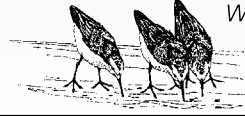
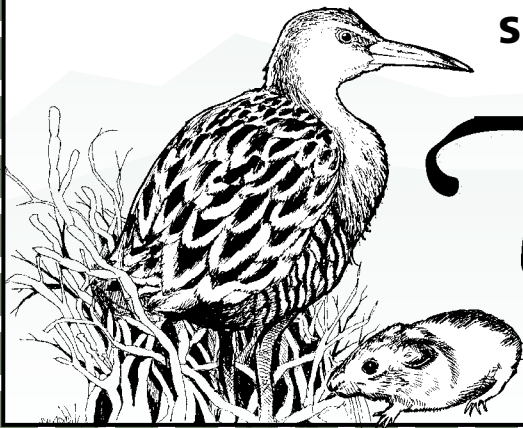


Spring 2005

# Tideline

San Francisco Bay National  
Wildlife Refuge Complex



Volume 25, Number 1

## Scooping for Scoters in San Francisco Bay

By Susan Wainwright-De La Cruz and John Takekawa

On a clear, crisp, winter day, a spectacular array of shorebirds and waterfowl can be easily seen feasting on the mudflats and salt ponds at the Don Edwards San Francisco Bay National Wildlife Refuge, creating a birdwatcher's paradise. When you aim your binoculars beyond the salt ponds and the mudflats toward the open Bay waters, you'll notice huge rafts of ducks dominating the landscape. Unlike dabbling ducks that feed partially submerged in shallow waters, these bay ducks dive deep to the depths of the Bay floor in search of clams and other invertebrate prey. Peer closely into one of these mixed species groups, and your eyes are immediately drawn to white triangular markings on the forehead and neck of a black bird. Its bill, bulbous and multi-colored with hues of red, yellow, white, orange, and black, grabs your attention next. This male duck standing out from the others is just one of 60,000 surf scoters that make the San Francisco Bay estuary their winter home.

Surf scoters (*Melanitta perspicillata*) are sea ducks, waterfowl that molt and winter in coastal waters. They are one of just three species of scoters. White-winged scoters and black scoters are the other species and are uncommon in the San Francisco Bay Area. The male surf scoter is quite distinct while females are less showy with brown bodies, diffuse white patches below their eyes, and bluish-black bills. This species breeds in very low densities across the

boreal forests of Alaska and Canada, and winters along both the Pacific and Atlantic coasts. Surf scoters are long-lived and their lifetime reproduction rate is quite low. Juveniles can take two to three years to mature.

Surf scoters have the dubious distinction of being one of the least studied waterfowl species in North America. Waterfowl breeding surveys have been traditionally geared toward dabbling ducks that nest earlier, resulting in a lack of information for ducks that nest later. Due to this lapse, obtaining good estimates of surf scoter population size has proven difficult. In addition, the extent of the surf scoter breeding range is not well known. Rough estimates of the North American population size range between 600,000 and one million individuals. However, surveys conducted since the 1950s show a disturbing trend: scoter populations seem to have decreased by about 50%. It is quite difficult to reverse the decline of a species when we know so little about its life history.

Biologists across the continent are working to improve our knowledge of surf scoters and to determine the causes of their decline. Current theories on decline focus on changes that are occurring throughout the breeding and wintering ranges of surf scoters. For instance, global warm-



Photo ©Dan Gaube

*Male surf scoter close-up, clearly showing distinguishing markings*

*Photo by Dan Gaube, USGS*

*Continued page 2*

# Scooping for Scoters in

ing may be reducing the quality of the freshwater boreal lakes scoters use in breeding areas. Also, the majority of wintering surf scoters are found in large, urbanized estuaries where increased development, contamination, and invasive species could be negatively influencing them or their primary prey.

The San Francisco Bay estuary is one of the most important wintering areas for surf scoters along the Pacific coast.



Photo ©Dan Gaube

*Surf scoters in the central bay during late winter.*  
Photo by Dan Gaube, USGS

This estuary, the largest on the west coast of North America, contains abundant food for wintering and migrating birds. During some years, as much as 75% of surf scoters counted in U.S. Fish and Wildlife Service mid-winter surveys of the lower Pacific Flyway are found right here in our backyard. Because the Bay is winter home to such a large fraction of surf scoters, it is crucial for us to understand factors here that influence this declining species.

Studies conducted in San Francisco Bay in the 1980s have already shown us that pollutants such as mercury, selenium, and cadmium accumulate in scoters during the winter. Concentrations of these contaminants were higher in scoters than in any other Bay waterfowl and were high enough to potentially cause them reproductive problems. Today this threat may be greater because of the invasion of the non-native Asian clam (*Potamocorbula amurensis*) in the late 1980s. This clam has become widespread in the northern estuary and has been shown to accumulate three-times the selenium and 22-times the cadmium as other clam species. Scoters may be eating the Asian clam, which could increase their exposure to these pollutants.

In 2003, we began a study of San Francisco Bay surf scoters to determine what they are eating and how much they are being affected by pollution. We are also attempting to track their migration routes with radio transmit-

ters, and follow them back to their breeding areas to examine their reproduction.

During this study, we discovered that capturing surf scoters to attach the radio transmitters was no easy task. They are incredibly difficult to catch. We first tried to catch scoters using mist nets, a net made of fine mesh, early in the morning before the birds could see the nets. This method works well in most areas, but not here - probably because of the ambient lights that surround the Bay, allowing scoters to see and avoid the nets. We now catch scoters from a boat with a net launcher that “scoops” them into a net just off the water. Once caught, we radio-mark birds and track their movements in the Bay seven days a week throughout the winter.

We have found that scoters use all bays in the estuary during early winter, and a large proportion of them are found within the boundaries of the San Pablo Bay National Wildlife Refuge. By mid-February they begin to congregate in the middle of the San Francisco Bay near the San Mateo Bridge, and nearly all scoters are found here by the early spring. We were able to determine that most scoters feed in shallow water of about six feet, or in the subtidal shoals surrounding the edge of the Bay. We also know that they do feed on the Asian clam, as well as a great variety of invertebrates, and even fish eggs!

Scoters on the Pacific coast are associated with spawning of Pacific herring (*Clupea pallasii*). Herring roe is found in the Bay, often in eelgrass beds in the shoals, from November through March, with a peak in January. Unfortunately, herring are at their lowest since the 1970s, and their decline may represent the loss of an important food source for scoters.

Very few scoter nests have ever been found and their breeding grounds are not well-known. In 2003, we marked females with satellite transmitters and waited for the spring migration

*Female surf scoter foraging on clams in San Francisco Bay.*

Photo by Dan Gaube, USGS



Photo ©Dan Gaube

# San Francisco Bay

to begin. Using satellite receivers, we followed these birds northward along the west coast and to their breeding area in the Northwest Territories of Canada between the Great Slave and Great Bear Lakes, a distance ranging between 2000 and 2500 miles. For a detailed map, log on to <http://www.werc.usgs.gov/scoter>.

Once we discovered how and where these birds go, we went to the breeding area to find the nests and to determine the types of nesting habitat that scoters favor. Flying in floatplanes, our crew was able to observe three different radio-marked scoters on small lakes scattered across this very large region. Our future work on the breeding ground will include determining whether pollutants affect scoter reproduction.

