

Tideline



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

Inspiring Youth One Piece of Litter at a Time

By *Olivia Andrus*

The San Francisco Bay Area is experiencing a booming economy, which often brings many people to the area. An increase in population also brings trash, which can accumulate in many public places including the Don Edwards San Francisco Bay National Wildlife Refuge. Something needed to be done.

Like all great projects, the Pollution Prevention Project first started as an idea. Julie Kahrnoff, former San Francisco Bay Wildlife Society Interpretive Specialist & Watershed Watchers Program Coordinator, discovered an app called Litterati™ that would document the types of trash found in outdoor spaces and its exact location. Julie was convinced that this platform would be perfect for litter cleanup projects and pollution prevention education.

How does Litterati™ work? The user takes a photo of a piece of trash using a mobile device, hashtags the photo, and uploads the geotagged photo into the Litterati™ database. The user then picks up the trash and disposes of it properly.

The information generated is useful for tracking the total amount of trash collected, types of trash found, trash locations, and the date when each piece of trash was found. This information allows the user to locate trash hotspots, see trends in the types of trash found, evaluate the efficiency of trash cleanups in specific locations over time, and much more. Having evidence of what types of trash is most prevalent can be used to stop trash at the source.

In the fall of 2015, the San Francisco Bay Wildlife Society, a Friends group of the



Youth from Children's Discovery Museum restored habitat and participated in a trash cleanup. Photo: Hope Presley

San Francisco Bay National Wildlife Refuge Complex, applied for, and received, a grant from the Santa Clara Valley Water District to clean up sections of the Don Edwards San Francisco Bay National Wildlife Refuge. Funding went towards hiring staff to oversee the cleanup projects, purchasing mobile devices to document the trash, and developing a mobile display to educate the public about the harmful effects of trash on wildlife and the environment.

I had heard about the pollution project early on and wanted to be involved, since I've always loved litter cleanups. When I found out I was hired to run the program, I was completely and utterly grateful for the opportunity!

The goal of the project was not only to incorporate technology and engage youth with trash cleanups, but also to focus on the removal of microtrash. Microtrash are the

pieces of trash that were once a part of the whole but has now separated into smaller fragments. Scientists are now saying that cleaning up microtrash should be a strong focus of litter cleanups because the smaller pieces are being consumed by animals and leading to major problems in every ecosystem.

In the beginning, I worked exclusively with the San Jose Conservation Corps. Teams of 10 men and women worked for 20 days at different ponds around Don Edwards San Francisco Bay National Wildlife Refuge. Then I took this project and adapted it to fit many different programs at the wildlife refuge.

It was first incorporated into habitat restoration and community service-learning programs at the Environmental Education

continued next page

Center in Alviso. In addition to planting, weeding, and mulching the native gardens and picking up trash, students learn about the problems associated with litter and how it is affecting the environment around them. They also share solutions about how they can change personal habits that will prevent further trash accumulation.

The students split into groups, are given an iPad with the Litterati™ app, trash pickers, trash bags, and set out for a day of fun! At the end everyone gathered back together, and each group's bag was weighed in front of the whole class. The group who had the most trash had the bragging rights for the rest of the day.

We then adapted the pollution project and created a citizen science project. A total of 4,403 members of the public have participated in our citizen science program. Since the start of this program, 3.14 tons, or 509 bags of trash, have been collected. More than 13,000 photos have been uploaded into the Litterati™ database, making our project the number one Litterati™ account in the United States. This project was so successful that the U.S. Fish & Wildlife Service National Conservation Training Center in West Virginia asked us to host a webinar about the citizen science project that had been created.

One of the reasons why this project was so successful is how it connects people to the benefits of picking up trash. People become engaged because they can see the immediate impact they were making on the environment. Each piece of trash picked up increases their motivation. At the end of the program I announce the total weight they collected and it clicks! Their faces brighten with amazement. I would hear them say, "I want to use this app when I go hiking," or "I want to come back and do this again." It was truly inspiring and made me want to do more.

The results of this project showed that the number one type of trash found on the refuge was plastic. The second was shotgun shells. This information has already influenced how Don Edwards San Francisco Bay National Wildlife Refuge is approaching to resolve the trash issues. In fact, after the results were announced the hunters that hunt on the refuge conducted their own cleanup of the hunt blinds. When I went to check on the ponds there was almost no trash found.



