

# Tideline



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

## White-Tailed Kite, Specter of the California Skies

by Cheryl L. Davis

You have likely seen these graceful, white raptors hovering above Bay Area grassland and marshes, their beating wings suspending them in air like a ghostly apparition or angel. With their head bent towards the ground, they quietly hover, scanning the ground for unsuspecting prey.

The white-tailed kite (*Elanus leucurus*), formerly called the American black-shouldered kite, has white underparts, a long, mostly white tail, and pointed wings. While juvenile underparts and head are lightly streaked with reddish/reddish orange color, both adults and juveniles, when viewed from above, show black shoulders in flight as the black leading edge of the inner wings, hence the earlier accepted common name of the black-shouldered kite. When viewed in flight from below, this edge appears as small black patches. One of the smaller raptors, it has a body length of 16 inches and wing span of 42 inches.

The white-tailed kite is a species well suited to thrive in many habitats available in California. Their distinctive hunting technique coupled with their unique coloring distinguishes them readily from other raptors in the field. White-tailed kites hover about 100 feet in the air and drop to the ground rather than using “stooping,” a foraging method of hawks and eagles which employs a steep dive to surprise prey. Even among other North American kites, they are the only kite to employ this hunting technique. This allows them to forage in areas with denser vegetation, when necessary, such as chaparral. Other types of habitats used by the kite include grassland, oak woodland, wetlands, and savannah-type

areas – areas that can support great abundances of rodents.

Their ability to adapt to disturbed habitats have expanded their range from the southern United States, along the coast of Oregon, Washington and California, and

note that the California vole (*Microtus californicus*) is the main food source for white-tailed kites. Though there are researchers who claim the evidence for this statement is based only on circumstantial evidence; such as observing changes in white-tailed



Aric Crabb/Bay Area News Group

south through Middle America and parts of South America. They forage and nest in low elevations, avoiding areas which have extensive winter freezing patterns.

Though vegetation structure and prey abundance have been noted to be the most important parameters influencing habitat choice, most researchers agree that prey abundance is the most important population regulator. Small mammals make up about 98% of their prey and many studies

kite numbers in response to changes in the abundance of this vole. Additionally, since the vole is not a desert species, kites in southeastern California are not likely to depend on this animal as a primary food source. Also consumed are other rodents (house mouse and western harvest mice), lizards, and insects, but rarely birds.

The core of the white-tailed kite breed-

continued next page

ing range in the United States is California. They are common in the Central Valley and along the coast of California. When nesting, white-tailed kites can generally be found in riparian areas adjacent to open areas and dense, broad-leaved deciduous trees are preferred for nesting and roosting at night. Historical accounts from the late 19<sup>th</sup> century have also documented them nesting in large stands of oaks in oak woodland habitat. Nests made of sticks are usually found in single isolated trees in large stands and they also use larger shrubs generally less than 10 feet tall.

Nest building occurs from January through August and egg-laying begins in February, with peaks of egg-laying occurring in March and April. The building of nests is truly a partnership between the two sexes. The male collects the nesting material where he would then hand them off to the female to create the perfect bowl-shaped home. The well-made nest would sit in the fork or top of a tree or tall bush, usually lining the nest with dry grass or straw from nearby agricultural fields. Due to the kite's preference for building the nest in dense vegetation, the nests are quite difficult to spot from the ground. During the incubation period, the male spends his days hunting for food for himself, his mate, and for the newly hatched young. This behavior would continue until the young has fledged.

Most chicks fledge in May and June and the fledglings continue to depend on parent raptors for about one to two months. It has been suggested that white-tailed kites



*California vole.* Photo: USFWS

seldom forage more than a ½ mile radius from their nest sites and nest sites have been closely associated with habitat that supports dense rodent populations.

White-tailed kites are known to have two or even three clutches of eggs in a single season, with clutches containing between three and six eggs. Accounts from the late 19<sup>th</sup> century described a pair of white-tail



*Suitable habitat for white-tailed kites.* Photo: Ambarish Goswami

kites having three clutches with new nests being built for each clutch. Incubation takes approximately 30 days. It has been documented that abundant food or a clutch of eggs being destroyed or stolen can prompt white-tailed kites to lay a second clutch. A late 19<sup>th</sup> century article by one of the founders of the journal *Condor*, describes the author climbing to several white-tailed kite nests that were over 20 feet off the ground and stealing the clutch for collectors and museum specimens. Often the same nest was robbed twice in one season!

This species has had a difficult history in California. While historically common in the lowlands and marshes of California, white-tailed kites were pushed to the edge of extinction around the arrival of the 1930s by habitat loss, shooting, and egg-collecting. Fortunately, their numbers and distribution increased between the 1940s and the 1970s, and into the early 1980s. This increase has been speculated to be caused by some protection for the species itself and an increase in agricultural development with a corresponding increase in rodent habitat. Ungrazed or lightly grazed fields provide the largest prey populations as opposed to row crops, vineyards, and orchards.

But even with this good news, a bird breeding survey in California conducted between 1980 and 2006 noted populations of white-tailed kites in southwestern California may be declining due to urban and commercial development, with the most significant decline occurring in Southern California grasslands from 1982

to 1991. This species is a fully protected species by the State of California under the Department of Fish and Wildlife.

In the 1960s, the State of California made an initial effort to provide extra protection to animals that were rare and faced possible extinction. Lists were created providing this additional protection for fish, mammals, amphibians and reptiles, and birds. Fully protected species may not be killed or possessed at any time and no licenses or permits can be issued for their destruction or possession except for necessary scientific research. Relocation of some bird species is allowed for protection of livestock.

Some fully protected species have also been listed as threatened or endangered species under the more recent endangered species laws and regulations. Though the white-tailed kite is not listed as threatened or endangered under the federal Endangered Species Act, administered by the United States Fish and Wildlife Service (USFWS), this species also receives protection under the Federal Migratory Bird Treaty Act, also administered by the USFWS. This law, originally issued in 1918, but updated subsequently as needed: "makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations."

However, even with such protections in place for individual birds, nests, and eggs,

protection from loss of foraging, breeding, and roosting habitat due to urbanization can be more difficult to ensure. That this species usually exists within a hunting guild, a collection of raptors and birds using the same foraging area and resources, makes habitat loss significant for the white-tailed kite as well as multiple other winged species.

Construction projects, whether public infrastructure, urban growth, or suburban sprawl may mitigate for their impacts to habitat by purchasing/protecting similar habitat. But locating available similar habitat adjacent to, or within an established habitat range or breeding area of the white-tailed kite or other raptor and bird species can be difficult, if not impossible. Disruption and loss of established breeding habitat or ranges for established populations can result.

Additionally, due to recent bacterial contamination of raw food crops such as lettuce and spinach, new laws are being enacted that target the elimination of rodent populations from such crops in California.

## Investing in the Future of the Bay

California is a state rich with habitat and wildlife diversity. No other state in the union can boast having such a mix of deserts, forests, mountains, wetlands, and marine habitats all within its borders. But ever since the Gold Rush made headlines, these habitats have been lost or drastically altered from rapid development, sometimes in a manner that is detrimental to ecosystem functions and the well-being of California residents.