Over the next three years, we'll continue scooping for scoters to learn more about their wintering activities in the San Francisco Bay, Pacific Flyway, and in the breeding grounds. This information will help in their recovery, and, with any luck, you will see more of their colorful bills in our Bay Area waters.

*Susan Wainwright-De La Cruz is a wildlife biologist with the U.S. Geological Survey, San Francisco Bay Estuary Field Station and a graduate student at the University of California, Davis. Her research focuses on foraging ecol-*



*ogy and cross-seasonal contaminant effects in surf scoters.*

*John Takekawa is a research wildlife biologist with the U.S. Geological Survey, San Francisco Bay Estuary Field Station which is co-located with the San Pablo Bay National Wildlife Refuge on Mare Island in Vallejo. His research specialties include migration and wintering ecology of waterbirds, radio telemetry, salt pond ecology, and wetland restoration.*

*Migration routes of surf scoters.*

*Courtesy of USGS*

## TIDELINE

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

Volume 25, Number 1

Editor: ..... Carmen Minch  
To receive *Tideline*, email [carmen\\_leong-minch@fws.gov](mailto:carmen_leong-minch@fws.gov), or write to: *Tideline*, Don Edwards San Francisco Bay National Wildlife Refuge, P.O. Box 524, Newark, CA 94560-0524.

## San Francisco Bay National Wildlife Refuge Complex

Founded in 1974 and administered by the U.S. Fish and Wildlife Service, Don Edwards San Francisco Bay National Wildlife Refuge exists to preserve wildlife habitat, protect threatened and endangered species, protect migratory birds, and provide opportunities for nature study. Six additional refuges are managed from the headquarters located in Fremont: San Pablo Bay NWR, Antioch Dunes NWR, Salinas River NWR, Ellicott Slough NWR, Marin Islands NWR, and Farallon NWR.

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Refuge Manager: ..... Clyde Morris

Don Edwards Warm Springs

Unit Manager: ..... Sally Reynolds

Don Edwards Refuge Operations Specialist: ..... Eric Mruz

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## Tideline is On-Line

Visit our web site, which features past issues of *Tideline*, at <http://desfbay.fws.gov>

## 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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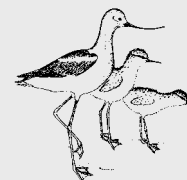
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# Thank you San Francisco Bay Wildlife Society Donors!

We gratefully acknowledge the following donors who have made gifts to the San Francisco Bay Wildlife Society between *October 16, 2004* and *January 14, 2005*. These gifts will be used for capital, environmental education, habitat restoration, and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.

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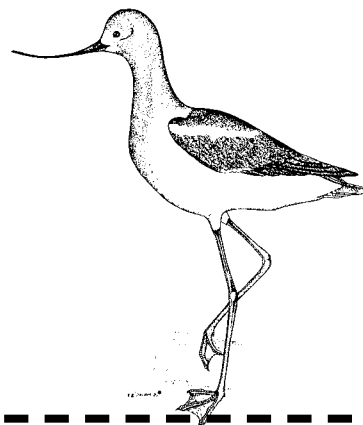
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## Matching Gift Program

Hewlett-Packard Employee Charitable Giving Program for Koh Kok-Wei



## Help Us Help the Refuge

Mail your donation to: **San Francisco Bay Wildlife Society, P.O. Box 234, Newark, CA 94560**. You may also fax your membership donation using a Visa or MasterCard number to (510) 792-5828.

For a gift membership, call 510-792-0222 ext. 40.

San Francisco Bay Wildlife Society is a nonprofit 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   
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Phone \_\_\_\_\_ *Thank you for your support!*

# San Francisco Bay National Wildlife Refuge Complex Welcomes New Deputy Project Leader John Bradley

Don't be surprised to see a smiling, new face roaming the trails, removing exotic vegetation, or practicing Tai Chi in the parking lot. John Bradley, the San Francisco Bay National Wildlife Refuge Complex's new Deputy Project Leader, plans to do it all. As Deputy Project Leader, whose primary responsibilities include overseeing the day to day operations of seven National Wildlife Refuges in the greater Bay Area, he has an excellent chance of doing just that.

John hails directly from Seal Beach National Wildlife Refuge, but is no stranger to the San Francisco Bay Area. He was born in Palo Alto and raised in Redwood City. After living in Plumas and Lassen Counties with his family for many years, John returned to the Bay Area to attend the University of San Francisco and graduated with degrees in sociology and history. He also received a degree in public health from the University of Oklahoma. John had always been an outdoor enthusiast and an avid birdwatcher. It was during these collegiate years and a two-year stint in a population internship program in Costa Rica for John Hopkins University when John began to turn his interest in a possible career in ecology. He returned to academia and received a doctorate in ecology at the University of California at Davis.

John became actively involved with the National Audubon Society in the 1980's, volunteering much of his time on the conservation committee, reviewing and commenting on Environmental Impact Reports. In the 1990's, the Fish and Wildlife Service hired him to

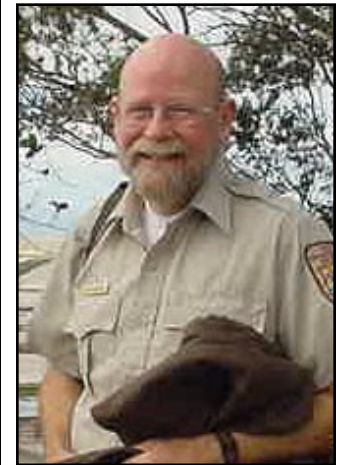
work in the Ecological Services Field Office in Laguna Niguel. In addition to surveying shorebirds, John worked with several threatened and endangered species including checkerspot butterflies, kangaroo rats, and fairy shrimp, just to name a few. After working his way up to branch chief of Endangered Species Consultation at the Ecological Services Field Office in Carlsbad, CA, John jumped at the opportunity to be a Refuge Manager of Seal Beach National Wildlife Refuge, located near San Diego.

"I've always loved refuges," says John. "I love their programs. I love to be out in the field – the biology, the habitat enhancement, the maintenance. I love it all."

In fact, for nine years, John and his wife Becky had volunteered at Seal Beach NWR prior to becoming its manager, monitoring nests and maintaining rafts that the endangered light-footed clapper rails built its nests on. After five years at Seal Beach NWR, John accepted the challenge of managing one of the most diverse and complex National Wildlife Refuges in the system – the San Francisco Bay National Wildlife Refuge Complex. He is eager to be part of a large staff, face new challenges, and take in the diversity that the Bay Area has to offer.

"I look forward to participating in as many refuge programs as I can, and getting to know everyone."

So if you see John hiking the trails or pulling weed, stop by and say hello. He'd love to meet you.



Don Edwards San Francisco Bay National Wildlife Refuge

## Annual Earth Day Cleanup

Saturday, April 23

9:00 a.m. – 12:00 p.m.

Protect wildlife and the environment.

Join us on our annual cleanup. We'll supply latex gloves and trash bags.

Wear sturdy shoes, a hat, and clothes you don't mind getting dirty.

