

Tideline

WINTER 2016 / 2017

Volume 39, Number 4

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

Surveys Show a Silver Lining for Rare Smith's Blue Butterflies

By Jacob Martin

With a wingspan of only one inch, Smith's blue butterflies are a challenge to spot with the naked eye. Despite their small size and rarity, the attractive bright blue coloring of the males and bright orange and brown coloring of the females never fails to catch the attention of Senior Fish and Wildlife Biologist Jake Martin. Martin works for the U.S. Fish & Wildlife Service to help recover threatened and endangered wildlife, and has studied the butterfly for more than 10 years.

"Much of my work involves thinking and writing about how human activities affect the Smith's blue butterfly; it is always refreshing to get out and see them behaving naturally in relatively undisturbed habitat," Martin says.

Over the past two years, Dr. Richard Arnold of Entomological Consulting Services, Limited, has trained Martin and other U.S. Fish & Wildlife Service staff in techniques to survey for the Smith's blue butterfly. In addition to survey techniques, Dr. Arnold helped develop a protocol for long-term monitoring efforts at Salinas River National Wildlife Refuge, a safe haven for Smith's blue butterflies and many other native plants and animals that live within the coastal dune ecosystem. In 2015, biologists estimated 1300 Smith's blue butterflies at the refuge using the new survey techniques. Previous techniques involved capturing and marking individual butterflies, a time intensive effort.

Now, biologists have established permanent sampling transects through the Smith's blue butterfly habitat at the refuge. Biologists walk the transects twice per week throughout the season when adult but-



Comparison between the male (above) and female (next page) Smith's blue butterfly. Photos: Diane Kodama/FWS

terflies are present, which runs between June and September.

"We identify each butterfly by species and sex and record its location and behavior along each transect. Using spatial-statistical modeling techniques developed by Dr. Arnold, we are able to use the data to generate an estimate of the number of Smith's blue butterflies within each acre of transect," Martin explains. Biologists then multiply this per-acre estimate by the 11 acres of habitat at the refuge to estimate the total number of adult butterflies present.

"The ability to calculate population estimates every year is invaluable in helping us track butterfly population trends over time," says Refuge Manager Diane Kodama. "This information will guide our management priorities and track the success of our coastal dune restoration efforts."

To the keen observer, Smith's blue butterflies can be seen fluttering the coastal dunes or perched upon buckwheat plants around Monterey Bay from the Salinas River National Wildlife Refuge southward to Sand City. Within scrub, chaparral, and grassland plant communities, the butterflies can be seen from Carmel Valley to Big Sur, and northern San Luis Obispo County. These two areas, the Monterey Bay area and northern San Luis Obispo County, are the only two places where the rare blue butterfly is known to exist.

Listed as a federally endangered species by the U.S. Fish & Wildlife Service in 1976, the Smith's blue butterfly has struggled to survive against trampling by humans and vehicles, proliferation of weeds, and

continued next page

coastal development. Martin says that while development is not as much of a concern in the areas around Big Sur, because much of the habitat there is on Federal and State-owned land, fires are of great concern. Most recently, the Soberanes Fire burned more than 130,000 acres, including portions of the Los Padres National Forest along the Big Sur coastline. Some of that acreage burned included significant habitat of the Smith's blue butterfly.

"It remains to be seen how much of their habitat has been or will be impacted by the fire," Martin says.

Progress has been made to help preserve coastal dunes and other key habitats that are vital to the species' survival. The U.S. Fish & Wildlife Service, California State Parks, Monterey Peninsula Regional Parks, Big Sur Land Trust, The Nature Conservancy, U.S. Army, and U.S. Forest Service have collaborated to manage important butterfly habitat on their lands and permanently protect habitat from future development in some areas. However, additional proposed development on non-protected lands continue to threaten coastal dune habitats and the species they support like the Smith's blue

butterfly, the federally threatened Monterey spineflower and the federally threatened Western snowy plover.

The data collected over time from the annual seasonal surveys at Salinas River National Wildlife Refuge will help inform how land managers can work to restore habitat to support the Smith's blue butterfly population both at the refuge and in other areas where the species exists along California's central coast.

Martin says, "By tracking the status of the species at the refuge over time, the collected data could reveal population-level effects of management actions, and in turn inform how we approach habitat restoration in the future."

Jacob Martin is a Senior Fish and Wildlife Biologist with the Ventura Fish and Wildlife Office. He works on a variety of projects with threatened and endangered species, including consultation, planning, recovery, and permitting. He is stationed in Santa Cruz County and has the advantage of working closely with Refuge staff. He is a native Californian and has worked with fish and wildlife on the California Central Coast, the Sierra Nevadas, the Great Basin, and the Chihuahuan Desert.