Olivia Andrus

The highest levels of trash were found on Ponds A8 and A16. Pond A8 has the highest amount of trash due to the constant tides that bring in trash from the sloughs and bay, and the increase of homeless encampments surrounding the pond.

Pond A16 has the second highest levels of trash because of the amount of use by the public. These results have narrowed down where the wildlife refuge should focus on cleaning in the South Bay and determine how frequent the cleanups should take place in order to make a real impact.

The final part of this project was creating the educational display that shows how trash affects the environment. It was funded not only by the Santa Clara Valley Water District grant and San Francisco Bay Wildlife Society, but also by Whole Foods Market's Nickels for Non-Profits program and Clean Harbors Environmental Services.

The display consists of three boxes, each representing a habitat found at Don Edwards Wildlife Refuge. They are divided into two sections; one half shows a healthy environment with no trash in it and the second half shows how the environment is impacted by the trash. It is now displayed at the Environmental Education Center in Alviso. The display is portable and can be used for many different programs and outreach events.

This project has taken over three years from start to finish and I could not be prouder. I have found that we can fix the trash problem if we work together. New technological advancements are being made every day to fight against the ever-growing trash monster, modernizing the way we approach and fix the litter problem. The more agencies that have access to programs like this, the more likely a solution will be possible.



Above: Employees at FireEye using the Litterati app to document trash. Photo: Hope Presley. Below: Olivia Andrus weighing a bag of trash during a service-learning program. Photo: USFWS



For more information, please visit <http://sfbws.com/programs/watershed-watchers/scvwd-Litterati™-pollution-prevention-project>. You may also email Hope Presley at hope.presley@sfbws.com or call 408-262-5513 ext. 104.

Olivia Andrus is a graduate from Purdue University with degrees in Wildlife Biology and Film/Video Studies. She was a volunteer education intern at Don Edwards San Francisco Bay National Wildlife Refuge and was later the Operation Coordinator for the Pollution Project. She also worked for the non-profit Guadalupe River Park Conservancy as the Homeschool Lead Instructor. She is currently pursuing a Master's Degree in Science and Natural History Filmmaking.

Employee Profile: A Conversation with Federal Wildlife Officer Jesse Navarro About Law Enforcement, YouTube and the Advantages of Verbal Judo

by Doug Cordell

Jesse Navarro has served as Supervisory Federal Wildlife Officer at the San Francisco Bay National Wildlife Refuge Complex since 2013. The path that led him there was unusual for law enforcement. He sat down with the Refuge Complex's public affairs specialist Doug Cordell to talk about his role with the U.S. Fish & Wildlife Service, the surprising, new challenges he faces on the job, and how his unique background helps him meet those challenges.

Doug Cordell: You went to college at UC Santa Cruz. What did you study?

Jesse Navarro: I got my bachelors degree in Community Studies. I did my thesis on a bilingual, English-Spanish community radio station in Salinas, KHDC.

DC: What did you learn about community radio?

JN: It was a very interesting place—a small station that played music, but also educated the Spanish-speaking community about public health, worker rights, and nature. I started working there, and ended up staying as a DJ for seven years.

DC: What was that like?

JN: Pretty exciting. I played music—techno—and recorded Public Service

Announcements in English and Spanish. I also took calls from listeners, which I really liked.

DC: What kind of career were you were thinking about when you majored in community studies?

JN: I was planning on going into social work. While I worked at the radio station I had a second job as youth counselor in a group home for disadvantaged kids. That was very meaningful. It's why I got a full-time job as a Corrections Officer, because they told me I'd be on a career track to do social work in federal prisons. But the prison system was a terrible environment, so I eventually left that for the Border Patrol, and from there I became a Ranger with the Bureau of Land Management. That's where I was working when I was hired by the Refuge Complex.

DC: How did that variety of experiences prepare you for law enforcement on wildlife refuges?

JN: I didn't plan it that way, but it turned out to be great training. I got professional experience in communications, and I learned how to connect with people from different backgrounds. I also learned about



Jesse Navarro and daughter.

conservation and endangered species when I was at BLM, and did a lot of outreach to land owners and native tribes.

DC: What did you learn working in a federal prison?

JN: Confidence—and how to communicate! Because when it's just you and 150 guys, and you don't have a gun, just an emergency beeper, you better know how to communicate.

DC: What do you like most about your job now?