No reservations needed. All groups welcome.

For more information, call Carmen Minch at 510-792-0222 ext. 38.

# IMBD 2005 Poster Contest

Join the 13th annual International Migratory Bird Day celebration by participating in the IMBD 2005 poster contest! Get yourself, your kids, and your classes drawing, painting, collaging, or any other poster art you can think of! Anyone from kindergarten to adults can enter.

All entries:

- must depict **MIGRATORY BIRDS** that can be seen in the SF Bay Area
- can be no larger than 16"x24"
- must contain a message about conserving water or preventing urban runoff

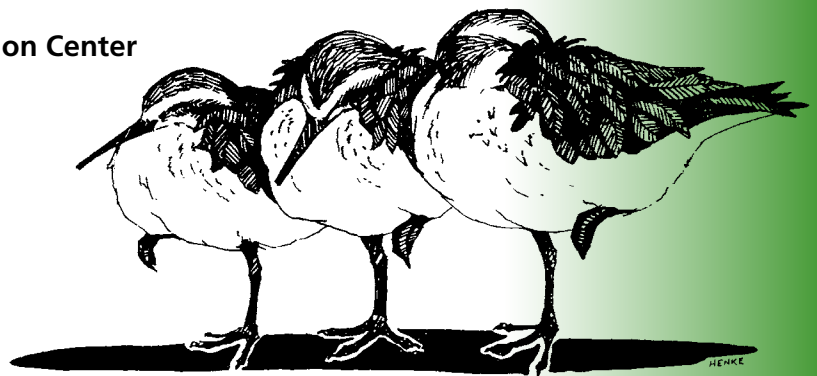
Entry deadline is April 26. Winners will be notified by April 30th and awards will be presented May 14 at IMBD in Alviso at 12 noon. All posters will be displayed during the month of May, and the

Best in Show will be framed. All winners will receive a certificate along with prizes donated by local wildlife-oriented stores and organizations. Winners must be present to win. Be sure to include the entry form below on the back of your poster. Include a self-addressed, stamped envelope if you want your poster returned by mail. Posters will be available for pickup June 2nd.

What's a migratory bird? Check out a birding field guide at your local library or on-line at [www.birdday.org](http://www.birdday.org). Here are a few species to get you started: Red-winged blackbird, western sandpiper, Forster's tern, American avocet, common yellowthroat, barn swallow, Canada goose. Remember, it must be a migratory bird of the San Francisco Bay Area.

Questions? Call Laurie McEwen 408-262-5513 ext 102.

Mail entries to: Laurie McEwen  
Environmental Education Center  
P.O. Box 411  
Alviso, CA 95002



Entries can be dropped at the Visitor Center at #1 Marshlands Road in Fremont, labeled ATTN: Laurie McEwen, or at the Environmental Education Center at 1751 Grand Blvd. in Alviso.

Full Name \_\_\_\_\_

Grade (circle one) K 1 2-3 4-5 6-8 9-12 adult

Phone Number \_\_\_\_\_

School (if applicable) \_\_\_\_\_

Bird \_\_\_\_\_

# International Migratory Bird Day

Saturday, May 14 • 11 a.m. to 4 p.m.

**All Activities are FREE!**

- Bird Walks
- Mud Studies
- Arts & Crafts
- Magic Shows
- Live Bird Programs
- Poster Contest
- Environmental Fair
- Food Vendor



## Early Morning Bird Banding Demonstrations May 14<sup>th</sup>

7:30 a.m., 8:30 a.m., 9:30 a.m. in Milpitas. Reservations Required. Contact Sharon Miyako at San Francisco Bay Bird Observatory at 408-946-6548 or e-mail [smiyako@sfbbo.org](mailto:smiyako@sfbbo.org)

## Celebrate Birds

### All This Month:

- May 7, 9-11 a.m., Beginning Birding for Adults
- May 7, 7-9 p.m., Evening with Local Bird Biologists
- May 21, 7-8:30 p.m., Bird Bingo!
- May 22, 10-11:30 a.m., Gardening for the Birds
- May 29, 11 a.m.–12:30 p.m., Family Bird Safari



## Environmental Education Center

1751 Grand Blvd, Alviso

For more information call 408-262-5513 or check our website <http://desfbay.fws.gov/imbd.htm>

### Event Sponsors:

City of San Jose  
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### Event Partners:

San Francisco Bay Bird Observatory  
([www.sfbbo.org](http://www.sfbbo.org))  
Santa Clara Valley Audubon Society  
([www.scvas.org](http://www.scvas.org))

# Spring Activity Schedule

## March

*Saturday, March 5*

### **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 birdwatching field guides, then head out onto the trails to find those birds. Learn about the salt marsh habitat along the way. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Call 510-792-0222. Led by Eileen McLaughlin.

### **Community Service Day**

**Environmental Education Center, Alviso**

**9:45 a.m. - 12:00 p.m.**

Calling all high school students looking to fulfill community service requirements, Scout groups looking to earn a service badge, and anyone else who just wants to pitch in at a one-time refuge project. Fight non-native plants in the Education Center's habitats. Long pants and long sleeve shirts are recommended but not required. Recommended for ages 9 and up. RESERVATIONS REQUIRED with Laurie McEwen at 408-262-5513 x 102.

### **South Bay Salt Pond Restoration Presentation**

**Visitor Center Auditorium, Fremont**

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

*Sunday, March 6*

### **Salt Pond Tour**

**Meet at Bayfront Park, Menlo Park**

**1:00 p.m. - 3:00 p.m.**

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more

about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions. Led by George Trevino and Dan Strickman.

*Saturday, March 12*

### **Exploring the Dunes**

**Antioch Dunes NWR, Antioch**

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

Did you know there's a National Wildlife Refuge in Antioch? Here's your chance to explore this refuge that is usually closed to the public. This guided tour (1-1.5 mile) will focus on the wonders of Antioch Dunes National Wildlife Refuge. Wear sturdy shoes for the sandy hike along the dunes. All ages welcome. No reservations required. No facilities. Contact 510-521-9624 for additional information and directions.

### **Habitat Walk**

**Environmental Education Center, Alviso**

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

Join naturalist Ed Kantack for an informative stroll through various habitats on the refuge. Find out what lives in the salt marsh, who prefers the salt pond, what makes a freshwater slough, and what creatures hide in the upland habitat. Geared for ages 8 and up. RESERVATIONS REQUIRED with Laurie McEwen at 408-262-5513 x 102.

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### **Raptors on the Refuge**

**Environmental Education Center, Alviso**

**3:00 p.m. - 4:30 p.m.**

Peg Bernucci is talking about birds of prey that live around the San Francisco Bay and also in your backyard. What do they look like? Where do they live? How do they hunt? Inquiring minds want to know! We'll start indoors and then take a walk around the Ed Center looking for sky hunters. Bring warm clothes; it can be windy on the

trails. Program geared for children age 6 and up. RESERVATIONS REQUIRED, call Laurie at 408-262-5513 x 102.

### **Twilight Marsh Walk**

**Visitor Center, Fremont**

**5:30 p.m. - 7:00 p.m.**

Experience the salt marsh at twilight on an easy stroll along Tidelands (1 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. Call 510-792-0222. Led by Mary and Gene Bobik.