Like many pollinators, Smith's blue butterflies are dependent upon specific native plants to carry out their life cycle. They lay their eggs only on the Coast buckwheat and Seacliff buckwheat.

A Smith's blue butterfly begins its life as an egg, which is placed by its mother in a buckwheat flower. After four to eight days, a caterpillar hatches from the egg and feeds on the flowers and seeds of its host buckwheat plant. After about a month of feeding and growing, the larva pupates on or beneath its buckwheat plant and spends the winter within a pupal case.

Adult Smith's blue butterflies emerge from their pupal cases the following summer. They survive as adults for about a week, on average, during which they feed on nectar from buckwheat flowers, mate, and produce the next generation of eggs.



Typical dune habitat of the Smith's blue butterfly. Photo: Jared Klein

Our Hunting Heritage

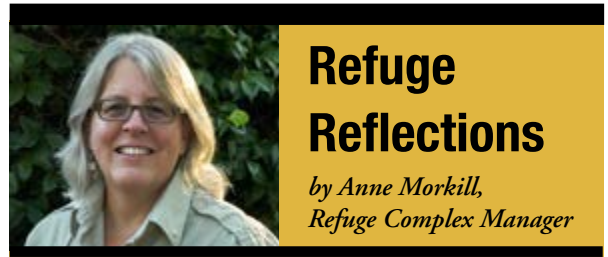
As temperatures dip and leaves begin to fall, another sign of autumn is the millions of waterfowl and shorebirds winging their way south along the Pacific Flyway from their northern breeding grounds. Their arrival is avidly awaited by refuge staff as well as birders and hunters alike. The whistling wings of ducks passing overhead and the sight of hundreds of small shorebirds hurriedly probing for food reminds me of my fortune in stewarding some of the nation's largest network of lands and waters set aside for wildlife. National Wildlife Refuges not only protect our natural heritage but also its cultural heritage by supporting traditional forms of wildlife-dependent recreation such as hunting.

Waterfowl hunting is a historical tradition in the San Francisco and Monterey Bay areas that continues today. The native people were gatherer-hunters, relying heavily on a wide range of plants and animals, including waterfowl, to feed their families.

When Europeans arrived, hunting was also a source of sustenance. Starting in the late 1800s, formal duck clubs took shape as hunting cabins and blinds were built along the edge of San Francisco Bay. The ghost town of Drawbridge in its heyday was renowned for outstanding hunting and fishing, accessible by boat and even special train runs to transport duck hunters. The sloughs and river mouths of Monterey Bay were also popular for waterfowl hunting by local residents and military personnel.

Because of sprawling urban development over the last half century, opportunities for hunting have become limited. This makes our refuges a valuable resource for local hunters still seeking to practice this traditional outdoor pastime and to connect with the land. We also recognize the need to minimize conflicts with other visitors who

enjoy refuges for other recreational activities such as nature observation and wildlife photography. This is accomplished through various zoning approaches, including



limiting the number of days that hunting may occur, and keeping other areas closed to hunting, so that we can ensure a safe, quality experience for all refuge visitors.

Waterfowl hunting season began on October 22 and ends January 29. Please visit our websites for more information about hunting that occurs on the San Pablo Bay, Don Edwards San Francisco Bay, and Salinas River National Wildlife Refuges.

Christmas Bird Count for Kids

at Don Edwards San Francisco Bay National Wildlife Refuge

January 21, 2017

8:30 a.m. - 1:30 p.m.

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

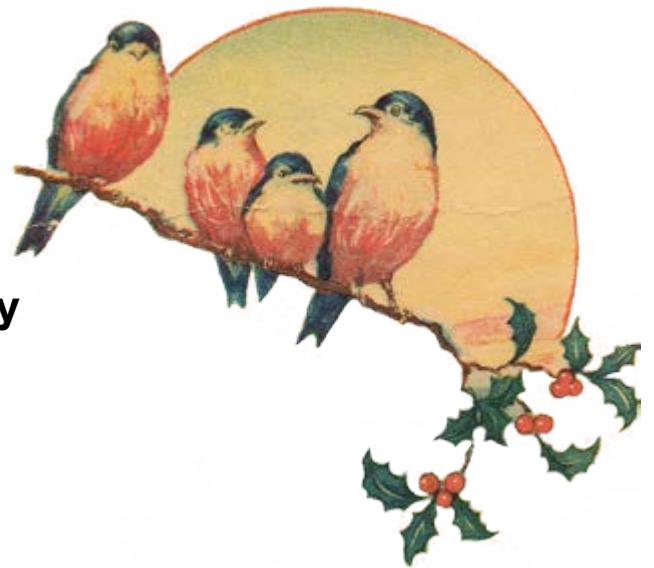
Recommended for ages 8-16. Minors must be accompanied by an adult.

