti, Marge E Wood

Family

John & Becky Bradley, Darlene Ceremello, Loring G Dales, Paul Davis, Kenneth & Dee Himes, Gerald E & Susan C James,

John Lukas, John & Melanie McKenna, Clark Nakamura, Joan M Nolen, Sally Smyth

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And to the anonymous donor who put a \$100 bill in the Donation Box at the Fremont Visitors Center: Thank you!



Help Us Protect Your San Francisco Bay Wetlands!

Mail your membership donation to: San Francisco Bay Wildlife Society, P.O. Box 234, Newark, CA 94560. You may also become a member at www.sfbws.com/donate.

For a gift membership, call 510-792-0222 ext. 364.

San Francisco Bay Wildlife Society is a not-for-profit 501(c)(3) organization that 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.

Enclosed is my donation of:

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Check enclosed

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Thank you for your support!

The San Francisco Bay Wildlife Society has:

- Introduced tens of thousands of students of all ages to the Don Edwards San Francisco Bay National Wildlife Refuge
- Provided weekend staffing at Visitor Centers
- Provided funding for restoration projects, a new boardwalk, trails, a greenhouse and native plant nursery

And much more ...

Become a Supporting Member of the Society. Benefits include:

- Free subscription to *Tideline* newsletter
- Tax deduction to the extent permitted by law
- 15% off at our nature stores
- Free book – *Exploring Our Baylands*
- The joy of helping protect this important environment

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 1

Tai Chi & Refuge Nature Walk Environmental Education Center, Alviso 9:30 a.m. – 11:00 a.m.



Morning Crane founder Chris Shelton is a certified Tai Chi and Qigong practitioner and instructor with 20 years of experience. Chris Shelton has helped thousands of people around the world reclaim their health and enjoy lives free from chronic pain.

Join us for a short nature walk afterwards to learn about the refuge! Sponsored by Morning Crane, San Francisco Bay Wildlife Society, and Santa Clara Valley Open Space Authority. No registration necessary.

Stewardship Saturday

Visitor Center, Fremont
9:30 a.m. – noon

If you are interested in improving the refuge for visitors and 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.

Restoration Work Day

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

Interested in volunteering at the Refuge? Come out for a Restoration Work Day! We will be working in the Butterfly Garden and surrounding trails. Work will include weeding, mulching, and planting native plants. This is a great opportunity for middle, high school, and college students to gain volunteer hours. Great for scout groups and families as well! All ages and skill levels are welcome to join. Gloves and tools are provided. Bring a lunch to enjoy after! Reservations required. Please visit: <https://restorationeec.eventbrite.com>. Questions? Hope: 408-262-5513 ext. 104.

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 approximately one mile walk traverses through endangered species habitat and offers great views of south San Francisco Bay. Led by Rick Arellano.

Twilight Marsh Walk

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

Experience 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://donedwardsstwiight.eventbrite.com> or call 510-792-0222 ext. 363. Led by Mary and Gene Bobik.

Saturday December 8

Salt Marsh Walk

Visitor Center, Fremont
10:00 a.m. – 11:30 a.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.

*Family Bird Walk

Visitor Center, Fremont
1:00 p.m. – 3:00 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.

Saturday December 15

*Bair Island Walking Tour

Inner Bair Island, Redwood City
10:00 a.m. – 11:30 a.m.

Join Peninsula Open Space Trust and the Don Edwards SF Bay National Wildlife Refuge for a beautiful walking tour of Inner Bair Island, led by Vicki Martell! This 1.5 mile walking tour will highlight the wetlands and the marine life that live within, such as: Endangered California Ridgway's rails and salt marsh harvest mice. Also cottontail rabbits, peregrine falcons, pelicans, egrets, terns, and stilts. Large rays and small leopard sharks can be seen in the sloughs at the farther reaches of the island. To register go to <https://www.eventbrite.com/e/inner-bair-island-walking-tour-tickets-51408139128>.

Hike the Mallard Slough

Environmental Education Center, Alviso
10:00 a.m. – 12:00 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. Rain will cancel this hike due to possibly muddy trail. Led by Steve Stolper, certified California Naturalist. Reservations Recommended. Go to:

<https://hikeeectrail.eventbrite.com> Questions? Hope: 408-262-5513 ext. 104.