In the San Francisco Bay Area, the US Fish and Wildlife Service, the State of California, regional agencies, and many conservation groups have worked diligently to halt and reverse some of the impacts humans have made on wetland habitats. Over the years, we've shared many stories in *Tideline* highlighting our progress, in collaboration with our many partners, in restoring thousands of acres of diked salt ponds in the South Bay and agricultural lands in the North Bay back to tidal marsh and seasonal wetlands. These actions are guided by comprehensive planning efforts, such as the Service's recently completed Recovery Plan for Tidal Marsh Ecosystems in Northern California and the State's Bayland Ecosystem Habitat Goals Project.

With a look to the future, the

The elimination of hedge rows, edge vegetation, or riparian vegetation near or surrounding agricultural fields could impact some of the foraging habitat that has helped the white-tailed kite recover its numbers. The California vole needs habitat with adequate ground cover and does not inhabit bare, mowed, or heavily grazed habitats.

Government protections will continue for this species as will California's efforts to preserve and restore wetlands and marshes, along with private efforts to preserve agricultural land from development. With these measures and the continued resilience and adaptability of white-tailed kites, this specter of California skies can hopefully continue to maintain and recover its populations throughout California.

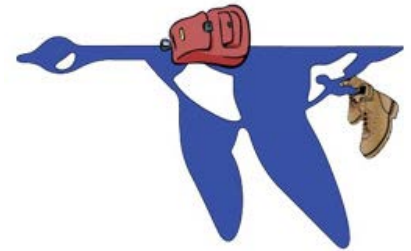
*Cheryl Davis is a Watershed Resources Specialist for the Contra Costa Water District at the Los Vaqueros Reservoir. She manages the biological and cultural resources on over 25,000 acres of land which include the Los Vaqueros Watershed and recently acquired*



California Legislature created the San Francisco Bay Restoration Authority in 2008 as a non-regulatory agency responsible for generating and delivering new local funding to support the restoration, enhancement, protection, and enjoyment of wetlands and wildlife habitat. The goal is to look for funds to support projects in the nine counties with shorelines that touch San Francisco Bay—projects to restore wildlife habitats, enhance public access and recreational opportunities, remove pollution from the Bay and surrounding watersheds, preserve clean water, and increase protection for communities and infrastructure from flooding by storms, high tides, and rising sea level.

For more information on the San Francisco Bay Restoration Authority and how it plans to seek funding for these types of projects, visit <http://sfbayrestore.org>.

*mitigation properties in Contra Costa, Alameda, and San Joaquin Counties. Her work includes protecting and enhancing populations of many special status animal and plant species, such as California tiger salamander, California red-legged frog, golden eagle, and burrowing owl. She received her M.S. in Biological Sciences from California State University, East Bay, where she remains an Associate Researcher in Dr. Christopher Kitting's Hayward Shore Laboratory.*



## Become a Refuge Rambler!

Join the thousands of people who are taking to the trails not only for scenic beauty and wildlife viewing, but for the many health benefits it provides. Take the challenge to complete at least seven of the trails, scattered throughout the east and south bay by October 18, 2014. Trails in San Pablo Bay Refuge and Salinas River Refuge can also count! Upon registering (required), you will receive a booklet containing information on Don Edwards, San Pablo Bay, and Salinas River Refuge Trails and a trail log book. Upon completion of the seven trails, you will receive a free Refuge Rambler Patch. For more information, go to [http://www.fws.gov/refuge/don\\_edwards\\_san\\_francisco\\_bay](http://www.fws.gov/refuge/don_edwards_san_francisco_bay)

### Sign me up for the Refuge Rambler Program!

Mail to Carmen Minch, 1 Marshlands Rd, Fremont, CA 94555 or email information to [Carmen\\_leong-minch@fws.gov](mailto:Carmen_leong-minch@fws.gov)

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# River Dredging Project Pays Unexpected Dividends for Endangered Species

by Doug Cordell

The banks of the San Joaquin River, in the northeastern reaches of the San Francisco Bay estuary, were once lined with sand dunes 12 stories high. But decades of sand mining and encroaching development from heavy industries like shipbuilding have reduced the dunes to a few patches of land along the river, squeezing out much of the endemic wildlife that once called the dunes home. Two of those patches are the neighboring units of the Antioch Dunes National Wildlife Refuge—55 riverfront acres, tucked between a shipyard and a gypsum processing

the nearby Port of Stockton, CA and the U.S. Army Corps of Engineers was such a notable achievement. With the agreement among the three parties, sand that was dredged from the San Joaquin River to clear navigation channels for cargo ships was pumped to the refuge for use in restoring dune habitat.

“This solved two big problems for us,” says Don Brubaker, the manager of the Antioch Dunes National Wildlife Refuge for the U.S. Fish and Wildlife Service. “One, it gave us a large enough supply of sand to begin to restore the high-dune habitat

ported a short distance to the refuge and fed into a series of berms that separated out water. A total of 40,000 cubic yards of sand were brought in at no cost to the refuge. By comparison, in 2009 the refuge paid \$25,000 to bring in only 1,500 cubic yards.

One challenge the refuge has faced in previous such efforts is keeping the sand free of the invasive weeds that, in recent years, have choked out not only the endangered plants on the refuge but the host plant for the endangered butterfly.

By bringing in such a large amount of sand in the most recent operation, the refuge will be able to build higher dunes, which drain better and allow for more naturally shifting terrain—two conditions for preventing the growth of invasive plants. A stacker will load the dried sand into a hopper so that it can be dropped to the ground from an elevated height, preferably on windy days, to blow out any detritus or other bio-matter that might feed invasives.

“We’re looking to mimic the habitat that we know has worked for the endangered species here in the past,” says Brubaker.

He notes that the Army Corps left the transport infrastructure in place so that more dredged sand can be brought to the refuge next year. He is also hopeful that other operators in the area looking to dispose of sand will be able to use it.

“This could really help the refuge.”

*Doug Cordell is the public affairs officer for the San Francisco Bay National Wildlife Refuge Complex*



*Earth movers distribute dredged sand brought to the refuge. Photo: USFWS*

plant, that, at the time they were set aside in 1980, constituted the smallest national wildlife refuge in the country and the first ever created to protect endangered plants and insects.

Without a natural influx of sand, however—something that hasn’t happened since the adjacent dunes along the river were lost to development—even the protected enclave of the Antioch Dunes refuge struggles to maintain the riverine dune habitat that supports the federally endangered Lange’s metalmark butterfly, Contra Costa wallflower and Antioch Dunes evening primrose.

That’s why an innovative arrangement in October, 2013 among the refuge,

that the endangered species on the refuge historically thrived on. And, two, it didn’t cost us a penny.”

Brubaker gives special credit to the San Francisco Bay Conservation and Development Commission for alerting the Port of Stockton about the refuge’s need for sand. He points out that the Port saved money as well, since the dredged sand didn’t have to be hauled farther away for disposal.

“Partnership and cooperation among agencies were the keys to making this thing happen,” he adds, “and everyone benefited.”