Driving to specific birding sites may be necessary.

Bring binoculars if you have them, water, and a bag lunch.

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

Partnered with San Francisco Bay Wildlife Society and East Bay Regional Parks District, Coyote Hills.



Refuge Dispatches

by Leah Mould, Visitor Services Intern

The end of the year often gives us pause to reflect on the year's accomplishments. Below are highlights of what happened on each refuge in the San Francisco Bay National Wildlife Refuge Complex.

Antioch Dunes

Careful management and surveying of endangered species continue at Antioch Dunes. Sadly, low numbers of endangered Lange's metalmark butterflies, found only on Antioch Dunes, were counted during surveys this year. The low numbers are possibly due to weather conditions. Contra Costa wallflower and Antioch Dunes evening primrose surveys had over 1,000 and 7,000 plants respectively of each endangered species.

The California Conservation Corps and Wildlife Refuge Specialist Louis Terrazas worked to remove woody vegetation encroaching on important butterfly habitat. Work is being done to learn possible effects on habitat and endangered species from gypsum dust wafting into the Sardis Unit.

Don Edwards San Francisco Bay

Events continue at the Don Edwards San Francisco Bay NWR, with the celebration of the 10th year of the Habitat Heroes program at the Environmental Education Center. Habitat Heroes are 7th – 12th graders that help with our Marsh-in Summer Camp, an educational camp held on the refuge to introduce children to the importance of the habitats protected by the refuge.

The South Bay Salt Pond Restoration Project reached another milestone with the finalization of the Environmental Impact Statement for Phase 2 for Alviso and Ravenswood areas.

A crew from AmeriCorps NCCC, on loan from the Bureau of Land Management, rerouted part of the Tidelands Trail around the HQ building, as the old trail was

becoming highly eroded and unsafe. The refuge, Peninsula Open Space Trust, and other partners welcomed the public to the new trails on Bair Island in Redwood City after nearly three years of being closed.

Ellicott Slough

Annual amphibian sampling was completed in all Ellicott Slough NWR salamander breeding ponds (Ellicott, Prospect and Calabasas). Numerous healthy Santa Cruz long-toed salamanders were documented in

all ponds. California tiger salamanders were also found in Prospect and Ellicott Ponds. California red-legged frog tadpoles were captured at Calabasas Pond and for the first time, at Prospect Pond, making Prospect the first pond on the refuge known to support all three federally-listed species.

Ellicott Slough NWR hosted several new tours in May of 2016. The refuge partnered with the Resource Conservation District of Santa Cruz County to give a tour of Prospect Pond for members of the Santa Cruz Museum of Natural History. The tour highlighted Endangered Species Day and the federally-listed species found on the refuge. The refuge also led two class field trips for DeAnza College and U.C. Santa Cruz to talk about conservation biology management and freshwater ecology, using Ellicott and Prospect Ponds as case studies.

Farallon

Invasive plants continue to be a threat to the habitat. An Invasive Plant Inventory is being led by Barbara Holzman and Quentin Clark of San Francisco State University. Their report will help us prioritize invasive plant control and track changes in invasive plant distribution.

This year, Farallon NWR continued monitoring bird and wildlife populations, with mixed results. California sea lions had a tough winter. A lack of food caused by this year's El Niño caused many mothers-to-be to lose their unborn pups. Still, a record number of pups were born on

the island this summer. El Niño conditions also seemed to reduce the availability of small fish for the island's breeding seabirds. Most species, such as common murre, pigeon guillemots, and pelagic cormorants, did not produce as many chicks as usual in 2016. However, Cassin's auklets (krill specialists) and Brandt's cormorants (fish specialists) did surprisingly well.

The Farallon web cam is back up, thanks to cooperative effort with Point



Clockwise from top left: Endangered Lange's metalmark butterfly at Antioch Dunes Refuge. Photo: Susan Euing/FWS; Dipnet survey yielded many Santa Cruz long-toed Salamander larvae. Photo: Julie Kitzenberger; National Civilian Community Corps worked on the Tidelands Trail at Don Edwards Refuge. Photo: Edison Velez III; San Pablo Bay Refuge had its first Family Bike Day at Skaggs Island. Photo: Carmen Minch/FWS; Pigeon guillemots had fewer fledglings than previous years on Farallon Refuge. Photo: Josh Hull.

continued next page

Blue Conservation Science and California Academy of Sciences! View the islands from the new HD camera here: <http://www.calacademy.org/farallones>

Marin Islands

Marin Islands and their surrounding wetlands had a tough year. The egret and great blue heron rookery crashed again this year. The failure is likely due to a combination of mammalian predation and human disturbance. Black oystercatcher nesting pairs were surveyed, however no fledglings were viewed.