Saturday December 22

*Marshlands of Dreams

Visitor Center, Fremont
8:30 a.m. – 9:30 a.m.

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

Saturday December 29

Fox Stories: 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 from the Urban Wildlife Research Project. Register at <http://donedwardsfox.eventbrite.com>.

Saturday January 5

Nature Walk for Health

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

See December 1 for program description and registration information.

Saturday, January 12

Tai Chi & Refuge Nature Walk

Environmental Education Center, Alviso
9:30 a.m. – 11:00 a.m.

See December 1 for program description and registration information.

Hike the Mallard Slough

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

See December 15 for program description and registration information.

*Family Bird Walk

Visitor Center, Fremont
1:00 p.m. – 3:00 p.m.

See December 8 for program description and registration information.

Saturday, January 19

Stewardship Saturday

Visitor Center, Fremont
9:30 a.m. – noon

See December 1 for program description and registration information.

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 19

Restoration Work Day
Environmental Education Center, Alviso
10:00 a.m. – 12:00 p.m.

See December 1 for program description and registration information.

Salt Marsh Walk – King Tides
Visitor Center, Fremont
10:00 a.m. – 11:30 a.m.

Take a walk with docent Gregg Aronson around the wetlands of the wildlife refuge and learn about their history. One of the highest tides of the season will take place at 10:30 a.m. 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. Register at <https://marshwalk.eventbrite.com>.

Pacific Flyway
Environmental Education Center, Alviso
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 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. Reservations Recommended. Go to: <https://pacificflyway.eventbrite.com>. Questions? Call Hope: (408) 262-5513 ext. 104.

Twilight Marsh Walk
Visitor Center, Fremont
4:30 p.m. – 6:15 p.m.

See December 1 for program description and registration information.

Saturday, January 26

Ohlone in the Marsh: Staves (Games)
Environmental Education Center, Alviso
10:00 a.m. – 11:30 a.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 some of 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. Reservations

Recommended. Go to: <https://eecohtonestaves.eventbrite.com>. Questions? Call Hope: (408) 262-5513 ext. 104.

Community Science Training Day
Environmental Education Center, Alviso
1:00 p.m. – 2:30 p.m.

Are you interested in volunteering at the Refuge while also contributing to real scientific studies? Come join us for a training day to learn about the various Community Science projects we have and how to get involved! You'll get trained that day, so that you are ready to volunteer! Community Science projects are for ages 15 and up. Must be able to commit to one monitoring day per month. Reservations Recommended. Please email Hope Presley at watershedwatchers@sfbws.com.

Fox Stories: Indicators that Fox are in Your Area
Visitor Center, Fremont
2:00 p.m. – 3:30 p.m.

See December 29 for program description and registration information.

Saturday, February 2

Tai Chi & Refuge Nature Walk
Environmental Education Center, Alviso

9:30 a.m. – 11:00 a.m.

See December 1 for program description and registration information.

Stewardship Saturday
Visitor Center, Fremont
9:30 a.m. – noon

See December 1 for program description and registration information.

Plants for Beginners: Roots and Underground Parts
Environmental Education Center, Alviso
10:00 a.m. – 12:00 p.m.

They're in cracks in the sidewalk and they make up entire forests--plants are everywhere! Did you know that you can learn a lot about plants with some basic knowledge? We'll take a walk around the upland garden at a botanist's pace (sloowly) using the native plants to learn easy-to-remember baseline plant knowledge. Wear weather appropriate clothing for being outdoors, bring a water bottle, and a little sketchbook if drawing helps you remember! And be prepared to develop the vocabulary you need to be plant literate! Good for all ages! Each program will have a different topic depending on the season! Reservations recommended. Go to: <https://plantseecseeds.eventbrite.com>. Questions? Call 408-262-5513 ext. 104.

Nature Walk for Health
Visitor Center, Fremont
10:30 a.m. – 11:30 a.m.

See December 1 for program description and registration information.

Saturday, February 9

Restoration Work Day
Environmental Education Center, Alviso
10:00 a.m. – 12:00 p.m.

See December 1 for program description and registration information.