JN: Educating people about our refuges at community events. I like showing the public who I am as a person, beyond the gun and the badge, letting them see a law enforcement officer who also cares a lot about refuges and wildlife.

DC: What's the biggest challenge as a refuge law enforcement officer?

JN: YouTube videos of police violence. They make my job harder, because they shape public perception of police. That makes communication even more important, especially in enforcement actions. Sometimes you have to use a little verbal judo to defuse things.

DC: What would you change about the U.S. Fish & Wildlife Service?

JN: The lack of manpower for law enforcement. At our complex, it's just myself and one other officer patrolling seven refuges on tens of thousands of acres, over more than 100 miles. Sometimes it feels like law enforcement is the stepkid of the agency.

DC: What do you see for your career going forward?

JN: I'd like to do a detail at agency headquarters, to learn how the national law enforcement operation works and get the big picture.

Stop at our energizer station on Marshlands Road at Don Edwards San Francisco Bay National Wildlife Refuge in Fremont 7:00-9:00 a.m. and pick up a free tote bag, while supplies last.



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

Are you interested in seeing the flower blooms around some of the last intact vernal pools in the East Bay? You will learn about the unique features of vernal pool grasslands, 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.

Tours will occur at the Warm Springs Unit of the Don Edwards San Francisco Bay National Wildlife Refuge in south Fremont. These walking tours are typically in April and will be conducted on a Saturday and a weekday with two tours each. The tour will last 1.5-2 hours. Total walking distance will not exceed one mile, but terrain is uneven. Participants also must climb up and down a short step ladder to cross over fencing. Please wear sturdy shoes and dress according to the weather. Heavy rain will cancel.



Contra Costa gold fields

To optimize the botanical beauty on our tours, we will finalize the tour dates three weeks before the peak bloom. We will notify people on our email list, website, and social media. Peak blooms are dependent on the amount of rain we receive. To sign up for the email list, contact Ivette Loredo at ivette_loredo@fws.gov.



Flatface downingia

Once dates and times are released, you will need to register to reserve a spot (sign up information will be sent with dates). Once registered, directions to Warm Springs will be sent. Each tour is limited to 20 people due to the sensitivity of the vernal pool ecosystem.

San Francisco Bay Wildlife Society Quarterly Message

Recent Events: The 30th Anniversary Celebration and Nature Art Show held in October were a success, raising \$2,000! We plan to repeat this in future years. A BIG thank you to the artists who created the inspiring art. And thanks to all who attended. Hope you enjoyed it. We appreciate the organizers' efforts (Mary Deschene, Renee Fitzsimons, and Alison Armstrong). Thanks to Lori Duvall for driving our Giving Tuesday efforts too!

Completion of Santa Clara Valley Water District Grant Project: One special outcome of this grant project was an innovative exhibit about the impacts of trash. Clean Harbors Environmental Services, and Whole Foods Market also contributed funds to this exhibit. An overall project review is available via this link: <http://bit.ly/2DpmbX>. Contact Hope Presley, Interpretive Specialist and Watershed Watchers Coordinator at 408-262-5513 ext. 104 or hope.presley@sfbws.com for more information.

Blue Goose Bus Fund Donations Needed: Each year, thousands of students visit the Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center in Alviso (San Jose) and Newark Slough Learning Center in Fremont. Some students are unable to visit the refuge because of transportation costs. The Blue Goose Bus Fund (formerly known as the Yellow Bus fund) provides assistance for these schools. We need to increase the available funds for the upcoming 2018-19 school year. Please consider a donation to the Blue Goose Bus Fund! Go to www.sfbws.com/donate or mail to: SFBWS, PO Box 234, Newark, CA 94560.

Volunteer Opportunities: We continue to seek volunteers to get involved with the San Francisco Bay Wildlife Society – join us! Volunteers are vital to nature store operations at Fremont and Alviso as well as to assist various committees that support the San Francisco Bay Wildlife Society's mission and vision. Other volunteer opportunities are also available. Reach out to Mary Deschene, Program Administrator at mary.deschene@SFBWS.com or 510-792-0222 ext. 364 for more information.

Check out www.sfbws.com or our Facebook page [@SanFranciscoBayWildlifeSociety](https://www.facebook.com/SanFranciscoBayWildlifeSociety) to stay up to date on Society news. I also strongly encourage a visit to the National Wildlife Refuge Association site refugeassociation.org to understand the challenges facing wildlife refuges today.