Salinas River

Thanks to US Fish & Wildlife Service Coastal Program and a partnership with the Big Sur Land Trust, the final round of efforts to control invasive grass in coastal dune habitat occurred. Once the invasive grasses are gone, the native coastal vegetation should flourish. This would include the coast buckwheat, host plant for the federally endangered Smith's blue butterfly.

Surveys for the Smith's blue butterfly occurred for the second year in a row during

the summer months. The initial count total appears to be similar to last year. However, the butterfly emergence pattern was unpredictable this year due to late blooming buckwheat and several weeks of cooler than normal coastal temperatures.

San Pablo Bay

Check out the new interpretive materials along the Sears Point/Dickson unit, including a new virtual guided walking tour hosted through the app Canogle, (to be renamed Vizzit), available through the Apple store. Restoration continues to play a major role on San Pablo Bay Refuge with the next site being Haire Ranch. Haire Ranch will be slowly re-vegetated to preempt problems sea level rise may cause.

This fall, bikers got a special treat to visit Skaggs Island, which is normally closed to the public. The refuge organized its first Family Bike Day as part of the Visions of the Wild Festival. More than 150 people came to the refuge to bike, walk and view wildlife.

Teen Environmental Art Show Now Open For Viewing at the Environmental Education Center

Organized by one of our teen volunteers, Vrinda Suresh, the show is a forum for today's teens to showcase their creativity and environmental consciousness through art. The exhibit will be open through December, so please bring friends and family to celebrate this wonderful event!



Help Us Protect Your San Francisco Bays Wetlands!

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

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

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

YES! I want to support San Francisco Bay Wildlife Society and its programs. My dues include a subscription to *Tideline*. Enclosed is my contribution of:

- \$20 Student/Senior
- \$35 Individual
- \$50 Family
- \$75 Supporter
- \$100 Participant
- \$200 Corporation
- \$250 Sponsor
- \$500 Sustainer
- \$1,000 Leader

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

Name _____

Address _____

City _____ State _____ Zip _____

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Thank you for your support!

For nearly 30 years, the San Francisco Bay Wildlife Society has:

- Introduced the refuge to tens of thousands of students of all ages
- Helped fund the Bair Island restoration and Management Plan, restoration work at Antioch Dunes NWR, and uplands restoration at the Environmental Education Center
- Provided weekend staff in Alviso through long-term partnerships with the City of San Jose and the Santa Clara Valley Urban Runoff Pollution Prevention Program
- Provided funding for a new boardwalk at the New Chicago Marsh Trail at the Environmental Education Center
- Funded a new greenhouse
- Provided funds to create a native plant nursery
- And much more

Help continue this tradition by becoming a Supporting Member of the Society.

Benefits include:

- Free subscription to *Tideline* newsletter
- Tax Deduction
- Free book – *Exploring Our Baylands*
- The joy of giving in support of the protection of this important environment.

San Francisco Bay Wildlife Society Quarterly Message

Volunteer & Donation Opportunities:

SFBWS is the Friends organization that helps the community to support the San Francisco Bay National Wildlife Refuges. We need volunteers to help with volunteer coordination, membership recruitment and member events, fundraising and partnership development, group tours, and running the nature stores which includes ordering and managing merchandise. SFBWS is also assisting refuge and SFBWS Environmental Education programs by providing funding for interns, and for transportation for low-income schools for field trips through our Yellow Bus Transportation Fund. Donations are welcome.

Contact Mary.Deschene@SFBWS.com, 510-792-0222, ext.364 for more information! See our website at sfbws.com. Mailing address: SFBWS, PO Box 234, Newark, CA 94560.

The City of San Jose received a Wu-Hoo award (also known as the Dr. Teng-Chung Wu Award) from the San

Francisco Bay Regional Water Quality Control Board for innovative pollution prevention activities, including the Living Wetlands program administered by SFBWS to help bring school children and the public to learn about life-long stewardship for San Francisco Bay, the habitat the refuge supports, and our role in keeping the baylands healthy for generations to come. See: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/dr_teng_chung_wu_award.shtml

Your feedback desired! We welcome continued feedback on the changed hours at the Visitor Contact Station (Fremont) and Environment Education Center (Alviso/San Jose), Nature Stores and San Francisco Bay Wildlife Society goals and mission. Go to sfbws.com/survey

Need key skills on Board of Directors:

We are looking for more Board of Director members, in particular people with a legal background and business financial experience. Let me know if you want to chat about these opportunities.