Salt Marsh Walk
Visitor Center, Fremont
10:00 a.m. – 11:30 a.m.

See December 8 for program description and registration information.

Twilight Marsh Walk
Visitor Center, Fremont
4:30 p.m. – 6:15 p.m.

See December 1 for program description and registration information.

Saturday, February 16

Hike the Mallard Slough
Environmental Education Center, Alviso
10:00 a.m. – 12:00 p.m.

See December 15 for program description and registration information.

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

See January 19 for program description and registration information.

Intro to Geospatial PDF Maps
Visitor Center, Fremont
10:30 a.m. – noon

What's a geospatial PDF map? How do you use it? A geospatial map is a map that you download and store on your smart phone. Use the free app called Avenza Maps to view and navigate from the stored map in your phone. Use it on hikes or bike rides to log your distance, start time, and duration, as well as perform other functions. You don't need wi-fi or a data connection once the app is installed. It uses your phone's GPS feature so it works even if you are out of range of mobile phone service. Meet at the Visitor Center to see a slideshow and find out how to obtain a copy of a geospatial map of the Don Edwards SF Bay National Wildlife Refuge. A live demonstration will follow. Led by docent Gregg Aronson. Register at <https://geopdf.eventbrite.com>.

Saturday, February 23

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 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. All ages are welcome. Reservations recommended. <http://eecinsect.eventbrite.com>. Questions? Call 408-262-5513 ext. 104.

Fox Stories: Indicators that Fox are in Your Area
Visitor Center, Fremont
2:00 p.m. – 3:30 p.m.

See December 29 for program description and registration information.

EARTH DAY 2019

**TEEN
WILDLIFE ART SHOW**

at Don Edwards San Francisco Bay National Wildlife Refuge

Artwork will be on display from April to May

Open to students grades 6-12

All submissions are due by March 2nd at the Environmental Education Center in Alviso and should be no larger than 24" by 32", be prepared with a securely attached hanger, the registration form, and label that includes the artist's name, grade, and the title of the piece.



Ayesha
Grade 9
Scrub Jay

Artwork should incorporate the Earth Day 2019 theme

**"Protecting
Species"**

The registration form can be accessed at

[https://www.fws.gov/refuge/
don_edwards_san_francisco_bay/](https://www.fws.gov/refuge/don_edwards_san_francisco_bay/)

Field Trips to the Refuge

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 Learning Center in Fremont

Wetland Round-Up Field Trips

We anticipate offering the field trip program March – May, 2019. Please note that due to staffing and budget we may reduce the number of available field trip dates.

Instructions about scheduling a SPRING 2019 field trips will be posted on our website on Wednesday, November 28, 2018. You will be notified about your status the week of December 3, 2018.

https://www.fws.gov/refuge/Don_Edwards_San_Francisco_Bay/WetlandRoundUp_Fremont.html

Contact the Environmental Education Staff at Fremont:

Office: (510) 792-0222 x 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 (Kinder – 4th grade)

https://www.fws.gov/refuge/Don_Edwards_San_Francisco_Bay/WetlandRoundUp_Alviso.html

Contact the Environmental Education Staff at Alviso: We anticipate offering the field trip program March – May, 2019. Please note that due to staffing and budget we may reduce the number of available field trip dates.

Instructions about scheduling a SPRING 2019 field trips will be posted on our website on Wednesday, November 28, 2018. You will be notified about your status the week of December 3, 2018.

Office: (408) 262-5513 ext 100

Cell: (510) 377-5250

E-mail: genie_moore@fws.gov

Wetland Round-Up Field Trip Workshops

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

Watershed Watchers Program

Habitat Restoration Service Learning Field Trips (5-12th)

The Watershed Watchers program is excited to announce the addition of Habitat Restoration Service Learning Field Trips for grades 5-12th! Students have the opportunity to learn about the important habitats that surround the Bay, the wildlife that depend on them and how they help on site and at home! Watershed Watchers is an interpretive program offered at no cost through the cooperative efforts of the Santa Clara Valley Urban Runoff Pollution Prevention Program, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society.