The sand was dredged from the river bottom with a hydraulic suction, trans-



# The Power of Wilderness

By Nancy Roeper

*Editor's Note: The Wilderness Act celebrates its 50<sup>th</sup> anniversary in September 3, 2014. Moreover, 2014 also marks the 40<sup>th</sup> anniversary of Farallon National Wildlife Refuge being designated as wilderness. Leading up to this historic event, Tideline will feature stories about these monumental milestones and how it has shaped conservation.*

Wilderness. It's a powerful word. And in the United States, it is protected by a powerful law: the Wilderness Act of 1964.

For a law that runs only six pages, the Wilderness Act, and the wilderness it created have had an outsized impact on conservation.

First, wilderness directly protects the wildlife, plants, and natural communities within its borders. However, since wilderness can only be designated on lands already administered by the Fish and Wildlife Service, National Park Service, Bureau of Land Management, or Forest Service, some may wonder what additional protection wilderness provides. As it turns out, a lot.

The Wilderness Act directs agencies to "preserve wilderness character." Wilderness character includes not just the natural biodiversity and ecosystem processes of wilderness areas, but also their intangible aspects such as "primeval character and influence," their appearance of having "been affected primarily by the forces of nature," or their state of being "untrammelled by man." Although millions of acres of lands managed by federal conservation agencies may appear pristine at first glance, much has been altered over the years by the development of roads and manmade structures, and the manipulation of habitat to reach conservation goals. Preserving the aspects of wilderness character greatly contributes to wildlife conservation since conventional conservation laws are silent on these attributes.

Next, the Wilderness Act not only prohibits visitor use of motorized or mechanized transport, structures, or landing of aircraft, it also applies these prohibitions



to the administering agency.\* This prohibition provides significant protection for wildlife and ecosystems because the Act protects the land from misguided management decisions.

Since every generation can only manage natural resources using available information, there had been times when management practices that seemed state of the art had since been shown to be detrimental to natural systems. Places that are protected as wilderness are more likely to have been spared from this sort of inadvertent misguided management.

Another way that wilderness has promoted conservation is by serving as the control against which to measure the effects of management actions. By observing conditions within wilderness, we can

better understand which changes were the result of the management treatment, and which were the result of changes due to other causes. Thus, conservation of wildlife in non-wilderness areas also benefits from the management restraint we exert in wilderness.

Wilderness has also contributed to international wildlife conservation. That a society would decide to set aside lands and waters and not actively manage them was a remarkable concept for a country founded on western socioeconomic traditions. Our concept of wilderness has provided inspiration to other countries seeking to protect their natural heritage. Seeing that we have successfully preserved the naturalness and wildness of protected areas by using restraint in our management practices, other countries have either

passed their own wilderness acts, or are working towards them. This will greatly add to the conservation benefits of wilderness around the world.

Finally, for future generations to fully experience and enjoy wildlife in a natural and wild setting, one must look beyond gardens, arboretums, plantations, or other tamed, highly managed areas with marked trails, snack bars, and bathrooms. One must look to wilderness

Wilderness designation provides a statutory level of protection that an administrative designation or agency policy cannot. As agency directors come and go, priorities, management directions, policies, and land designations can change. Wilderness does not. Unless changed by new legislation set forth by Congress, agencies are mandated to continue to preserve wilderness character for the next 50 years and beyond.

Wilderness. Powerful indeed.

*Nancy Roeper is the National Wilderness Coordinator for the US Fish and Wildlife Service.*

*\*except for existing private rights and legal special provisions.*

*Photo credits clockwise: Nyssa Landres, Molly McCarter, Kristine Sowl, Tom Jablonowski*

Come and join us!  
**Celebrate Earth Day!**



Alkali heath

at  
Don Edwards San Francisco Bay  
National Wildlife Refuge

**April 19, 2014**

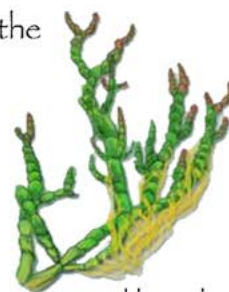
**9:00 a.m.-12:00 p.m.**

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

Gloves and trash bags provided.

Children welcome, and must be  
accompanied by an adult.

RSPV at [savesfbay.org](http://savesfbay.org)



Pickleweed



Photo by Gregg Aronson



Eel Grass



Cordgrass

Contact [joseph\\_garcia@fws.gov](mailto:joseph_garcia@fws.gov) or call 510-792-0222 ext 141 for more information

Ohlone Audubon and the Don Edwards San Francisco Bay NWR

## LaRiviere Marsh Celebration

Rescheduled to  
**Saturday, March 15, 2014**

The LaRiviere Marsh trail is looking better than ever!  
Help us celebrate the trail upgrades and the new  
viewing platform donated by Ohlone Audubon.



- 9:00 a.m. Family Bird Walk. Share nature with your children  
RSVP at <https://donedwardsfamilybird.eventbrite.com>  
or call 510-792-0222 ext. 362. ★
- 9:00 a.m. Adult Bird Walk. Enjoy the trails and practice your  
birding skills. No RSVP required. ★
- 11:30 a.m. Dedication Ceremony and Refreshments at the  
LaRiviere Marsh Viewing Platform.

★ These programs leave from the Visitor Center in Fremont.

# SOUTH BAY BIRD FEST 2014 "WHY BIRDS MATTER"



Saturday  
May 17  
12 - 3 pm

AT THE DON EDWARDS SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE



Hands on activities  
Guided bird walks  
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IN & AROUND THE ENVIRONMENTAL EDUCATION CENTER IN ALVISO

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or call (408)262-5513



# 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, 2013 and December 30, 2013. These gifts will be used for publishing Tideline, capital, environmental education, habitat restoration, and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.*

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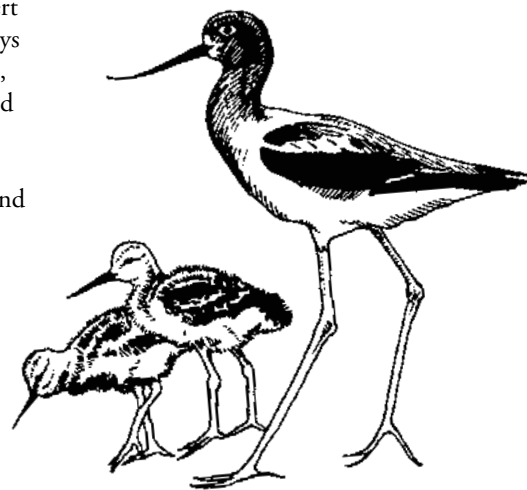
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## Seniors

Laura Avery, Ann Dee Clemenza, Margaret Hartman, Alberto Martines, Laura Nakanishi, David Stronck, Viola E Walters, and Stella Yang



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## Help Us Help the Refuge

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

For a gift membership, call 510-745-8170.