*Sunday, March 13*

### **Viewing Nature Through an Artistic Lens**

**Visitor Center, Fremont**

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

When our eyes spot a bird, our brain thinks, "Ah- a bird." But to truly see an object, one has to forget its designation and try to view the object with an open mind- not only as a bird- but as a mixture of lines, shapes, textures, and colors. In this unique outdoor workshop, Danielle Norris will lead several activities designed to help us experience nature's inherent beauty on a new level. If you can't draw, do not despair! This workshop is more an exercise in thinking and looking. Space is limited. Please call 510-792-0222. All ages welcome.

*Saturday, March 19*

### **What are the Parts that Make a Marsh?**

**Visitor Center Auditorium, Fremont**

**11:00 a.m. - 12:00 p.m.**

Join us for a puppet show and find out what are the parts that make a marsh! Afterwards, we'll take a short walk on the trail to find those parts and view plankton through hand lenses and microscope. Recommended for ages 3-6. Led by Danielle Norris.

### **South Bay Salt Pond Restoration Presentation**

**Visitor Center Auditorium, Fremont**

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-

**Don Edwards San Francisco Bay National Wildlife Refuge**

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# Spring Activity Schedule

oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older. Presented by Dale Petersen.

## Twilight Equinox Walk

**Environmental Education Center, Alviso**  
**6:00 p.m. - 7:30 p.m.**

Celebrate the beginning of spring and discover what emerges from the marsh as the sun goes down. Why do these creatures come out at night? Find out on this leisurely evening stroll. Learn about the Vernal Equinox and how it is celebrated around the world. Suitable for all ages. Dress warmly; it can be very cold. Reservations required. Call Laurie McEwen at 408-262-5513 x 102.

## Jupiter & Saturn Viewing

**Environmental Education Center, Alviso**  
**7:30 p.m. - 8:30 p.m.**

Amateur astronomer Ralph Libby is showing off some spectacular planets tonight. Make a scale model of our solar system and venture outside to view the night sky through a telescope. Gaze at the rings of Saturn and the moons of Jupiter! Bring your own binoculars or spotting scopes if you have them. Dress warmly as it gets cold in the evening. Fun for the whole family. Planet viewing subject to weather conditions. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

*Sunday, March 20*

## Hawk Walk

**Visitor Center Entrance, Fremont**  
**9:00 a.m. - 11:00 a.m.**

Join Laurey Hemenway on a leisurely walk through the refuge and learn to differentiate between the various raptors. Identify other migratory birds in the upland and salt marsh habitats. Wear comfortable shoes and bring a bird book and binoculars. Recommended for ages 8 and up. RESERVATIONS REQUIRED. Call 510-792-0222.

## Adult Beginning Birdwatching

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

Activities abound in the marsh as birds find mates and build nests. Join birding enthusiast Ceal Craig for a beginning birdwatching program

and get to know the most common refuge visitors. Start with a slide show indoors to learn how to recognize the regulars. Then borrow a pair of binoculars and take a walk with Ceal to test your new skills. Program intended for adults. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

*Saturday, March 26*

## Slow the Flow Presents: Critter Café

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

Mud and water are pretty boring stuff, right? No way! Come take a closer look at some of the tiny, wiggly, squiggly creatures we'll find in samples of mud and water from marshes at the Don Edwards San Francisco Bay National Wildlife Refuge. Learn about macroinvertebrates and plankton – the tasty treats that shorebirds are eating at our five-star marsh “cafes” at the refuge. Reservations required. Call Tina at 408-262-5513 ext 104.

## Salt Pond Tour

**Meet at Bayfront Park, Menlo Park**  
**1:00 p.m. - 3:00 p.m.**

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions. Led by Archana Sudame and Carole Foster.

## South Bay Salt Pond Restoration Presentation

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

## A Ghost Town in San Francisco Bay?

**Visitor Center, Fremont**  
**3:00 p.m. - 4:00 p.m.**

That's right! On Station Island nestled in the salt marshes of south San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful community of nature lovers, or a rip-roaring gang of two-fisted rowdies? Excellent slide show and presentation. Presented by Pat Anthony.

*April*

*Saturday, April 2*

## Viewing Nature Through an Artistic Lens

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

When our eyes spot a bird, our brain thinks, “Ah-a bird.” But to truly see an object, one has to forget its designation and try to view the object with an open mind- not only as a bird- but as a mixture of lines, shapes, textures, and colors. In this unique workshop, Danielle Norris will lead several activities designed to help us experience nature's inherent beauty on a new level. If you can't draw, do not despair! This workshop is more an exercise in thinking and looking. Space is limited. Please call 510-792-0222. All ages welcome.

## Reptile Hike

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

Join a member of the Bay Area Amphibian and Reptile Society (BAARS) for a discovery hike around the Education Center. Look for resident reptiles as they emerge to soak up the sun. Geared for ages 5 and up. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

## Reptile Day!

**Environmental Education Center, Alviso**  
**11:00 a.m. - 2:00 p.m.**

The Bay Area Amphibian and Reptile Society (BAARS) will be displaying many scaly critters inside the Education Center today. Come learn about reptiles and amphibians. Possibly hold a snake... or let a snake give you a squeeze! This is great fun for all ages.

**Don Edwards San Francisco Bay National Wildlife Refuge**

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# Spring Activity Schedule

## Reptile Talk

Environmental Education Center, Alviso  
12:30 p.m. - 1:30 p.m.

The Bay Area Amphibian and Reptile Society (BAARS) will put on an informative slide show about California native reptiles and amphibians. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

## South Bay Salt Pond Restoration Presentation

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

*Sunday, April 3*

## Salt Pond Tour

Meet at Bayfront Park, Menlo Park  
1:00 p.m. - 3:00 p.m.

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions. Led by Dale Petersen and Dan Strickman

*Saturday, April 9*

## Exploring the Dunes

Antioch Dunes NWR, Antioch  
10:00 a.m. - 11:00 a.m.

Did you know there's a National Wildlife Refuge in Antioch? Here's your chance to explore this refuge that is usually closed to the public. This guided tour (1-1.5 mile) will focus on the wonders of Antioch Dunes National Wildlife Refuge. Wear sturdy shoes for the sandy hike along the dunes. All ages welcome. No reservations required. No facilities. Contact 510-521-9624 for additional information and directions.

## South Bay Salt Pond Restoration Presentation

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

## Living Between the Tides

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

Most wildlife and some plant life on the refuge are affected by the tidal action. This slide show presentation will show how living things adapt to the changes that occur while the tide goes from high toward low. A walk on the Tidelands trail will follow afterwards. Led by Ed Kantack.

## Slow the Flow Presents: Salinity Sleuths

Environmental Education Center, Alviso  
2:30 p.m. - 4:00 p.m.

Step into the shoes of a scientist and strap on our field detective packs for a hands-on investigation where we will collect water samples, use plant clues, and do some sleuthing around to answer the question "How salty is it?" You will need to bring along keen senses of taste, smell and sight to determine which plants and animals live in the refuge's salty habitats! Reservations required. Call Tina at 408-262-5513 x104.

## Adult Beginning Birdwatching

Environmental Education Center, Alviso  
3:00 - 4:30 p.m.