Future ideas:

The 30th anniversary of the San Francisco Bay Wildlife Society is on July 30, 2017. Let us know what type of celebration you would like to see. We would like to know our members! Tell us why you have supported the organization and what your ideas are about its future.

Out on the trail:

I was so excited to observe a Ruff in the ponds west of the road into the

Environmental Education Center a few weeks ago. Shout out to the San Francisco Bay Bird Observatory group that pointed the rare bird out so I could share their excitement.

Want more?

Check out www.sfbws.com and refugeassociation.org for more information and how you can get involved. As always, we welcome your inputs. Send your thoughts to [Ceal\[dot\]Craig\[at\]SFBWS\[dot\]com](mailto:Ceal[Craig@SFBWS.com)

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

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, 2016 and September 30, 2016. These gifts will be used for publishing *Tideline*, environmental education, habitat restoration, and interpretive programs at the San Francisco Bay National Wildlife Refuge Complex.

Leader

Clean Harbors Environmental District

Participant

Steve Ferguson, Natalie Forrest, Barb & William Francis, Marge Kolar, Tara Lee, Terry Smith, Gerald Watanabe

Supporter

Loring G Dales, David Epps, Kenneth Himes, Howard Shellhammer

Family

Brenda & Sheldon Baker, Jayita Bhojwani, Scott & Rachel Birkey, Art Garibaldi, John Lucas, John & Melanie, Howard Shellhammer, Sally Smythr

Individual

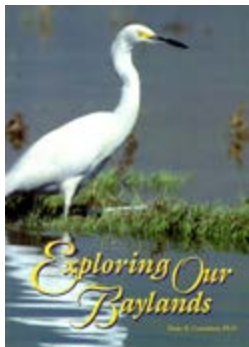
Thomas M Blalock, Joyce Lewis, Julie A Paccioretti, Tri-City Ecology Center, Marge E Wood

Senior/Student

Linda Felt, Pat Gordon, Martha H Hartsog, Nancy Milligan, Joan M Nolen, William & Pamela Rapp, Haven Thompson, Rosemary Schmele



Special Thanks to Clean Harbors Environmental Services, who donated \$6000 to help with matching funds for the educational display for our Santa Clara Valley Water District trash clean-up grant for Pollution Prevention.



Please accept a **FREE BOOK**

Exploring Our Baylands

with any purchase at our Nature Stores at the **Don Edwards San Francisco Bay National Wildlife Refuge**

2 Locations:

Visitor Contact Station, 2 Marshlands Road, Fremont, CA
Normal hours: 11:00 a.m. - 4:30 p.m. Wednesday - Saturday
Call to confirm hours: 510-792-0222, ext. 363

Environmental Education Center Lobby
1751 Grand Blvd, Alviso (San Jose), CA
Usually open 10:00 a.m. - 5:00 p.m. Saturdays, and some weekdays
Call for hours: 408-262-5513

Redeemed by: Name _____ Date _____ Circle: EEC VCS

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 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. Led by Matt Keehner.

Volunteer Orientation

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

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

*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.

Saturday, December 10

Drawbridge: A History Revealed

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

An abandoned town in the San Francisco Bay? That's right! Nestled on an island in the salt marshes of South San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful town full of nature lovers, or people scrambling out a living? How long did it exist? Find out at this program, led by Ceal Craig. Program will be of most interest to adults interested in history or nature. Note: this program does not include

the van tour. RESERVATIONS RECOMMENDED. Go to: <https://dbwinter.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

*Salt Marsh Walk

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

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

Holiday Crafts!

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

Spread the holiday cheer by creating fun handmade crafts. These nature-based project ideas make great gifts and decorations. Appropriate for children 6 and older. Register at: <https://eeeholidaycrafts.eventbrite.com> Questions? Call Julie at 408-262-5513 ext.104.

*Bird Watching for Beginners

Visitor Center, Fremont
2:30 p.m. – 4:00 p.m.

In this beginner's program, we will go over the use of binoculars, how to use a bird guide, and identify the birds we see on the trail. Recommended for ages 10 and up. Dress for the weather and wear comfortable shoes. Led by Carmen Minch.

Twilight Marsh Walk

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

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

Saturday, December 17

Stewardship Day

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

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

*A Change in the Tide

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

Take a walk around the refuge and explore the different habitats that line the San Francisco Bay.

Develop a greater understanding of why these habitats are here, how they've changed over time, and what is being done to protect them today. There will be opportunities for wildlife viewing, as winter is the prime time for waterfowl and shorebirds. This will be a 1.0-mile walk on flat terrain and boardwalk. Binoculars and/or camera are welcome. Led by Hope Presley. Register at <http://changetides.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

Saturday, December 31

Hiking Yogis

Visitor Center, Fremont
9:00 a.m. – 10:30 a.m.