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

**YES!** I want to support San Francisco Bay Wildlife Society and its programs with my membership. My dues include a subscription to *Tideline* and 15% discount at the Don Edwards SF Bay National Wildlife Refuge bookstore. Enclosed is my contribution of:

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

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To sponsor or support the tour, contact [info@GoingNativeGardenTour.org](mailto:info@GoingNativeGardenTour.org)

Photos: [tmousecmouse.blogspot.com](http://tmousecmouse.blogspot.com)



The California Native Plant Society (Santa Clara Valley Chapter)  
in association with  
UCCE Master Gardeners of Santa Clara County  
present the



# 12<sup>th</sup> Annual Going Native Garden Tour

**Saturday, April 26, 2014, 10-4:** NORTHERN GARDENS: Sunnyvale, Mountain View, Palo Alto, Los Altos, and San Mateo County

**Sunday, April 27, 2014, 10-4:** SOUTHERN GARDENS: Cupertino, Santa Clara, Campbell, San Jose and south

Bay Area homeowners are making their gardens aesthetically pleasing, attractive to birds and butterflies, water-wise, and low maintenance by incorporating California native plants. Visit gardens landscaped with native plants on this **free** annual tour, now in its 12<sup>th</sup> year.

**Free admission • Plant Sales & Talks at select gardens • Register at [www.gngt.org](http://www.gngt.org)**

Garden information, maps, and directions will become available to registrants the week of April 7. Registrations will be accepted until noon of April 27. For information, visit [www.gngt.org](http://www.gngt.org), or email [info@gngt.org](mailto:info@gngt.org).



## Now Available at the San Francisco Bay Wildlife Society Bookstores

Located at the Don Edwards San Francisco Bay National Wildlife Refuge Visitor Center in Fremont and Environmental Education Center in Alviso



Two children's books based on endangered species in the San Francisco Bay National Wildlife Refuge Complex are now available for purchase at the San Francisco Bay Wildlife Society bookstores.

Follow the adventures of the salt marsh harvest mouse and the Lange's metalmark butterfly. These stories will be cherished by children and adults for generations to come. Available for \$6.99 each plus tax.



### U.S. Fish and Wildlife Service Don Edwards San Francisco Bay National Wildlife Refuge Volunteer Opportunities: Spring 2014

Environmental Education Center (Alviso, California)

If you have an interest in wildlife and their conservation, enjoy working with people, and are enthusiastic and dependable, the Environmental Education Center'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.

Prior to volunteering at the Environmental Education Center, you must attend a Volunteer Orientation. You can also attend the orientation just to see what opportunities there are, and if it is the right fit for you.

#### Upcoming Volunteer Orientations

11 a.m. to Noon

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

- |                  |                    |
|------------------|--------------------|
| Tuesday, March 4 | Sunday, March 30   |
| Tuesday, April 8 | Saturday, April 19 |
| Tuesday, May 6   | Saturday, May 31   |

# 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 1

#### \*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.

#### \*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.

#### Bay Bike Ride

Meet at the Visitor Center, Fremont

10:30 a.m.

Go on an 11-mile bike ride with docent Gregg Aronson along Marshlands Road and on the Shoreline Trail to observe birds and the occasional leopard shark! Pass through several habitat types along the way including salt marsh, salt pond, and the bay. The paved and dirt trails are almost flat and trail and hybrid bicycles highly recommended. Helmets are required. Recommended for more experienced bicyclists. Program cancels if it rains the day before and the day of due to mud. Register at <https://donedwardsbike.eventbrite.com> or call 510-792-0222 ext. 362 for reservations.

### Sunday, March 2

#### \*Tiny Drifters

Environmental Education Center, Alviso

10:00 a.m. – 11:00 a.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. Call 408-262-5513 ext. 102 for reservations.

### Sunday, March 9

#### The Science of Seasons – Help Document Climate Change!

Visitor Center, Fremont

11:00 a.m. – 12:30 p.m.

Become part of the scientific community and help scientists gather data on how the climate is changing. A presentation will be given about the importance of gathering data, how plants can be an indicator of climate change, and how to take measurements of Don Edwards Refuge plants to be uploaded onto the Nature's Notebook website. Over time, the information you provide can be used by refuge managers to manage land more effectively. To register for this free workshop, go to <https://donedwardsphenology.eventbrite.com> or call 510-792-0222 ext. 362. Led by Carmen Minch.

### Saturday, March 15

#### \*Family Bird Walk

Visitor Center, Fremont

9:00 a.m. – 11:00 a.m.

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 362.

#### \*Adult Birding Walk

Visitor Center, Fremont

9:00 a.m. - 11:00 a.m.

March is a great time to look for lingering, wintering birds and migrating birds at the refuge. Join Ohlone Audubon for a birding walk to see what birds are visiting. This is a great opportunity for new and experienced birders to practice their skills. For ages 16 and over.

#### Community Service

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 community service 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 a different location. For more information, or to make reservations, call 510-792-0222 ext. 363.

#### Team Citizen Scientists! – Community Service

Environmental Education Center, Alviso

10:00 a.m. – 1:00 p.m.

Become a citizen scientist! Are you interested in plants? Volunteer for one or all team dates and learn native plant monitoring and habitat restoration. Bring your own gloves or borrow a pair of ours – tools are provided. Dress in layers and bring water and sunscreen. Be prepared to get dirty! Ages 9 and up. Participants 18 and under must be accompanied by a chaperone. Call Julie for reservations at 408-262-5513 ext. 104.

#### Science, Art, and the Changing Seasons

Environmental Education Center, Alviso

10:00 a.m. – 11:30 a.m.

In this family-friendly program, explore how plants change with the seasons. Look carefully at our native plants and draw what you see. Help us create a field guide to our native plants showing seasonal changes. Learn how you can help scientists gather information about the seasons. Appropriate for all ages. Children must be accompanied by an adult. Call Julie at 408-262-5513 ext 104 for reservation.

#### Fossils and Flumes

Environmental Education Center, Alviso

11:00 a.m. – 12:30 p.m.

Fossils and flumes are used to teach children about the South Bay Salt Pond Restoration Project. Park Ranger Jose Garcia brings fossils from Triassic wetlands he collected in eastern Montana to show the similarities to today's wetlands, and to explain their function in nature. Interactive flumes allow for a hands-on experience of how wetlands protect the surrounding area from flooding. Children must be accompanied by an adult. Call 510-792-0222 ext. 141 for reservations.

#### Bird Photography for Beginners

Environmental Education Center, Alviso

1:00 p.m. – 3:00 p.m.

Learn basic field techniques, composition, lighting, and camera equipment for photographing birds in the wild. We will also discuss what birds are commonly seen at the refuge. Bring your camera along with its manual if you need help setting it up. If time permits, we will test your newly acquired skills outside. Led by Alex Baranda. Recommended for ages 14 and up. Call Julie at 408-262-5513 ext. 104 for reservations.

#### Twilight Marsh Walk

Visitor Center, Fremont

6:30 p.m. – 8:00 p.m.

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

### Sunday, March 23

#### \*Ohlone in the Marshes – Staves

Environmental Education Center, Alviso

10:30 a.m. – 12:00 p.m.

Do you want to know more about the Native Americans that lived in the Bay Area before us? Come to the refuge to learn about some of the tools and games the Ohlone might have used. Play Ohlone games and take home your own customized staves. Best suited for ages 8 and up. Call 408-262-5513 ext. 102 for reservations.

#### \*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.

## \*Welcome Back Swallows Tours

Visitor Center, Fremont

2:00 p.m. – 3:00 p.m.

The swallows have just arrived from their long voyage from South America to their breeding grounds here in the Bay Area. Join docent Roy Sasai to view the swallows as they begin building their unique nest design. We will learn why they chose the Bay Area, their courtship rituals and unusual choice of building materials. We will hike to various spots on the refuge to view their unique homes and discuss how sea level rise may risk their building material in the future. Bring binoculars and camera. The hike is approximately 1 mile with medium hills. Reservations are not required.