As always, we welcome your input. Send your thoughts to ceal.craig@sfbws.com.

Cecilia (Ceal) D. Craig, PhD

President, SFBWS Board of Directors



2018 Annual Mother's Day Celebration

Saturday May 12, 2018
10:00 a.m.-3:30 p.m.

Free Public Event! Registration Required*

Guided Nature Walks * Live Bird Show
Craft Your Own Gifts * And More!

*To Register visit: <https://mothersdayeec2018.eventbrite.com>

Bring a picnic and enjoy the wetlands and wildlife!

Where: Don Edwards San Francisco Bay
National Wildlife Refuge
Environmental Education Center
1751 Grand Boulevard, Alviso
(North San Jose)



Santa Clara Valley
Urban Runoff
Pollution Prevention Program

The U.S. Fish & Wildlife Service is committed to providing access to this event for all participants. Please direct all requests for sign language interpreting services, closed captioning, or other accommodation needs to Genie Moore at 408-262-5513 ext. 100, TTY (800) 877-8339 or genie_moore@fws.gov by close of business May 6, 2018.



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 and December 31, 2017. These gifts directly support the refuge and its programs, such as publishing *Tideline*, restoring habitat, and offering environmental education and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.

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Brian Strom

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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:

- | | |
|--|--|
| <input type="checkbox"/> \$20 Student/Senior | <input type="checkbox"/> \$200 Corporation |
| <input type="checkbox"/> \$35 Individual | <input type="checkbox"/> \$250 Sponsor |
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| <input type="checkbox"/> \$75 Supporter | <input type="checkbox"/> \$1,000 Leader |
| <input type="checkbox"/> \$100 Participant | |

Check enclosed

For credit card payment, please use PayPal at www.sfbws.com/donate

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

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

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 3



Nature Walk for Health Visitor Center, Fremont

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

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

Volunteer Orientation – Alviso Environmental Education Center, Alviso

11:00 a.m.-noon

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.

Twilight Marsh Walk

Visitor Center, Fremont

5:00 p.m.- 6:45 p.m.

Cap off the day by experiencing the salt marsh at twilight on an easy stroll along Tidelands (1.3 miles) Trail. At the setting of the sun we will observe the beginning of nature's night shift. Come discover the sights, sounds, and smells of the refuge as night descends. Not suitable for young children. Go to <https://donedwardstwilight.eventbrite.com> or call 510-792-0222 ext. 363. Led by Mary and Gene Bobik.

Saturday, March 10

Stewardship Saturday

Visitor Center, Fremont

9:30 a.m.-noon

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.

*Restoring Inner Bair Island Walking Tour

Inner Bair Island, Redwood City

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

On this 1.5-mile walk, witness wetland restoration in progress. Hear the story of Bair Island and see how we are turning the former salt pond back into a healthy tidal marsh. Directions: Take Highway 101 and exit at Whipple Ave in Redwood City. Head west toward the bay. The road winds 0.5 mile becoming East Bayshore, then Bair Island Road. The Don Edwards National Wildlife Refuge Bair Island parking lot is on the right. Meet by the restrooms. RESERVATIONS RECOMMENDED. Go to <http://innerbairtour.eventbrite.com>.

Restoration Work Day

Environmental Education Center, Alviso

10:00 a.m.-noon

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 school, 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. Visit <https://restorationeec.eventbrite.com>. Questions? Call Hope at 408-262-5513 ext.104.

Salt Marsh Walk

Visitor Center, Fremont

10:30 a.m.-noon

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.

Sunday, March 11

Visitor Center Desk Training – Day 1

Visitor Center, Fremont

10:00 a.m.-3:00 p.m.

The refuge is seeking volunteers to staff the Visitor Center information desk. Once trained, volunteers work a minimum of two shifts a month for a minimum of four months. This training is six hours and broken up into two days. On Day 1, we will walk the trails, discuss the history of the refuge and its mission, learn about the wildlife that lives here, and hear about the benefits of becoming

a volunteer. To volunteer at the information desk, you must be able attend both training days. Day 2 training is held on Wednesday, March 14 from 6:00 p.m. – 8:00 p.m. To register, visit https://donedwards_infodesk.eventbrite.com. For more information, contact Paul Mueller or Carmen Minch at 510-792-0222, ext. 361 or 476, respectively.