Yoga poses often take the name of nature such as tree pose and half moon pose. On this 1.3-mile walk, we will incorporate some simple yoga stretches that mimic our natural surroundings, and return feeling refreshed and re-energized! Led by Carmen Minch. No mat needed. Good for the mind, body and soul. Wear comfortable clothes and shoes.

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 <https://donedwardsfox.eventbrite.com>

January

Saturday, January 7

*Nature Walk for Health

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



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

*Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 363. Led by Ken Roux.

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.

* Tiny Drifters

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

There's plankton in our Bay! Learn about the different characteristics of plankton and how they have adapted to survive. We will become planktologists for a day, collect water samples and identify these incredible organisms under a microscope. All ages are welcome. Register at <https://eectinydrift.eventbrite.com>.

Saturday, January 14

*Marshlands of Dreams

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

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

Drawbridge Slideshow

Auditorium at the Top of the Hill, Fremont
12:00 p.m. – 1:00 p.m.

An abandoned town in the San Francisco Bay? That's right! Nestled on an island in the salt marshes of South San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful town full of nature lovers, or people scrabbling out a living? How long did it exist? Find out at this slideshow program, led by Ceal Craig. Program will be of most interest to adults interested in history or nature. Register at <http://drawbridgefremont.eventbrite.com>. Note: this program does not include the drawbridge van tour.

Saturday, January 21

Christmas Bird Count for Kids

Visitor Center, Fremont
8:30 a.m. – 1:30 p.m.

Are you new to bird watching or want to know how to get started? Join our Christmas Bird Count for Kids! Go out with an experienced birder to specified locations and tally all the species you see over a 90-minute period. Return to our headquarters where you and your team will summarize your findings. This is a great way to get started in the sport of bird watching, provide scientists the data of what bird was seen and where, and enjoy the outdoors. Recommended for ages 8-16. Parent(s) are needed to drive to

nearby birding spots. Bring a bag lunch. Register at <http://xmasbirdcount4kids.eventbrite.com>. Call Carmen at 510-792-0222 ext. 476 for more information.

Hike the Mallard Slough Trail

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

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

*Pacific Flyway

SF2 Trail, Menlo Park
11:00 a.m. – 12:30 p.m.

Our wetlands are an important stop on the Pacific Flyway, a major bird migration route. Stroll with docent Laurel Stell to learn why birds migrate, 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 Julie at 408-262-5513 ext. 104.

Twilight Marsh Walk

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

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

Saturday, January 28

Stewardship Day

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

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

*Restoring Inner Bair Island Walking Tour

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

Bair Island is now open! 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 be-

coming 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>. Questions? Call Julie at 408-262-5513 ext.104.

*Wetlands Walking Tour

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

Our refuge consists of salt marshes, salt ponds, tidal and non-tidal sloughs. How do humans and wildlife depend on our wetlands? Come enjoy by a 0.5-mile walk through the wetlands, depicting the life and death struggles of our marsh inhabitants. Open to all ages, but best suited for ages 7 and up. Register at <http://eewetlandstour.eventbrite.com>. Questions? Call Julie at 408-262-5513 ext.104.

*Salt Marsh Walk

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

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

Indicators that Fox are in Your Area

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

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

February

Saturday, February 4

*Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 363. Led by Ken Roux.

*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. Led by Matt Keehner.

*Pacific Flyway

SF2 Trail, Menlo Park

10:00 a.m. – 11:30 a.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 Julie at 408-262-5513 ext. 104.

Duck Walk

Visitor Center, Fremont

3:00 p.m. – 4:30 p.m.

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

Saturday, February 11

Stewardship Day

Visitor Center, Fremont

9:30 a.m. – 12:00 p.m.

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

Intro to Geo PDF Maps

Visitor Center, Fremont

10:30 a.m. – 12:00 p.m.

What's a Geo PDF map? How do you use it? A Geo PDF map is a map 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, duration, and more. 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 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>. and for instructions on how to download the free app.

Jr. Refuge Ranger with Nature Play

Environmental Education Center, Alviso

1:00 p.m. – 2:30 p.m.

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

Volunteer Orientation

Visitor Center, Fremont

2:00 p.m. – 3:00 p.m.

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

Saturday, February 18

Hiking Yogis

Visitor Center, Fremont

9:00 a.m. – 10:30 a.m.

Yoga poses often take the name of nature such as tree pose and half moon pose. On this 1.3-mile walk, we will incorporate some simple yoga stretches that mimic our natural surroundings, and return feeling refreshed and re-energized! Led by Carmen Minch. No mat needed. Good for the mind, body and soul. Wear comfortable clothes and shoes.