## Saturday, March 29

### \*Habitat Under Construction

#### Walk at Pond SF2

Menlo Park, SF2 Trailhead

10:00 a.m. – 11:00 a.m.

The Salt Pond Restoration Project is coming to the end of the Phase 1 Operations and beginning Phase 2. Take a nature trail walk with Park Ranger Jose Garcia and learn about the effort behind Pond SF2 and how it is being used to help with habitat design. Enjoy the abundant wildlife that depends on it. Come see the exciting transition. Cameras welcome. SF2 is on the Westside of Dumbarton Bridge. Call 510-792-0222 ext. 141 for more information.

### A Trip Back in Time

Visitor Center, Fremont

10:30 a.m. – 12:00 p.m.

Revive the vanishing knowledge of the history of the Don Edwards San Francisco Bay National Wildlife Refuge grounds by strolling the trails with docent Ray Studer. Using a collection of old photographs, the last vestiges of a way of life such as salt production, the old railroads, and homes can be traced back to the 1850s that led to the construction of the town of Newark in 1876.

### 5 Tools You Can Use to Find the Elusive Gray Fox

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.

## Sunday, March 30

### Story Hunters

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Discover what stories lie hidden on the Don Edwards Refuge in this series by Art Garibaldi. Coordinates will lead you to landmarks that embody the rich human history that helped shaped refuge lands. We'll begin with a brief introduction on how to use our GPS units. GPS units are available for loan. Go to <http://donedwardsstory.eventbrite.com> or call 510-792-0222 ext. 362 for reservations.

# April

## Saturday, April 5

### \*Nature Walk for Health

Visitor Center, Fremont

10:30 a.m. – 11:30 a.m.



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

### \*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.

### \*Jr. Refuge Ranger Program

Environmental Education Center, Alviso

11:00 a.m. – 12:30 p.m.

Become a Jr. Refuge Ranger! Our Jr. Refuge Ranger program is an introduction to the Don Edwards SF Bay National Wildlife Refuge from its wildlife to its plants. Jr. Refuge Rangers will participate in several fun hands-on activities to earn their badge at the end of the program. Dress in layers- we'll be going on a nature walk with volunteer Lynnea Shuck. Best suited for ages 8-11. Call Julie for reservations at 408-262-5513 ext. 104.

## Sunday, April 6

### \*Monster Bacteria & Other

#### Suspicious Critters

Environmental Education Center, Alviso

10:00 a.m. – 12:00 p.m.

Let's explore the salt marsh's hidden habitats! See monster bacteria, of which some love rotten eggs, and some make the air we breathe. Join Microbial Ecologist Dr. Wayne Lanier for a short hike where we will use field microscopes to dive down into a tiny world – an ecology hidden from view. Ages 8 to 80 and beyond! Call Aja at 262-5513 ext. 102 for reservations.

## Saturday, April 12

### Community Service

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 community service 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 a different location. For more information, or to make reservations, call 510-792-0222 ext. 363.

### \*The Basics of Salt Pond Restoration

Environmental Education Center, Alviso

1:00 p.m. – 2:30 p.m.

Learn about the Salt Pond Restoration Project with Jose Garcia. This ambitious project seeks to restore

15,100 acres of former industrial salt ponds to a mix of wetland habitats. An interactive talk will be in the auditorium and if weather permits, a walk on the 0.25-mile boardwalk trail to view the progress thus far. For questions, call 510-792-0222 ext. 141.

### Twilight Marsh Walk

Visitor Center, Fremont

7:00 p.m. – 8:30 p.m.

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

## Sunday, April 13

### 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 from the Visitor Center. Bring a yoga mat. A limited number of mats are available to borrow. Wear comfortable clothing. Consult with your doctor before participating. All ages and abilities welcome. Reservations are required. Rain cancels. Go to <https://donedwardsyoga.eventbrite.com> or call 510-792-0222 ext. 362. Led by Carmen Minch.

### \*Life at the Bottom of the Food Chain

Visitor Center, Fremont

10:00 a.m. – 12:00 p.m.

Wetlands microbes are often called "the lungs of the earth." Explore the dynamics of microbial communities in LaRiviere Marsh ponds. Join microbiologist Wayne Lanier, PhD for a brief presentation; then a microscope hike to LaRiviere Marsh where we will sample and view the most ancient creatures on earth. See how they produce the oxygen we breathe and take up the carbon dioxide we produce. Discover how tides and salinity shape these vital communities. Easy short hiking level. Ages 9-90 years. Register at <https://donedwardsfoodchain.eventbrite.com> or call 510-792-0222 ext. 362.

### \*Living Wetlands

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 a slideshow depicting the life and death struggles of our marsh inhabitants, followed by a walk through the wetlands. Open to all ages, but best suited for ages 9 and up. Call 408-262-5513 ext. 102 for reservations.

### Wildflower Drawing for Families and Adults

Environmental Education Center, Alviso

12:30 p.m. – 2:00 p.m.

Increase your confidence in drawing and learn skills to help you draw what you see. Learn about plant anatomy while performing sketching exercises. We'll then go outdoors, weather permitting, and draw flowers in the wildflower garden. Materials provided but feel free to bring your sketch pad, pencil, colored pencils or watercolors if you have them. Appropriate for ages 8 to adult. Children, please bring an adult with you who would like to participate. Adults without children are welcome as well. All skill levels welcome. Call Julie at 408-262-5513 ext. 104 for reservations.

# 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, April 19

### Earth Day Cleanup

Ravenswood Point, East Palo Alto  
9:00 a.m. – 12:00 p.m.

Help protect wildlife! Join the refuge and Save the Bay for our annual Earth Day Cleanup. For more information, call 510-792-0222 ext. 141. RESERVATIONS ARE REQUIRED. Please reserve your spot through [www.savesfbay.org](http://www.savesfbay.org). Minors must be accompanied by an adult.

### Earth Day Community Service

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

Come spend Earth Day with us in the great outdoors. Do you need to fulfill community service requirements? Or would you just like to come lend a hand? Come help in our native plant garden by removing non-native plants, pruning, mulching, or performing various other jobs that help protect wildlife and clean up our gardens. It's a great service project for groups and individuals. Bring your own gloves or borrow a pair of ours – tools are provided. Dress in layers and bring water and sunscreen. Be prepared to get dirty! Ages 9 and up. Participants 18 and under must be accompanied by a chaperone. Call Julie for reservations at 408-262-5513 ext. 104.

### \*Coyote Creek Lagoon Trail – 4 miles roundtrip

Meet at the trailhead in Fremont  
11:00 a.m.

**Let's Go Outside!** Take a walk with Paul Salemme on this little-known trail hidden behind a business park. See what refuge staff call the "Mouse Pasture" and what birds have not yet migrated. Hats, water, and sunscreen are strongly recommended. Directions: The south trailhead can be reached by taking the South Fremont Blvd/Cushing Pkwy exit from I-880 in Fremont. Drive south on Fremont Blvd. until it dead ends. There is a parking lot on the right next to 48481 Fremont Blvd. Meet in the parking lot. There are no restroom facilities on this trail.