Activities abounds in the marsh as birds find mates and build nests. Join birding enthusiast Ceal Craig for a beginning birdwatching program and get to know the most common refuge visitors. Start with a slide show indoors to learn how to recognize the regulars. Then borrow a pair of binoculars and take a walk with Ceal to test your new skills. Program intended for adults. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

## 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 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. Call 510-792-0222. Led by Mary and Gene Bobik.

*Sunday, April 10*

## Viewing Nature Through an Artistic Lens

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

When our eyes spot a bird, our brain thinks, "Ah- a bird." But to truly see an object, one has to forget its designation and try to view the object with an open mind- not only as a bird- but as a mixture of lines, shapes, textures, and colors. In this unique outdoor workshop, Danielle Norris will lead several activities designed to help us experience nature's inherent beauty on a new level. If you can't draw, do not despair! This workshop is more an exercise in thinking and looking. Space is limited. Please call 510-792-0222. All ages welcome.

*Saturday, April 16*

## Warm Springs Vernal Pool Tours

Visitor Center Parking Lot, Fremont  
Carpool to Warm Springs  
10:00 a.m. - 1:00 p.m.

Discover the wonders of vernal pool plants and wildlife on this easy walking tour of the Warm Springs Unit of Don Edwards NWR. Naturalists of all kinds will enjoy the chance to see one of the Bay Area's remaining vernal pool grasslands that is usually closed to the public. Total walking distance will not exceed one mile, but terrain is uneven. Please wear sturdy shoes (preferably waterproof) and dress according to the weather. Heavy rain will cancel. Appropriate for ages 7 and up. No facilities. RESERVATIONS REQUIRED. Tours limited to 15 people due to the sensitivity of the vernal pools. Call Sally Reynolds at 510-792-4275 x 49 to reserve a spot.

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# Spring Activity Schedule

*Friday, April 22*

## **Warm Springs Vernal Pool Tours**

**Visitor Center Parking Lot, Fremont**

**Carpool to Warm Springs**

**10:00 a.m. – 1:00 p.m.**

Discover the wonders of vernal pool plants and wildlife on this easy walking tour of the Warm Springs Unit of Don Edwards NWR. Naturalists of all kinds will enjoy the chance to see one of the Bay Area's remaining vernal pool grasslands that is usually closed to the public. Total walking distance will not exceed one mile, but terrain is uneven. Please wear sturdy shoes (preferably waterproof) and dress according to the weather. Heavy rain will cancel. Appropriate for ages 7 and up. No facilities. RESERVATIONS REQUIRED. Tours limited to 15 people due to the sensitivity of the vernal pools. Call Sally Reynolds at 510-792-4275 x 49 to reserve a spot.

*Saturday, April 23*

## **Earth Day Cleanup!**

**Visitor Center Parking Lot, Fremont**

**9:00 a.m. – 12:00 p.m.**

Join us for our annual Earth Day Cleanup and help protect wildlife! We'll supply laytex gloves and trash bags. Wear sturdy shoes, a hat, and clothes you don't mind getting dirty in. Water is also recommended. No reservations needed. All groups welcome. For more information, call Carmen Minch at 510-792-0222 ext. 38.

## **Warm Springs Vernal Pool Tours**

**Visitor Center Parking Lot, Fremont**

**Carpool to Warm Springs**

**10:00 a.m. – 1:00 p.m.**

Discover the wonders of vernal pool plants and wildlife on this easy walking tour of the Warm Springs Unit of Don Edwards NWR. Naturalists of all kinds will enjoy the chance to see one of the Bay Area's remaining vernal pool grasslands that is usually closed to the public. Total walking distance will not exceed one mile, but terrain is uneven. Please wear sturdy shoes (preferably waterproof) and dress according to the weather. Heavy rain will cancel. Appropriate for ages 7 and up. No facilities. RESERVATIONS REQUIRED. Tours limited to 15 people due to the sensitivity of the vernal pools. Call Sally Reynolds at 510-792-4275 x 49 to reserve a spot.

## **South Bay Salt Pond Restoration Presentation**

**Visitor Center Auditorium, Fremont**

**1:00 p.m. – 2:00 p.m.**

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

## **Slow the Flow Presents: Where Does All the Water Go?**

**Environmental Education Center, Alviso**

**1:30 pm. – 3:00 p.m.**

Ever wonder where the water in the toilet and the water that goes down the drain end up? Come see a slide show on how the San Jose/Santa Clara Water Pollution Control Plant cleans our wastewater. Afterwards, take a hike on the refuge and observe how this cleaned wastewater affects habitats. Appropriate for ages 10 and up. Reservations required. Call Tina at 408-262-5513 ext 104.

## **Look For New Arrivals**

**Environmental Education Center**

**2:00 p.m. – 4:00 p.m.**

Join naturalist Ed Kantack for a leisurely stroll through the salt marsh to look for the arrival of migratory birds. As the season changes, new species appear while some wintering birds depart. Dress warmly; it can be windy on the trails. Geared for ages 7 and up. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

## **Twilight Walk**

**Environmental Education Center, Alviso**

**6:30 p.m. – 8:00 p.m.**

Join returning interpreter, Sharon Miyako, for a twilight stroll around the refuge. As the sun sets, a whole new world comes alive. Many bird species travel thousands of miles primarily at night. Learn how and why. Geared towards adults but all ages are welcome. Dress warmly; it can be very cold in the evening. NOTE: This program will be videotaped. Reservations required. Please call Laurie McEwen at 408-262-5513 x 102.

## **Moon & Planets in the Night Sky**

**Environmental Education Center, Alviso**

**8:00 p.m. -9:00 p.m.**

Come out to see the full moon on TV. Amateur astronomer Ralph Libby shows off the moon and other planets. Make a scale model of our solar system to take home and venture outside to view the night sky through a telescope. Gaze at the rings of Saturn and the moons of Jupiter! Bring your own binoculars or spotting scopes if you have them. Dress warmly as it gets cold in the evening. Fun for the whole family. Planet viewing subject to weather conditions. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

*Saturday, April 30*

## **South Bay Salt Pond Restoration Presentation**

**Visitor Center Auditorium, Fremont**

**1:00 p.m. – 2:00 p.m.**

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

## **Salt Pond Tour**

**Meet at Bayfront Park, Menlo Park**

**1:00 p.m. – 3:00 p.m.**

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions. Led by Carole Foster and George Trevino.

## **What are the Parts that Make a Marsh?**

**Visitor Center Auditorium, Fremont**

**3:00 p.m. - 4:00 p.m.**

Join us for a puppet show and find out what are the parts that make a marsh! Afterwards, we'll take a short walk on the trail to find those parts and view plankton through hand lenses and microscope. Recommended for ages 3-6. Led by Danielle Norris.

**Don Edwards San Francisco Bay National Wildlife Refuge**

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# Spring Activity Schedule

## May

### Sunday, May 1

#### Viewing Nature Through an Artistic Lens

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

When our eyes spot a bird, our brain thinks, "Ah- a bird." But to truly see an object, one has to forget its designation and try to view the object with an open mind- not only as a bird- but as a mixture of lines, shapes, textures, and colors. In this unique outdoor workshop, Danielle Norris will lead several activities designed to help us experience nature's inherent beauty on a new level. If you can't draw, do not despair! This workshop is more an exercise in thinking and looking. Space is limited. Please call 510-792-0222. All ages welcome.