Jr. Refuge Ranger Program

Visitor Center, Fremont

11:00 a.m. – 12:30 p.m.

Become an honorary Jr. Refuge Ranger by completing activities on the refuge. We will guide you in some of the activities that will help you earn the Refuge Ranger Badge. The rest of the activities can be completed on your own. Those who complete the activities in the booklet for

your age group will receive a Jr. Refuge Ranger badge. Register at <http://donedwardsranger.eventbrite.com>.

Twilight Marsh Walk

Visitor Center, Fremont

4:30 p.m. – 6:15 p.m.

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

Saturday, February 25

Crafts in the Outdoors: Beginning Leatherwork

Environmental Education Center, Alviso

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

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

Indicators that Fox are in Your Area

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

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

Alviso Slough Cleanup –

DATES available at

<http://sloughkeepers.com/>

joining-sloughkeepers

Alviso Marina through the Alviso Slough

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



Field Trips to the Refuge

General Education Program Information

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

Field Trips at Learning Center in Fremont

Wetland Round-Up Field Trip

Field trip dates will be offered March – May, 2017. Instructions about scheduling a SPRING 2017 field trips will be posted on our website on **Monday, November 21, 2016**. You will be notified about your status the week of December 12, 2016.

<http://go.usa.gov/xks5z>

Contact the Environmental Education Staff at Fremont:

Office: (510) 792-0222 ext. 475

Cell: (510) 377-7269

E-mail: tia_glagolev@fws.gov

Field Trips at the Environmental Education Center in Alviso

Wetland Round-Up Field Trips

Field trip dates will be offered March – May, 2017. Instructions about scheduling a SPRING 2017 field trips will be posted on our website on **Monday, November 21, 2016**. You will be notified about your status the week of December 12, 2016.

<http://go.usa.gov/xksPG>

Contact the Environmental Education Staff at Alviso:

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).

Living Wetlands Program

Living Wetlands 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 1 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, contact the Living Wetlands Program Coordinator at 408-262-5513 ext. 102 or at email livingwetlands@sfbws.com.

Programs for Colleges and Universities

Guided Field Trips are offered at the Environmental Education Center in Alviso. Programs generally last from 1.5-2 hours. *Reservations must be made at least 8 weeks in advance of the desired field trip date.* Please contact Julie Kahrnoff, at 408-262-5513 ext. 104 or at Julie.kahrnoff@sfbws.com

College instructor-led tours are allowed at the Environmental Education Center in Alviso. All college instructors planning this type of field trip must make a reservation at least 8 weeks in advance of the desired field trip date. If your group size is over 25 you will need to acquire a Special Use Permit from our Headquarters office in Fremont. Please contact Genie Moore, at 408-262-5513 ext. 100 or at Genie_moore@fws.gov or Julie Kahrnoff, at 408-262-5513 ext. 104 or at Julie.kahrnoff@sfbws.com to make a reservation.

Application for 2016/2017 Transportation Funds

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

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 Bus Fund Form. Please follow these steps and we will contact you as soon as possible with a response.

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

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



Scout and Youth Group Programs

The Don Edwards San Francisco Bay National Wildlife Refuge offers free hands-on, programs for youths. During the programs participants learn about endangered species, migratory birds, wetland habitats, and the relationship between personal habits and their effects on the San Francisco Bay. These programs are designed to meet badge/patch requirements of Scout Groups, but anyone can participate. Because of the popularity of such programs, reservations are required. Children under the age of 16 must be accompanied by an adult. Badges are not provided.

Programs at the Environmental Education Center are sponsored by the Santa Clara Valley Urban Runoff Pollution Prevention Program and the San Francisco Bay Wildlife Society.

Youth Group Programs at the Environmental Education Center in Alviso

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

- Webelos Adventure Into the Wild

- Daisies Journeys
- Brownies Journeys and Badges
- Juniors Journeys and Badges
- Cadette Journeys

All minors must be accompanied by an adult.

Saturday, February 25th

Girl Scouts World Thinking Day Environmental Education Center, Alviso 1:00 p.m. – 3:00 p.m.

Be part of the global community. Each year in February on World Thinking Day girls honor their sister Girl Guides and Girl Scouts by taking time to give thanks for their international friendships. We will also remember that Girl Scouts of the USA is part of a global community. Join us on this journey of growth as we go on a treasure hunt to find the “seeds of change”. We’ll be learning and planting native plants around the Refuge to celebrate our new friendship. RESERVATIONS REQUIRED. Go to <http://gswtd.eventbrite.com> Questions? Call Julie at 408-262-5513 ext.104 (Note: badges are not provided).