### A Day in the Life of a Swallow

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

Join docent Roy Sasai to experience the "day to day" life of a swallow. What are they doing when they are not eating? What is their favorite food? How do they get it? You will have an opportunity to catch their meal too! Meet outside of the Visitor Center to learn about this species' natural history and their habits. We

will hike to spots on the refuge to view them feeding and discuss if sea level rise will affect their food source. Bring binoculars and camera. The hike is approximately 1 mile with medium hills. Reservations are not required.

### Night Sky Party!

Environmental Education Center, Alviso  
8:00 p.m. – 9:30 p.m.

Meet the stars of Spring Join our amateur astronomers as we learn about constellations. Make a star chart and then venture outside to view the night sky through a telescope. Afterwards, warm up with some hot chocolate. Bring your own binoculars or spotting scopes if you have them. Dress warmly. Fun for the whole family! Program will go on sprinkling rain or shine. Program will be canceled only if it is pouring rain. RESERVATIONS REQUIRED. Call Julie at 408-262-5513 ext. 104.

## Sunday, April 20

### \*Birding at Alviso

Meet at the Alviso Marina, Alviso  
9:00 a.m. – 11:00 a.m.

Join park staff on this family-friendly midmorning hike around the Don Edwards Bay Refuge in Alviso. You will learn key identification characteristics of some of the more difficult to identify shorebirds. All skill levels are welcome. Please bring water, snacks, sunscreen and your binoculars. Some binoculars may be available to share. Reservations required online at [https://apm.activecommunities.com/sccoparks/Activity\\_Search?activity\\_id=303](https://apm.activecommunities.com/sccoparks/Activity_Search?activity_id=303) or call 408-355-2240.

### \*A Taste of the Refuge

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

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

## Saturday, April 26

### \*Habitat Under Construction Walk at Bayfront Park

Bedwell Bayfront Park, Menlo Park  
10:00 a.m. – 11:00 a.m.

The Salt Pond Restoration Project is coming to the end of the Phase 1 Operations and beginning Phase 2. Take a nature trail walk with Park Ranger Jose Garcia and enjoy the abundant wildlife. Come see the exciting transition. Cameras welcome. Location: Bayfront Expy and Marsh Rd in Menlo Park. Call 510-792-0222 ext. 141 for more information.

### Bay Bike Ride

Meet at the Visitor Center, Fremont  
10:30 a.m.

Go on an 11-mile bike ride with docent Gregg Aronson along Marshlands Road and on the Shoreline Trail to observe birds and the occasional leopard shark! Pass through several habitat types along the way including salt marsh, salt pond, and the bay. The paved and dirt trails are almost flat and trail and hybrid bicycles highly recommended. Helmets are required. Recommended for more experienced bicyclists. Program cancels if it rains the day before and the day of due to mud. Register at <https://donedwardsbike.eventbrite.com> or call 510-792-0222 ext. 362 for reservations.

## 5 Tools You Can Use to Find the Elusive Gray Fox

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.

### \*Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 362.

## Sunday, April 27

### \*Ohlone in the Marshes – Tule Boats

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

How did the people who lived here 10,000 years ago travel in the water world that once was San Francisco Bay? By boat, of course. Join us on a short walk to view the raw materials used by the Ohlone in boat-making. Afterwards, use natural materials to make small replicas of Ohlone boats to take home. Very appropriate for children 8 and up who are accompanied by an interested adult participant. Program led by Laura Mello and Aja Yee. Call 408-262-5513 ext. 102 for reservations. REGISTRATION CLOSES April 24.

# May

## Saturday, May 3

### Drawbridge Van Excursion

Environmental Education Center, Alviso  
10:00 a.m. – 12:00 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 a rip-roaring town full of two-fisted rowdies? Find out at this program led by Ceal Craig. We'll start with a slideshow, and then take a short van excursion to view Drawbridge across Coyote Creek. Program will be of most interest to adults interested in history or nature; children 13 and over with an adult are welcome. Space is very limited. RESERVATIONS ARE ESSENTIAL. Call Julie at 408-262-5513 ext. 104. (Note: we do not visit the town itself – we go to the closest spot that one can legally view Drawbridge.)

### Team Citizen Scientists! – Community Service

Environmental Education Center, Alviso  
10:00 a.m. – 1:00 p.m.

Become a citizen scientist! Are you interested in plants? Volunteer for one or all team dates and learn native plant monitoring and habitat restoration. Bring

your own gloves or borrow a pair of ours – tools are provided. Dress in layers and bring water and sunscreen. Be prepared to get dirty! Ages 9 and up. Participants 18 and under must be accompanied by a chaperone. Call Julie for reservations at 408-262-5513 ext. 104.

### \*Nature Walk for Health



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

Take a break from your busy schedule and refresh your spirit with nature at the refuge. Take a guided nature walk on the Tidelands Trail and hear what makes this National Wildlife Refuge unique. The 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.

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**Sunday, May 4**

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### \*A Taste of the Refuge

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

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

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**Saturday, May 10**

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### \*Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Go to <https://donedwardsfamilybird.eventbrite.com> or call 510-792-0222 ext. 362.

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**Sunday, May 11**

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### Mother's Day Beginning Bird Watching

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

Spend time with mom on our special Mother's Day Beginning Bird Watching program. We'll start with a slideshow indoors to learn how to recognize the regulars, then borrow binoculars and take a walk to try out your new skills. All ages welcome. Program is led by Ceal Craig. Call Julie at 408-262-5513 ext. 104 for reservations.

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**Saturday, May 17**

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### SOUTH BAY BIRD FEST!

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

Join us for a day of exploration as we celebrate our feathered friends with guided walks, games, crafts, face painting, and various other hands-on activities. Explore avian antics in a LIVE BIRD SHOW showcasing bird behavior. Get up close and personal with live birds and their habitats on the Flying Frenzy Expedition and learn about how you can help birds. Don't miss our annual bird-brained bash! Everything is FREE. Fun for the whole family. No reservations necessary. Visit our website for directions. For more information contact Aja at 408-262-5513 ext. 102 or Julie at ext. 104.

### Geology Walk of the Coyote Hills

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

Ever wonder what the dirt on the trail is made of, what the rocks are by the shore, and how wetlands are created? Join Park Ranger Jose Garcia at the refuge as he deconstructs the area around you and explains how geology influences the landscape. Discover how knowledge of geology helps rebuild wildlife habitat and provides flood protection for us all. Cameras welcome. Trail is 1.3 miles and family friendly. Call 510-792-0222 ext. 141 for more information.

### Twilight Marsh Walk

**Visitor Center, Fremont**  
**7:30 p.m. – 9:00 p.m.**

Experience the salt marsh at twilight on an easy stroll along Tidelands (1.3 miles) Trail. At the setting of the sun we will observe the beginning of nature's night shift. Come discover the sights, sounds, and smells of the refuge as night descends. Not suitable for young children. RESERVATIONS REQUIRED. Go to <https://donedwardstwilight.eventbrite.com> or call 510-792-0222 ext 362. Led by Mary and Gene Bobik.