Saturday, March 17

Hike the Mallard Slough

Environmental Education Center, Alviso

10:00 a.m.-noon

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 muddy trail. Led by Steve Stolper, certified California Naturalist. RESERVATIONS REQUIRED. Go to <https://hikeeetrail.eventbrite.com> Questions? Call 408-262-5513 ext.104.

Eco-Friendly Spring Cleaning

Environmental Education Center, Alviso

1:00 p.m.-2:30 p.m.

Getting ready to conquer your spring cleaning? Come join us at the education center to learn how to clean in a cost-effective, eco-friendly, non-toxic way. Whether you're looking to declutter or deep clean, we will provide you with the tools and resources to do so. This program is family-friendly, best for ages 10 and up. Register at <http://eececocleaning.eventbrite.com> or call 408-262-5513 ext. 102 for reservations.

*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, March 24

Webelos Adventure Into the Wild

Visitor Center, Fremont

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. The Refuge Headquarters offer Webelos programs for up to 15 Webelos. Registration required. Register at <https://donedwardswebelos.eventbrite.com>. Program led by June Smith.

continued next page

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.

Saturday, March 31

*Bird Watching for Beginners

Visitor Center, Fremont
8:30 a.m.-10:00 a.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.

Marsh Yoga

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

Find your center among the wetland habitats at the Don Edwards Refuge for an ecology-inspired yoga class! The day will consist of an hour of vinyasa flow overlooking a habitat teeming with wildlife and plants. The yoga practice will be followed by an optional, educational walk through the peaceful wetlands. Binoculars will be provided for wildlife and scenic viewing. Yogis of all skill-levels are welcome so bring a friend or make one while you're here. Bring a yoga mat. Consult with your doctor before participating in new exercises. Free registration at <http://eecmarshyoga.eventbrite.com> or call 408-262-5513 ext. 102 for reservations. Led by Brad Speno.

*A Taste of the Refuge

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

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

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>.

April

Saturday, April 7

Crafts in the Outdoors:

Beginning Leatherwork
Environmental Education Center, Alviso
10:00 a.m.-noon

Doing crafts outdoors is a wonderful experience. Make and decorate (tool) a small patch for your backpack or clothing made from vegetable tanned leather in this family-friendly program. Learn how Bay Area residents used the tanoak tree for food and for making leather. Bring water, snacks, and appropriate clothing. This program runs rain or shine. Led by Steve Stolper, certified California Naturalist. RESERVATIONS REQUIRED. Go to <https://beginningleatherwork.eventbrite.com>. Questions? Call Hope at 408-262-5513 ext.104.



*Nature Walk for Health

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

See March 3 for program description.

Volunteer Orientation – Alviso

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

See March 3 for program description.

Twilight Marsh Walk

Visitor Center, Fremont
6:30 p.m.- 8:15 p.m.

See March 3 for program and registration information.

Saturday, April 14

Pacific Flyway

SF2 Trail, Menlo Park
3:00 p.m.-4:30 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. REGISTRATION REQUIRED. Go to <https://pacificflyway.eventbrite.com>. Questions? Call 408-262-5513 ext. 104.

Saturday, April 21

Earth Day Cleanup on

Stewardship Saturday
Visitor Center, Fremont

9:30 a.m.-noon

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 or register at <https://DonEdwardsEarthDay.eventbrite.com>.

Restoration Work Day on

Earth Day

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

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 school, 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. Visit <https://restorationeec.eventbrite.com>. Questions? Call Hope at 408-262-5513 ext.104.

Salt Marsh Walk

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

See March 10 for program and registration information.

Saturday, April 28



Nature Yoga

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

Enjoy the benefits of Yoga outdoors with great views of the salt marsh. Through story and postures, learn what attracted people and wildlife to the Bay. There will be a short hike to the site 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 in new exercises. Recommended for ages 13 and up. Reservations are required. Register at <http://donedwardsyoga.eventbrite.com> or call 510-792-0222 ext. 362. Led by Carmen Minch.

*Family Bird Walk

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

See March 17 for program and registration information.

Paint with a Ranger

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

Connect with nature via paint! Art is a great way to gain a new perspective on what you see out on the refuge. It allows you to discover shapes and colors you may not have noticed before. Each Paint with a Ranger program will have a different theme. All materials are supplied so just bring yourself, your family, and friends. All skill levels are welcome to join. Recommended for ages 7 and up. Reservations required. Please visit <https://paintranger.eventbrite.com>. Questions? Call Hope at 408-262-5513 ext.104.