### Saturday, May 7

#### Beginning Birding for Adults

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

The San Francisco Bay Area is a fantastic place for birds. Come see some of these beautiful birds on this two-hour walk. No previous birding experience necessary. Bring your curiosity and a pair of binoculars. Lisa Myers of Let's Go Birding is leading this program. Visit [www.letsjobirding.com](http://www.letsjobirding.com) for more information about Lisa Myers. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

#### 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 birdwatching field guides, then head out onto the trails to find those birds. Learn about the salt marsh habitat along the way. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Call 510-792-0222. Led by Eileen McLaughlin.

#### Discovery Hike

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

Join naturalist Ed Kantack for an enlightening hike around the Education Center. Find out what critters are enjoying the refuge during this time of year. What does spring look like in a salt pond? In a salt marsh? Look for seasonal changes in our wetland habitats. Geared for ages 7 and up. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

#### South Bay Salt Pond Restoration Presentation

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

#### An Evening With Local Ornithologists

Environmental Education Center, Alviso  
7:00 p.m. – 9:00 p.m.

Take an armchair tour of the California least tern colony in Alameda with refuge biologist Rachel Hurt, followed by San Francisco Bay Bird Observatory's (SFBBO) presentation on the impacts of powerlines on birds. Are there better ways for birds and people to co-exist? Presented by SFBBO Biologist Gina Barton, Volunteer Jan Hintermeister, and Outreach Specialist Sharon Miyako. Shade-grown coffee and cookies will be served. Program intended for adults. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

### Sunday, May 8

#### It's Not My Fault!

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

The San Francisco Bay region is a complex maze of faults, mountains, and other geologic formations. We will explore the formation of the San Francisco Bay and the hill upon which the Visitor Center sits. Geared toward adults. Led by Carmen Minch.

#### Early Morning Bird Walk with Clyde

Environmental Education Center, Alviso • 7:30 a.m. - 9 a.m.

Join Refuge Manager, Clyde Morris for an early morning walk along the boardwalk and levee trails. Discover migratory birds nesting in the salt marsh, on islands in the salt ponds, and even along the freshwater slough. Program geared for adults. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

#### Bird Banding Demos

Coyote Creek Field Station, Milpitas  
7:30 a.m., 8:30 a.m., 9:30 a.m.

For 15 years, the San Francisco Bay Bird Observatory (SFBBO) has been banding songbirds in the Bay Area. Discover what songbirds migrate through the area and how banding is done at the Coyote Creek Field Station. RESERVATIONS REQUIRED. Email Sharon Miyako with IMBD in the subject line at [smiyako@sfbbo.org](mailto:smiyako@sfbbo.org), or call 408-946-6548. For more SFBBO events, check [www.sfbbo.org/calendar.htm](http://www.sfbbo.org/calendar.htm)

#### International Migratory Bird Day

Environmental Education Center, Alviso • 11:00 a.m. – 4:00 p.m.

It's time to celebrate long distance frequent flyers! Come take a nature walk, make a keepsake photo and frame, visit environmental organizations at our street fair, watch a live bird presentation, and be amazed by the Magic of Water show. Great family fun, all ages welcome. Food vendor on site so you can grab lunch or a snack. Everything (except the food) is FREE! See page 7 for more details.

### Saturday, May 14

International Migratory Bird Day



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# Spring Activity Schedule

*Saturday, May 14*

## **Exploring the Dunes**

**Antioch Dunes NWR, Antioch**  
**10:00 a.m. – 11:00 a.m.**

Did you know there's a National Wildlife Refuge in Antioch? Here's your chance to explore this refuge that is usually closed to the public. This guided tour (1-1.5 mile) will focus on the wonders of Antioch Dunes National Wildlife Refuge. Wear sturdy shoes for the sandy hike along the dunes. All ages welcome. No reservations required. No facilities. Contact 510-521-9624 for additional information and directions.

## **South Bay Salt Pond Restoration Presentation**

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

## **Salt Pond Tour**

**Meet at Bayfront Park, Menlo Park**  
**1:00 p.m. – 3:00 p.m.**

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions.

## **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 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. Call 510-792-0222. Led by Mary and Gene Bobik.

*Saturday, May 21*

## **Hawk Walk**

**Visitor Center Entrance, Fremont**  
**9:00 a.m. - 11:00 a.m.**

Join Laurey Hemenway on a leisurely walk through the refuge and learn to differentiate between the various raptors. Identify other migratory birds in the upland and salt marsh habitats. Wear comfortable shoes and bring a bird book and binoculars. Recommended for ages 8 and up. RESERVATIONS REQUIRED. Call 510-792-0222.

## **National Creek Cleanup Day**

**Alviso Marina County Park, Alviso**  
**9:00 a.m. – 12:00 p.m.**

Help clean up Alviso Slough as it winds its way to the Bay. Grab your friends, bring gloves and trash bags, and enjoy a nice walk outdoors as you remove trash from your watershed. Call Laurie at 408-262-5513 ext 102 if you have questions.

## **Canoe the Sloughs**

**Newark Slough Boat Launch**  
**10:45 a.m. – 2:00 p.m.**

Ducks paddle the slough in the winter; humans paddle the slough in the spring and fall. Experience the refuge from a duck's point of view. Bring your own canoe, paddles, and life vest (mandatory!). Learn about the ecology of the salt marsh, and identify the birds, plants, and mammals of the slough. Meet at the Newark Slough boat launch off of Thornton Avenue. No inflatables please!! RESERVATIONS REQUIRED!! Led by Ed Kantack.

## **South Bay Salt Pond Restoration Presentation**

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

## **Bird Bingo!**

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

Learn about the watershed while celebrating migratory birds. Then, let the games begin! Join Laurie for a lively evening of Bird Bingo. Hone your bird identification skills or just fine tune your visual powers. Good family fun, all ages welcome. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

## **Night Sky**

**Environmental Education Center, Alviso**  
**8:30 p.m. - 9:30 p.m.**

Get one last look at Jupiter and Saturn with amateur astronomer Ralph Libby. Make a scale model of our solar system and venture outside to view the night sky through a telescope. Gaze at the rings of Saturn and the moons of Jupiter! Bring your own binoculars or spotting scopes if you have them. Dress warmly as it gets cold in the evening. Fun for the whole family. Planet viewing subject to weather conditions. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

*Sunday, May 22*

## **Gardening for the Birds**

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

Spring is in the air! All around the Bay Area birds are finding mates and preparing to raise their young. How can you play a role in providing habitat for nesting birds? View plants in our gardens that not only attract birds and add beauty to our garden, but do not require much watering. Led by native plant specialist, June Smith. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

## **Salt Pond Tour**

**Meet at Bayfront Park, Menlo Park**  
**1:00 p.m. – 3:00 p.m.**

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions.