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**Sunday, May 18**

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### \*Geocaching at Alviso

**Meet at the Alviso Marina, Alviso**  
**10:00 a.m. – 12:00 p.m.**

Join park staff on this fun and interactive outing that is great for families and children. Armed with GPS units supplied by the parks department you will search for geocaches (hidden treasures) hidden throughout the area. You will also learn how to do "earth caching" on the refuge by using coordinates from the GPS to find natural jewels in the area. Please bring water, snacks and sunscreen. Reservations required online at [https://apm.activecommunities.com/sccoparks/Activity\\_Search?activity\\_id=304](https://apm.activecommunities.com/sccoparks/Activity_Search?activity_id=304) or call 408-355-2240.

### Meet the Swallow Family

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

Some of the baby swallows are now out exploring their new world. Join docent Roy Sasai to view the crèches (assembly of colony young) as they await their meal delivery. Learn about their adventures exploring their new world as they learn how to fly and catch their meals in preparation for their monumental 5,000 mile journey to a jungle which they have never seen before. We will hike to spots on the refuge to view their unusual gathering spots and discuss the effects of sea level rise on their future. Bring binoculars and camera. The hike is approximately 2 miles total with medium hills. Reservations are not required.

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**Saturday, May 24**

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### Bay Bike Ride

**Meet at the Visitor Center, Fremont**  
**10:30 a.m.**

Go on an 11-mile bike ride with docent Gregg Aronson along Marshlands Road and on the Shoreline Trail to observe birds and the occasional leopard shark! Pass through several habitat types along the way including salt marsh, salt pond, and the bay. The paved and dirt trails are almost flat and trail and hybrid bicycles highly recommended. Helmets are required. Recommended for more experienced bicyclists. Program cancels if it rains the day before and the day of due to mud. Register at <https://donedwardsbike.eventbrite.com> or call 510-792-0222 ext. 363 for reservations.

### 5 Tools You Can Use to Find the Elusive Gray Fox

**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.

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**Sunday, May 25**

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### 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 from the Visitor Center. Bring a yoga mat. A limited number of mats are available to borrow. Wear comfortable clothing. Consult with your doctor before participating. All ages and abilities welcome. Reservations are required. Rain cancels. Go to <https://donedwardsyoga.eventbrite.com> or call 510-792-0222 ext. 362. Led by Carmen Minch.

### Introduced Invertebrates

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

Alien mud creatures are invading our bay! They have no spine and no legs. How did they get here? How have these exotic aquatic creatures impact our ecosystem? Come learn about the invertebrates living in the San Francisco Bay through a slideshow presentation and touch a few of them. Suitable for ages 7 and up. Call 408-262-5513 ext. 102 for reservations. RESERVATIONS REQUIRED by May 22.

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**Saturday, May 31**

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### Fossils and Flumes

**Environmental Education Center, Alviso**  
**11:00 a.m. – 12:30 p.m.**

Fossils and flumes are used to teach children about the South Bay Salt Pond Restoration Project. Park Ranger Jose Garcia brings fossils from Triassic wetlands he collected in eastern Montana to show the similarities to today's wetlands, and to explain their function in nature. Interactive flumes allow for a hands-on experience of how wetlands protect the surrounding area from flooding. Children must be accompanied by an adult. Call 510-792-0222 ext. 141 for reservations.



# Field Trips to the Refuge

## General Education Program Information

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

Educators and adult leaders conduct their own field trips after attending a Field Trip Workshop. The workshops allow you to design and conduct your own field trip. In addition, adult volunteers must be recruited to lead the activities at the different learning stations and to chaperone the rotation groups of students.

We provide easy to follow “scripts” for each station, but both “leaders” and “chaperones” are strongly encouraged to attend a Field Trip Workshop. New teachers must attend a Field Trip Workshop. Location of activities and trail conditions may vary. Please call for accessibility information.

## Field Trips at the Learning Center in Fremont

The Wetland Round-Up Field Trip program in Fremont is fully booked for spring. Please contact us for more information.

**Contact the Environmental Education Staff at Fremont:**

**Office: 510-792-0222 ext. 475 Cell: 510-377-7269**

**E-mail: ee.hq.intern@gmail.com**

## Field Trips at the Environmental Education Center in Alviso

**Wetland Round-Up Field Trips** - Investigate the butterflies in the butterfly garden, taste pickleweed in the salt marsh, or discover the creatures that live in the slough water on a Wetland Round-Up Field Trip. This field trip program is designed for up to 65 students in grades K-6. Our field trip program is fully booked for spring. Please call the Environmental Education Staff at 408-262-5513 ext. 100 for more information or email [genie\\_moore@fws.gov](mailto:genie_moore@fws.gov).

**Fall 2014 field trip dates will be posted on-line at the end of August 2014. See the Summer issue of *Tideline* for dates and details.**

## Living Wetlands Education Program

The Living Wetlands Program provides first-hand learning environment for students and educators to explore the topics of watershed health, wetlands, and habitat preservation. Activities and presentations focus on the relationship between personal habits and their effects on 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 and Wildlife Service, and the San Francisco Bay Wildlife Society.

### Living Wetlands Program Offerings:

**Integrated Field Trip Program (5th – 12th grades):** 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 include hands-on activities and demonstrations. For the Integrated Program, participating classes must be from the following cities: San Jose, Alviso, Milpitas, Santa Clara, Saratoga, Monte Sereno, Los Gatos, Campbell, and Cupertino. There is a limitation to 60 students per field trip, and a 1:10 chaperone to student ratio is required.

**Classroom Presentations (5th – 12th grades):** 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.

**Field Trip and Guided Tours for other Schools, Colleges, Universities, and related organizations:** General presentations and guided tours are available and are generally 1.5 hours in length.

Educators are encouraged to contact us to discuss options for customizing field trips and classroom presentations. Reservations for the Living Wetlands program are on a first-come basis. For more information, or to make a reservation, call Aja Yee, the Living Wetlands Program Coordinator at 408-262-5513 ext. 102 or email at [livingwetlands@sfbws.com](mailto:livingwetlands@sfbws.com).



# 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.

Below are the names, dates, and descriptions of the programs. 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

Note: Ratio of 1 adult per 5 children maximum. Space is limited to 20 people, including siblings. Once the program is full there will be a waiting list.

### \*Webelos Naturalist Badge

**Saturday, March 1, 2:00 p.m. – 4:00 p.m.**  
**Saturday, April 5, 2:00 p.m. – 4:00 p.m.**  
**Saturday, May 3, 2:00 p.m. – 4:00 p.m.**

Anyone out there need to earn a Naturalist badge? We've got the program that's right for Webelos! Learn about birds, migration, flyways, food chains, human impact, and the importance of wetlands. Then take a walk and use our binoculars to spot birds in the wild. Call 408-262-5513 ext. 104 for reservations.

### Happy Birthday Girl Scouts!

**Saturday, March 15**  
**3:00 p.m. – 4:00 p.m.**

Birthdays are something worth celebrating! On this date in 1912, 18 girls gathered to hold their first meeting as Girl Scouts. If you are looking to show your friends, family, and other Girl Scouts how you've taken action to make a difference come to the refuge where we'll throw a party in your honor! Call Julie at 408-262-5513 ext. 104 to reserve.