Insect Exploration

Environmental Education Center, Alviso

1:00 p.m.-3:00 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. All ages are welcome. Register at <http://eecinsect.eventbrite.com> or call 408-262-5513 ext. 102.

Indicators that Fox are in Your Area

Visitor Center, Fremont

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

See March 31 for program and registration information.

May

Saturday, May 5

Stewardship Saturday

Visitor Center, Fremont

9:30 a.m.-noon

See March 10 for program and registration information.

Webelos Adventure Into the Wild

Visitor Center, Fremont

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

See March 24 for program and registration information.



*Nature Walk for Health

Visitor Center, Fremont

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

See March 3 for program description.

Volunteer Orientation – Alviso

Environmental Education Center, Alviso

11:00 a.m.-noon

See March 3 for program description.

Geology Walk

Environmental Education Center, Alviso

1:00 p.m.-2:30 p.m.

Join one of our Student Conservation Association interns, Haleigh, for a fun walk amongst the refuge habitats to discuss the geology of the area. We'll learn about the geologic history of San Francisco Bay during a short presentation and then head outside for an interactive walk on our trails. The history of salt harvesting in the South Bay will be highlighted as we walk through the historic and restored salt marshes. Appropriate for all ages. Reservations Required. Please visit <https://geologywalkeec.eventbrite.com>. Questions? Call Hope at 408-262-5513 ext. 104.

Saturday, May 12

*Restoring Inner Bair Island Walking Tour

Inner Bair Island, Redwood City

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

See March 10 for program and registration information.

Salt Marsh Walk

Visitor Center, Fremont

10:30 a.m.-noon

See March 10 for program and registration information.

Pacific Flyway

SF2 Trail, Menlo Park

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

See April 14 for program and registration information.

Friday, May 18

Night Sky Party!

Environmental Education Center, Alviso

8:30 p.m.-10:30 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. Go for a night hike on the boardwalk, looking for signs of nocturnal animals! 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. Great for Scout groups. RESERVATIONS REQUIRED. Go to <https://nightskyspring18.eventbrite.com>. Questions? Call Hope at 408-262-5513 ext.104.

Saturday, May 19

*Marshlands of Dreams

Visitor Center, Fremont

9:30 a.m.-10:30 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.

Restoration Work Day

Environmental Education Center, Alviso

10:00 a.m.-noon

See April 21 for program and registration information.

Intro to Geo PDF Maps

Visitor Center, Fremont

10:30 a.m.-noon

What's a Geo PDF map? How do you use it? A Geo PDF map is a map that you download and store on your smart phone. Use the free app called PDFMaps 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

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.

a Geo PDF 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>.

*Family Bird Walk

Visitor Center, Fremont

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

See March 17 for program and registration information.

Twilight Marsh Walk

Visitor Center, Fremont

7:00 p.m.- 8:45 p.m.

See March 3 for program and registration information.

Saturday, May 26



Nature Yoga

Visitor Center, Fremont

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

See April 28 for program and registration information.

Wonderful Wetlands

Visitor Center, Fremont

1:00 p.m.-2:00 p.m.

Food webs, wildlife habitat, flood protection, and carbon sequestration are just some of the benefits of salt marsh habitats. On this guided one mile walk, hear how tidal salt marshes benefit wildlife and people while we view examples of historic, developed, and restored wetlands. Led by Carmen Minch.

Tree Appreciation

Environmental Education Center, Alviso

1:00 p.m.-2:30 p.m.

Working hard, trees are the unsung heroes of everyday life. We breathe the air they provide. They filter pollutants from our water. We even build our homes with them. Join us at the Environmental Education Center to appreciate all the TREE-mendous things our plant friends have to offer. Expect crafts, walks and activities! Register at <http://eectrees.eventbrite.com> or call 408-262-5513 ext. 102 for reservations.

Indicators that Fox are in Your Area

Visitor Center, Fremont

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

See March 31 for program and registration information.

Field Trips to the Refuge

General Education Program Information

Dear Educators,

Last year, the San Francisco Bay National Wildlife Refuge Complex staff began a work prioritization process to guide the optimal allocation of our limited funding and staffing capacity in the years ahead. Over the next six to eight months the focus of our planning effort will be visitor services and the educational programs we offer.

To provide refuge staff the time necessary to engage in this important evaluation and planning effort, we will not be offering our usual lottery for the Wetland Round-up Field Trip program (Fremont and Alviso) for spring 2018.