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# Spring Activity Schedule

## Slow the Flow: Habitat Hike

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

The refuge is a mosaic of different habitats, each habitat supporting an array of wildlife unique to the South Bay. Come enjoy the outdoors as we hike and explore them all! We'll learn how people and nature affect habitat as we get up close and personal with the salt marsh, sloughs, and salt ponds on our short and easy trek. Binoculars and I.D. charts in hand, we will identify plants, birds, and other animals we see. Reservations required. Call Tina at 408-262-5513 ext 104.

*Saturday, May 28*

## Community Service Day

Environmental Education Center, Alviso  
9:45 a.m. -12:00 p.m.

Calling all high school students looking to fulfill community service requirements, Scout groups looking to earn a service badge, and anyone else who just wants to pitch in at a one-time refuge project. Help control invasive exotics in the EEC's habitats. Dress in layers, long pants and long sleeve shirts are advised but not required. You'll probably get dirty and you might get wet. Dress appropriately. Recommended for ages 9 and up. RESERVATIONS REQUIRED with Laurie McEwen at 408-262-5513 x 102.

## South Bay Salt Pond Restoration Presentation

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

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation,

learn about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older.

*Sunday, May 29*

## Family Bird Safari

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

Join Laurie McEwen and Peg Bernucci on a birding safari around the salt ponds via minivan. Learn about salt ponds and the restoration project currently underway. We'll stop and take a peek at the remains of Drawbridge as we pass by. Best for ages 5 and up. Space is limited. Reservations are essential. Call Laurie at 408-262-5513 ext 102 to make a reservation.

## Don Edwards San Francisco Bay National Wildlife Refuge

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# Protect our Watershed: Reduce the use of toxic chemicals in and around your home

Did you know something as simple as wrapping a strip of copper around a flower pot or the wooden sides of garden beds can help protect the environment and wildlife? Snails and slugs are repelled by copper because of the unpleasant reaction it causes on their bodies. Although the more common method, the application of snail bait, is innocuous when used by only a few, it can be harmful when combined with other chemicals and when used by millions of people.

We all live in a watershed, a land area that drains water into our creeks and into the bay. When it rains, pesticides from your home, garden, and yard flow into storm drains that empty directly into our creeks and the bay. Many commonly used household products including bug sprays, snail bait and weed killers contain chemicals that may be harmful to aquatic life. These chemicals are used to kill a wide variety of insect pests including ants, fleas, cockroaches, aphids, spiders, and wasps. They work by shutting down the nervous system of target pests, but

can have the same impact on beneficial insects and birds. Children and pets can also be harmed through repeated exposure, or short time exposure to high concentrations.

Below are some actions you can take to reduce pesticide use and protect your watershed:

- Keep pests from entering your home by trimming plants and trees so they don't touch your house.
- Prevent ant invasions by storing food in containers that seal tightly.
- Keep things clean and dry and caulk cracks where ants are entering the house.
- The easiest and safest way to get rid of spiders and their webs is to vacuum them up. The dust inside the vacuum bag will quickly suffocate spiders. This works for lines of ants too.
- Select non-toxic or less-toxic alternatives to pesticides. Contact Watershed Watch for more tips.

- Don't use pesticides outdoors when rain is predicted, or prior to watering your lawn or garden.
- Never dispose of pesticides in the trash, storm drain or sink. Contact your local county's household hazardous waste disposal program. In Santa Clara County, call the Santa Clara County Household Hazardous Waste Disposal Program at 408-299-7300 for drop off information or visit [www.hhw.org](http://www.hhw.org)

For more information about less-toxic pest control and ways to protect your watershed visit [www.WatershedWatch.net](http://www.WatershedWatch.net) or call 1-866-WATERSHED.

What is your watershed? If you would like to receive a watershed poster depicting South San Francisco Bay, come to the Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center in Alviso at 1751 Grand Blvd, or to the Visitor Center in Fremont at 1 Marshlands Rd.

# 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** and **Trekking the Refuge** Field Trip Programs are offered at the Visitor Center in Fremont, and **Wetland Round Up** and **Slow the Flow** Field Trip Programs 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.

For more information about field trips at the Don Edwards San Francisco Bay National Wildlife Refuge, call Ken Clarkson at 510-792-0222 in Fremont, or Genie Moore at 408-262-5513 in Alviso.

**Wetland Round Up** field trips are full at the Visitor Center in Fremont and at the Environmental Education Center in Alviso. Fall field trips will begin in October 2005.

**Trekking the Refuge** in Fremont is still available. Call Ken at 510-792-0222 or email him at [ken\\_clarkson@fws.gov](mailto:ken_clarkson@fws.gov).

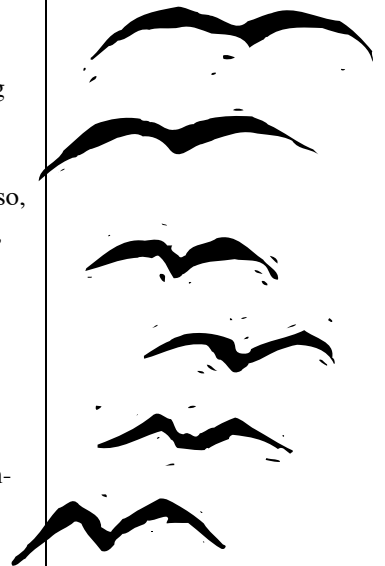
**Slow the Flow** Programs are still available in Alviso.

## Slow the Flow Program

**Slow the Flow** provides an experiential learning environment for students and educators to explore the topics of water use, wastewater treatment, and habitat preservation. Activities and presentations focus on the relationship between personal habits and their effects on local habitats. **Slow the Flow** is an environmental education program offered at no cost through the cooperating efforts of the City of San Jose, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society. The program offers field trips at the Refuge, classroom presentations, and outreach presentations.

Programs are geared for 5th - 12th grades, although a modified field trip is available for college groups. Educators are also encouraged to contact us to discuss options for customizing field trip and presentation activities and schedules. Slow the Flow programs are available to educators and groups located in San Jose, Alviso, Milpitas, Santa Clara, Saratoga, Monte Sereno, Los Gatos, Campbell and Cupertino.

Reservations for the Slow the Flow program are on a first come basis. Call Tina Simmons, the Slow the Flow Program Coordinator at 408-262-5513 ext 104 for more information or to schedule a field trip or presentation. Spring presentations and field trips still available.