### \*Get Moving! Jr. Girl Scouts Journey

**Saturday, April 12**  
**11:00 a.m. – 12:30 p.m.**

Are you prepared to use your energy to save the planet? On this journey, learn ways to reduce your energy use, make buildings energy efficient, and create a plan to fix an energy problem in your community. Call 408-262-5513 ext. 104 for reservations.

### \*WOW! Wonders of Water Brownie Girl Scout Journey

**Saturday, April 12**  
**2:00 p.m. – 3:30 p.m.**

Without water, we cannot exist. Can you return the favor? On this journey, take action by discovering how to love water, save water, and share water. Space is limited to 20 people and program fills quickly. Call Julie at 408-262-5513 ext. 104.

## Youth Group Programs at the Refuge Headquarters in Fremont

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

### Webelos Naturalist Program

**Saturday, March 22**  
**Sunday, April 6**  
**Sunday, May 18**  
**10:00 a.m. – 12:30 p.m.**

Attention Webelos! Earn your naturalist badge in just 2.5 hours. During this hike, learn about birds, flyways, food chains, and the importance of wetlands. Bring your binoculars, or borrow one of ours.

## TIDELINE

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**Volume 37, Number 1**

Editor: ..... Carmen Minch

To receive *Tideline*, email [carmen\\_leong-minch@fws.gov](mailto:carmen_leong-minch@fws.gov), or write to: *Tideline*, San Francisco Bay National Wildlife Refuge Complex, 1 Marshlands Rd, Fremont, CA 94555

### San Francisco Bay National Wildlife Refuge Complex

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

Project Leader: ..... Anne Morkill  
 Don Edwards Refuge Manager: ..... Eric Mruz  
 Don Edwards Wildlife Specialist: ..... Melisa Amato  
 Don Edwards Warm Springs Unit Manager: .. Ivette Loreda  
 Farallon Refuge Manager: ..... Gerry McChesney  
 Farallon Wildlife Specialist: ..... Jonathon Shore  
 North Bay Refuges Manager: ..... Don Brubaker  
 North Bay Wildlife Specialist: ..... Louis Terrazas  
 South Bay Refuges Manager: ..... Diane Kodama  
 Public Affairs Officer: ..... Doug Cordell  
 Refuge Planner: ..... Winnie Chan  
 Chief of Visitor Services: ..... Jennifer Heroux  
 Park Ranger/Outdoor Recreation Planners: .....  
 Joseph Garcia and Carmen Minch

Environmental Education Specialists: .....  
 Tia Glagolev and Genie Moore  
 Volunteer Coordinator: ..... Paul Mueller  
 Law Enforcement Officers: ..... Jared Klein, Jesse Navarro  
 and Chris Wilson  
 Biologists: ..... Joy Albertson, Christopher Caris,  
 Susan Euing, Allison Fuller, Meg Marriott,  
 Cheryl Strong, and Rachel Tertes  
 Administrative Staff: ..... Lucinda Ballard,  
 Patricia Compton, and Ellen Tong  
 Maintenance Staff: ..... Juan Flores, James Griffin,  
 Calvin Sahara, Michael Springman, and Ed Van Til

### San Francisco Bay Wildlife Society

A nonprofit 501(c)(3) cooperating association established in 1987 to promote public awareness and appreciation of San Francisco Bay and fund education and outreach programs at San Francisco Bay National Wildlife Refuge Complex.

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 Program Administrator: ..... Sue Ten Eyck

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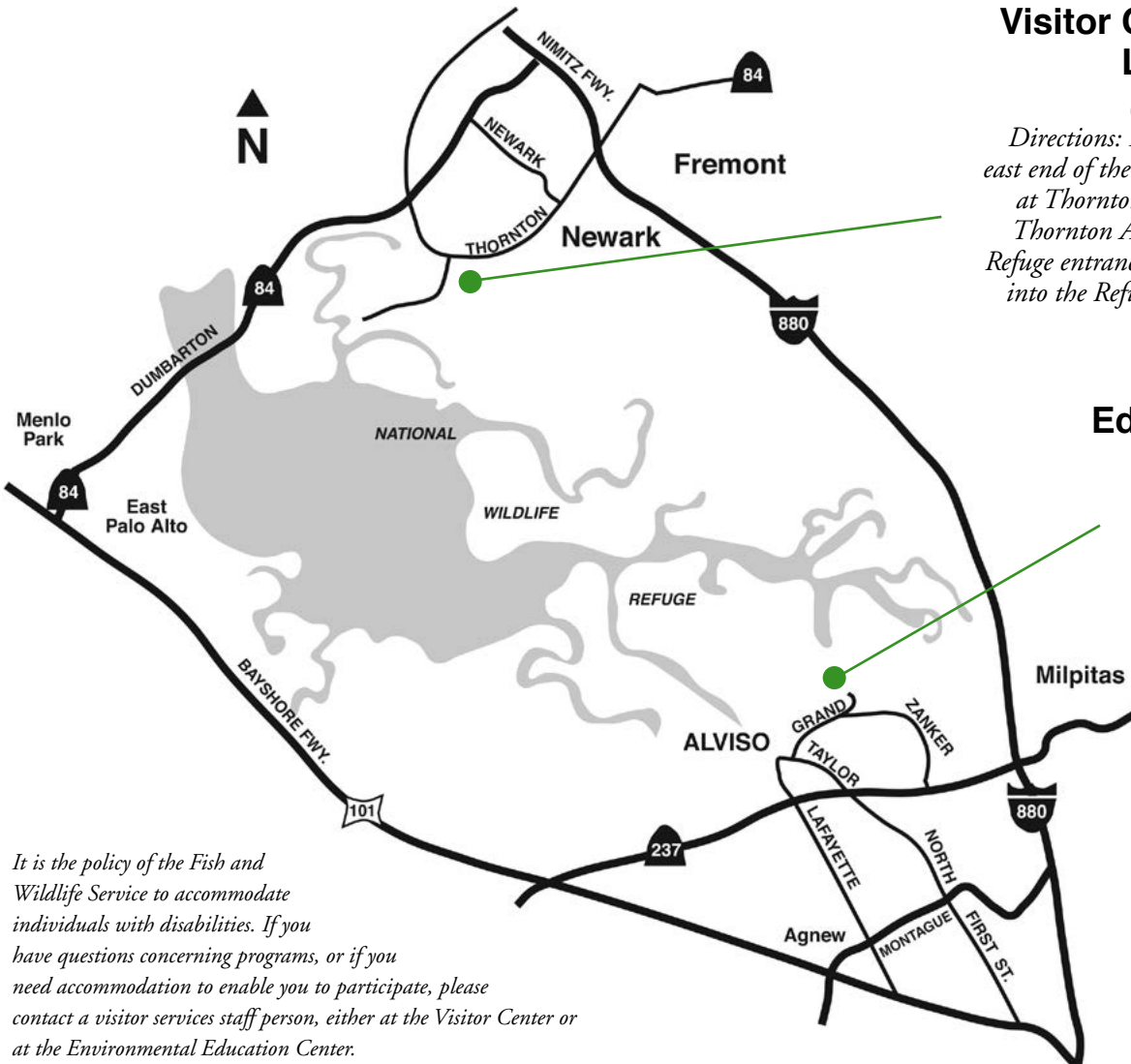
# Tideline



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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.*