We encourage you to reach out to other local environmental education providers for field trip options.

Please continue to check our website for updates and information about the 2018-2019 school year.

We appreciate your continued participation and support of our programs!

Sincerely,

Genie Moore,
genie_moore@fws.gov
408-262-5513 ext. 100

Tia Glagolev,
tia_glagolev@fws.gov
510-792-0222 ext. 474



Living Wetlands Program

The Living Wetlands program provides a 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: (See below for information about priority schools)

5th-12th grades: 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 limit of 60 students per field trip, and a 1:10 chaperone to student ratio is required.

5th-12th grades: 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 Title I schools in San Jose. Second priority will be given to schools in Milpitas, Santa Clara, Saratoga, Monte Sereno, Los Gatos, Campbell, and Cupertino.

For more information, or to make a reservation, call Colter Cook, Living Wetlands Program Coordinator, at 408-262-5513 ext. 102 or at colter.cook@sfbws.com.

Programs for Colleges and Universities at the Environmental Education Center in Alviso

Staff-led Field Trips

Guided field trips by staff generally last 1.5-2 hours. Reservations must be made at least eight weeks in advance of the desired field trip date. Please contact Hope Presley at 408-262-5513 ext. 104 or at hope.presley@sfbws.com.

College Instructor-led Visits

Instructors from area colleges can lead their own field excursions at the Environmental Education Center in Alviso. All college instructors planning this type of excursion must make a reservation at least eight weeks in advance of a desired 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 408-262-5513 ext. 104 or at hope.presley@sfbws.com.

Programs for Scout Groups

Programs offered for Boy and Girl Scout Groups at the Environmental Education Center in Alviso and are sponsored by the Watershed Watchers Program. Programs are 1.5 hours and activities vary depending on badge requirements. *Please note: Programs are offered Sept-May only, must be made 8-12 weeks in advance, and badges are not provided. Visit https://www.fws.gov/refuge/Don_Edwards_San_Francisco_Bay/Scouts.html for additional information. Please contact Hope Presley at hope.presley@sfbws.com to schedule.



Application for 2017-2018 Blue Goose Bus Funds

The Blue Goose Bus Fund was started with funding from the U.S. Fish & Wildlife Service's Connecting People with Nature Program. The San Francisco Bay Wildlife Society has provided additional funding for the 2017-2018 school year through a generous grant from the City of San Jose and the California Coastal Conservancy's Explore the Coast program. The program is administered by the U.S. Fish & Wildlife Service and 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 and Living Wetlands Field Trip programs at the Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center in Alviso and the Newark Slough Learning Center in Fremont.

Please refer to our website for more information at <https://go.usa.gov/xRVMJ>. You may also contact Genie Moore at 408-262-5513 ext. 100 or at genie_moore@fws.gov.



TIDELINE

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Editor: Carmen Minch

To receive *Tideline*, email carmen_leong-minch@fws.gov, or write to: *Tideline*, San Francisco Bay National Wildlife Refuge Complex, 1 Marshlands Rd, Fremont, CA 94555

San Francisco Bay National Wildlife Refuge Complex

Administered by the U.S. Fish & 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

- 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>
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- http://www.fws.gov/refuge/salinas_river
- http://www.fws.gov/refuge/san_pablo_bay



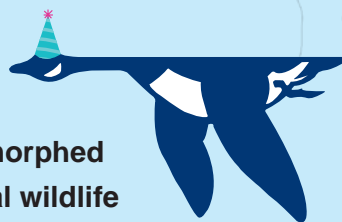
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San Francisco Bay NWR Complex

Happy Birthday to Us!

The National Wildlife Refuge System celebrates 115 years on March 14. In 1903, Pelican Island in Florida was the first federal land set aside to protect non-marketable wildlife, the brown pelican. Since then, the refuge system has morphed from three-acre Pelican Island to 566 national wildlife refuges, 38 wetland management districts, and three national monument areas encompassing more than 800 million acres of land and waters. The system is home to more than 8,000 species of wildlife.