TIDELINE

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Volume 39, Number 4

Editor: Carmen Minch

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

San Francisco Bay National Wildlife Refuge Complex

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

Tideline is On-Line Visit our web sites at

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



Follow us on Facebook:
San Francisco Bay NWR Complex

Volunteer Opportunities in Alviso: Winter 2016/2017

Don Edwards San Francisco Bay National Wildlife Refuge

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

Upcoming Volunteer Orientations for Winter

Volunteer orientations will meet in the auditorium of the Environmental Education Center in Alviso,

11 a.m. to noon.

Saturday, December 3

Saturday, January 7

Saturday, February 4

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

UNITED STATES
DEPARTMENT OF THE INTERIOR

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

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SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE COMPLEX

WINTER 2016 / 2017
Volume 39, Number 4

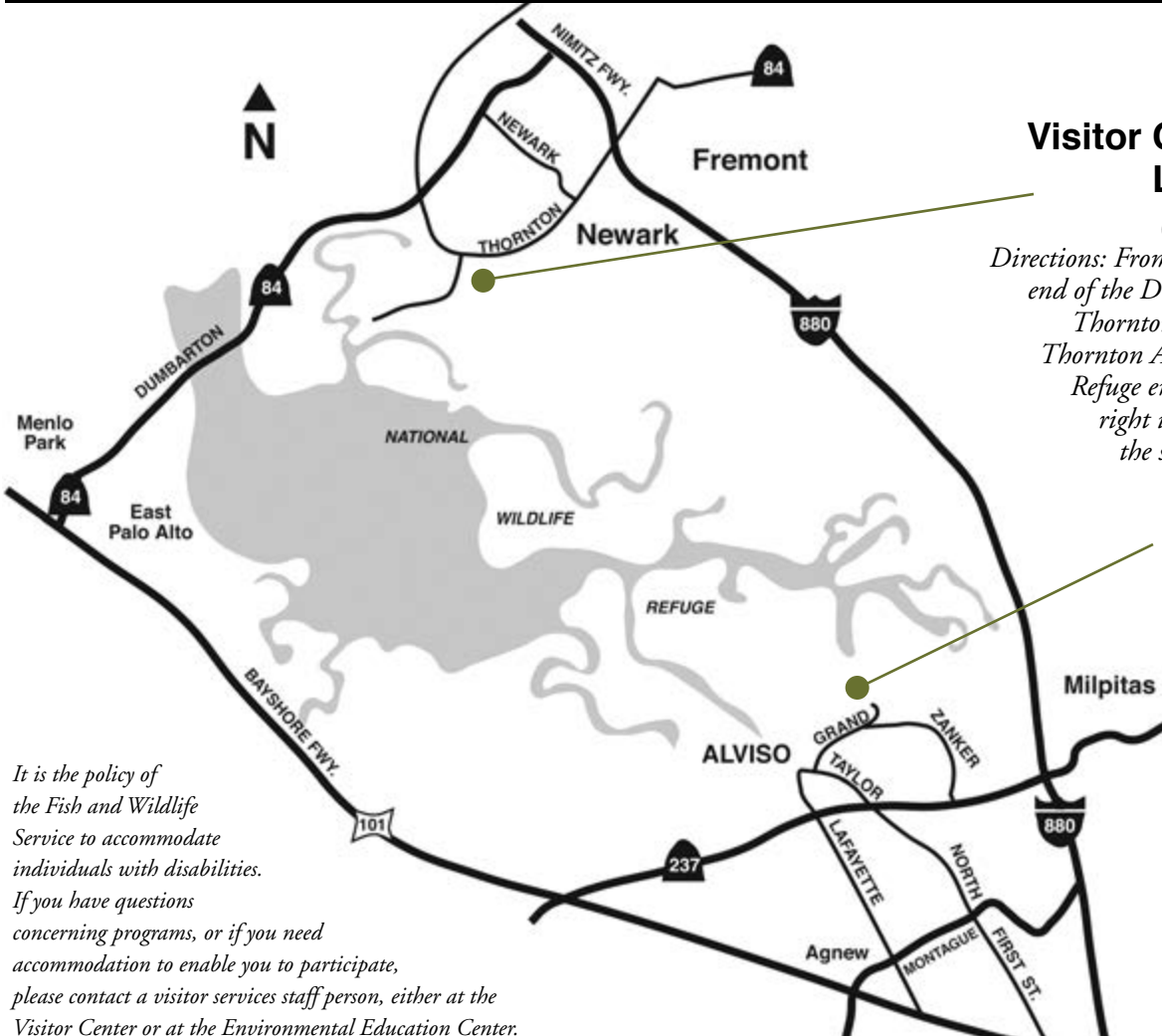


Tideline

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



Visitor Center, Fremont Learning Center

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

Environmental Education Center, Alviso

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