## Free Discovery Packs available at the Visitor Center and Environmental Education Center!

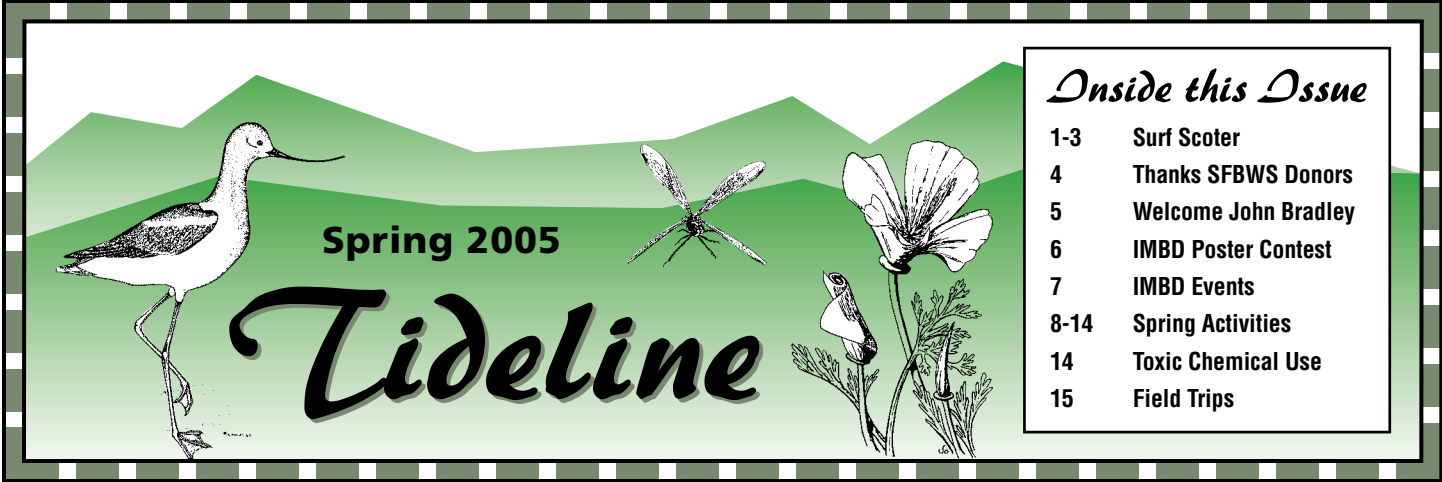
Explore the salt marshes, salt ponds, and the birds of the Refuge with your family or small youth group! The discovery pack includes an activity booklet, and all of the equipment such as dip nets, magnifying lenses and bug boxes that you will need to take a close look at the salt marsh plants, the brine shrimp, and the birds! The back pack is suitable for up to 6 people, ages kindergarten - adults. There are also group packs available for 12 - 24 (only at the Visitor Center, please call in advance if you would like a group pack). You can check out the Discovery Packs free of charge at the Visitor Center in Fremont or the Environmental Education Center in Alviso! The **Visitor Center** is open Tuesday - Sunday from 10 - 5. For questions or to reserve a group pack please call 510-792-0222. The **Environmental Education Center** is open Saturday and Sunday from 10 - 5. For questions please call 408-262-5513.

UNITED STATES  
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE  
DON EDWARDS SAN FRANCISCO BAY  
NATIONAL WILDLIFE REFUGE  
P.O. BOX 524  
NEWARK, CALIFORNIA 94560

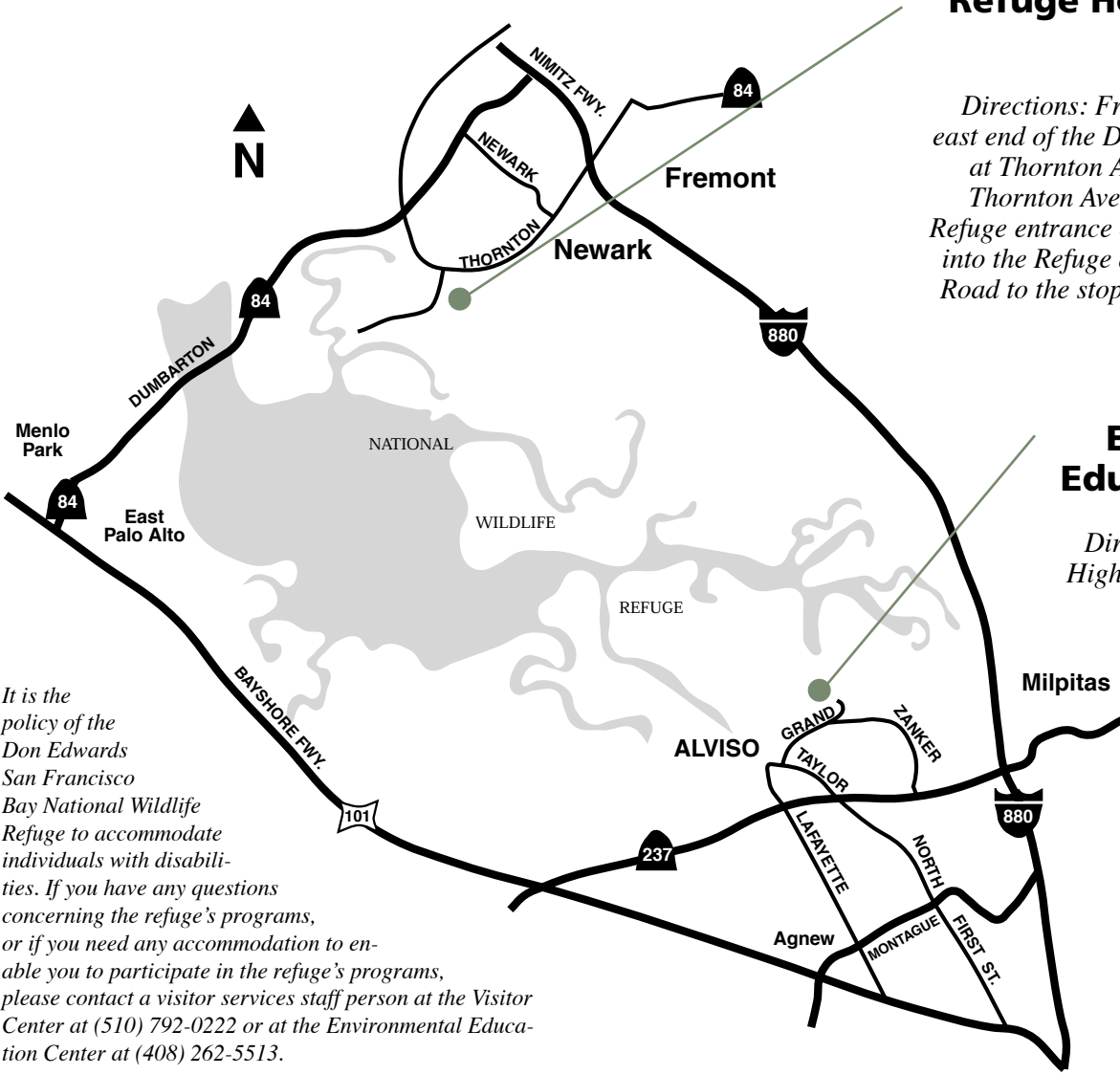
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**Refuge Headquarters & Visitor Center**

(510) 792-0222  
*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 Marshlands Road to the stop sign. Turn left into the parking lot.*

**Refuge Environmental Education Center**

(408) 262-5513  
*Directions: From I-880 or Highway 101, exit on Highway 237 toward Mountain View/Alviso. Turn north onto Zanker Road. Continue on Zanker Road to the Environmental Education Center entrance road (a sharp right turn at Grand Blvd.) The distance from 237 to the entrance road is 2.1 miles.*

*It is the policy of the Don Edwards San Francisco Bay National Wildlife Refuge to accommodate individuals with disabilities. If you have any questions concerning the refuge's programs, or if you need any accommodation to enable you to participate in the refuge's programs, please contact a visitor services staff person at the Visitor Center at (510) 792-0222 or at the Environmental Education Center at (408) 262-5513.*