How well do you know your national wildlife refuges? In honor of the refuge system's 115 years, take our quiz to see how you fare. You might learn something new, or get inspiration for your next vacation!

https://www.fws.gov/refuge/San_Pablo_Bay/115Trivia.html



UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
DON EDWARDS SAN FRANCISCO BAY
NATIONAL WILDLIFE REFUGE
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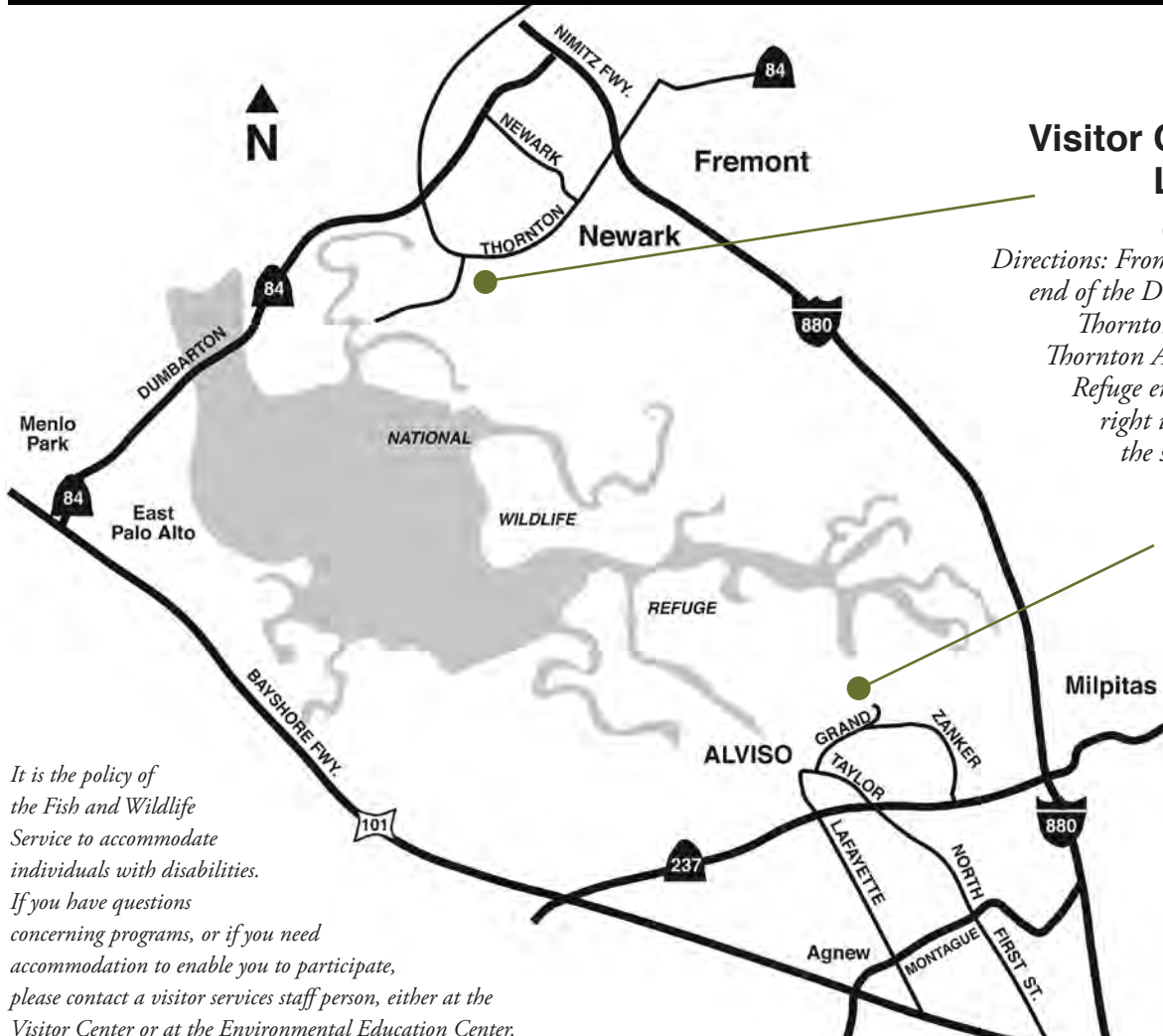
Inside This Issue

- 1-2 Litterati™
- 3 Employee Profile
- 4 Vernal Pool Tours
- 5 Mother's Day Celebration
- 6 Wildlife Society Thanks
- 7-9 Spring Activities
- 10 Field Trips to the Refuge

Tideline



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



Visitor Center, Fremont Learning Center

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

Environmental Education Center, Alviso

(408) 262-5513
Directions: From I-880 or 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.