Field trips include a Habitat Hike, going on the boardwalk and levee trails seeing all five habitats at the Refuge; Restoration Work, improving Upland habitat in the Butterfly Garden and surrounding areas by removing invasives and planting natives; and an optional trash pickup, using the Litterati app to document the types of trash found. Field Trips are limited to a max of 35

students, and a min of 10. The time frame is 10:00am – 1:00pm, including time for lunch.

Program Offerings: Programs will be offered from September – May on Tuesdays and Thursdays at the Environmental Education Center in Alviso. **Due to funding restrictions, program numbers are limited and first priority will be given to schools located within Santa Clara County.*

Please contact Hope Presley, Watershed Watchers Program Coordinator, at hope.presley@sfbws.com or (408) 262-5513 ext. 104 to set up your field trip!

https://www.fws.gov/refuge/don_edwards_san_francisco_bay/WatershedWatchers.html

College and University Field Trips

Staff-led Field Trips

Guided field trips by staff are 2 hours and include a PowerPoint presentation, followed by a Habitat Hike at the Environmental Education Center in Alviso. Reservations must be made at least eight (8) weeks in advance of the desired field trip date. Please contact Hope Presley at hope.presley@sfbws.com or (408) 262-5513 ext. 104.

Instructor-led Field Trips

Instructors from local colleges can lead their own field trip excursions at the Environmental Education Center in Alviso. All instructors planning this type of excursion 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 Hope Presley at hope.presley@sfbws.com or (408) 262-5513 ext. 104.

Due to funding restrictions, program numbers are limited and first priority will be given to colleges located within Santa Clara County.



Programs for Scout Groups

Programs are offered for Boy and Girl Scout Groups at the Environmental Education Center in Alviso and are sponsored by the Watershed Watchers Program. *Please note: Programs are 1.5 hrs, and are offered Sept - May only. Must be scheduled 8-12 weeks in advance, and badges are not provided (group leaders are responsible for fulfilling badge requirements).

Visit https://www.fws.gov/refuge/Don_Edwards_San_Francisco_Bay/Scouts.html for additional information and to choose desired program.

Please contact Hope Presley at hope.presley@sfbws.com to schedule.

Due to funding restrictions, program numbers are limited and first priority will be given to groups located within Santa Clara County.



Application for 2018/2019 Blue Goose Bus Fund

The Blue Goose Bus Fund was started with funding from the U.S. Fish and Wildlife Service's Connecting People with Nature Program. The San Francisco Bay Wildlife Society has provided additional funding for the 2018/2019 school year. The program will be administered by the U.S. Fish and Wildlife Service and the San Francisco Bay Wildlife Society Staff.

The fund was created to help Title 1 schools and schools with proven hardships to access the Wetland Round-Up at the Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center in Alviso and the Newark Slough Learning Center in Fremont.

The San Francisco Bay Wildlife Society will pay up to \$700 for transportation for a field trip. If you are awarded funding for a bus you will be expected to hire the bus and mail a copy of the invoice to the San Francisco Bay Wildlife Society. Once they receive the invoice they will send the check for up to \$700 either to the bus vendor directly (school district or local vendor) or to the school/school district for

the reimbursement, whichever method is preferred by the school.

PLEASE NOTE: If your school is in need of transportation to a field trip, you will need to reserve a field trip date first and then fill out a Blue Goose Bus Fund Application Form. Please follow these steps and we will contact you as soon as possible with a response. You may also contact Genie Moore at 408-262-5513 ext 100 or at genie_moore@fws.gov

Please refer to our website for more information: https://www.fws.gov/refuge/Don_Edwards_San_Francisco_Bay/Environmental_Education.html

*All of our programs are offered FREE of charge. Location of activities and trail conditions may vary. Please call for accessibility information.



TIDELINE

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To receive *Tideline*, email paul_mueller@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 & 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 Islands NWR, Marin Islands NWR, Salinas River NWR, and San Pablo Bay NWR.

Tideline is On-Line Visit our web sites at

- https://www.fws.gov/refuge/antioch_dunes
- https://www.fws.gov/refuge/don_edwards_san_francisco_bay
- https://www.fws.gov/refuge/ellicott_slough
- https://www.fws.gov/refuge/farallon_islands/
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- https://www.fws.gov/refuge/san_pablo_bay



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Tia Glagolev of Visitor Services leads programs for school field trips to the Don Edwards San Francisco Bay National Wildlife Refuge.

SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE COMPLEX

WINTER 2018-2019
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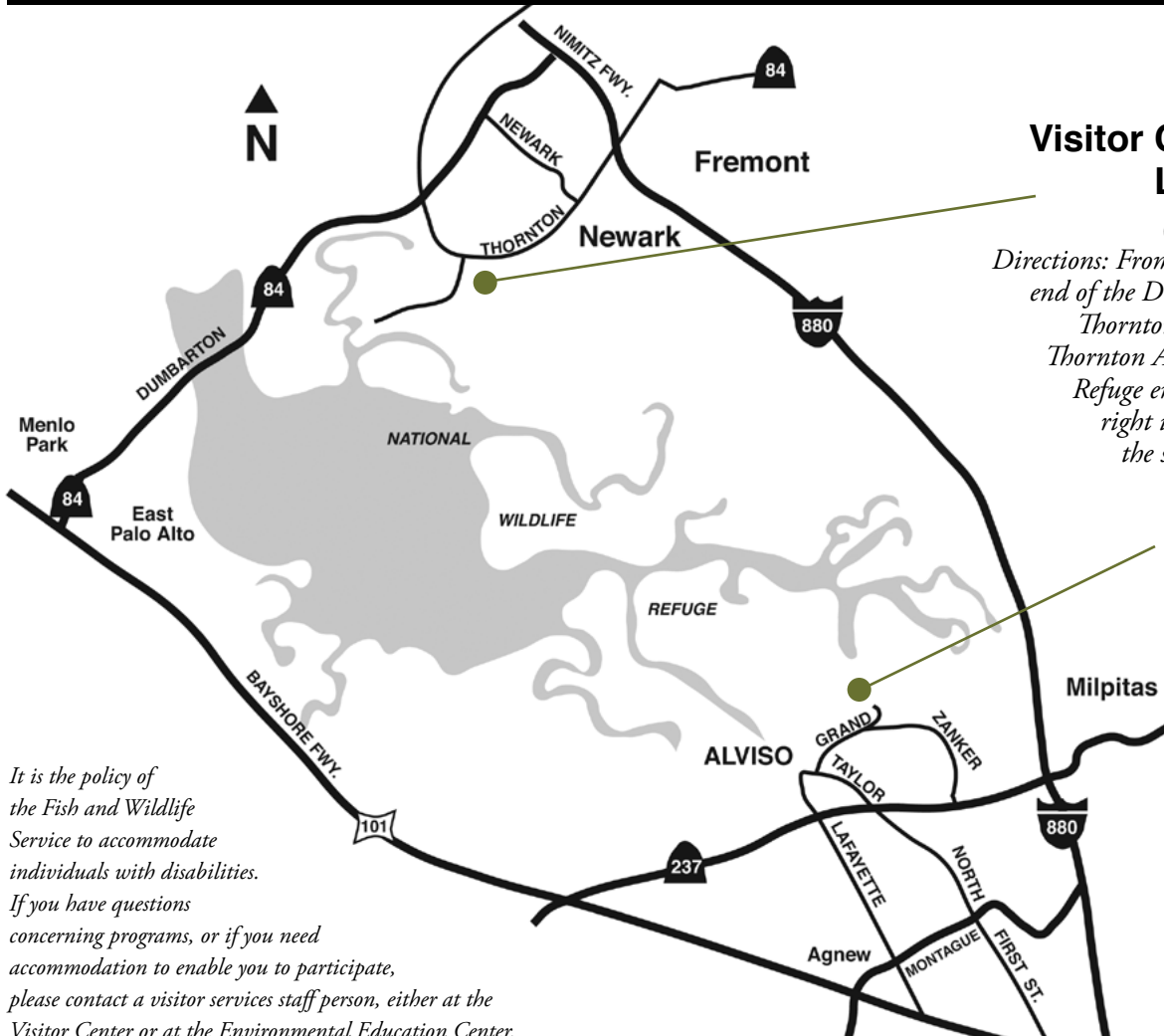
Tideline



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Antioch Dunes / Don Edwards / Ellicott Slough / Farallon Islands / 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.