

Tideline



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

A Winter at Warm Springs

By *Ivette Loredó*

As the series of back-to-back rainstorms in mid-December deposited several inches of rain and kicked off the rainy season in full force, the vernal pools at the Warm Springs Seasonal Wetland Unit of Don Edwards San Francisco Bay National Wildlife Refuge (Warm Springs) slowly began to saturate, fill, and expand, coming to life. This marks the beginning of the annual pool cycle, a



California Tiger Salamander

Credit: FWS Photo

short cycle of life, reproduction, death, and desiccation undertaken by a variety of species adapted to the vernal pool habitat. The quiet, sleepy fall has given way to the richly productive winter in these newly formed aquatic habitats. Warm Springs is a vernal pool grassland located in south Fremont adjacent to the salt ponds. It represents one of the few remaining areas of ecotone habitat in the San Francisco Bay, occurring in what historically was the transition from salt marsh to upland habitat.

But first, “What are vernal pools?” Vernal pools are rain-filled topographic depressions that fill with water during the winter rainy season and then completely dry out in the spring or summer. Vernal pools are home to a highly diverse and largely endemic group of plant and animal species, which are adapted to these extreme annual cycles. Because vernal pools occur in grassland habitats and these habitats are typically easy to develop (in terms of topography and land clearing), California’s vernal pool ecosystems have been significantly fragmented and reduced in size due to urbanization and agricultural conversion. As a result, many of the endemic species that inhabit these vanishing wetlands are extremely rare. The vernal pools at Warm Springs support three rare vernal pool species: the endangered vernal pool tadpole shrimp, the threatened California tiger salamander, and

the endangered Contra Costa goldfield. Although the goldfields must await the spring in order to germinate and begin their annual life cycle, it is the winter season in which tadpole shrimp, salamanders, and a host of other species come together to mate and reproduce in the pools.

As these shallow basins begin to fill with rain, an amazing phenomenon occurs. A casual observer would never suspect that buried within the muddy pool bottom are

cysts and eggs of insects and crustaceans and seeds of plants. Environmental cues related to soil saturation and temperature cause the cysts and eggs to hatch while the pools are inundated. Within a few weeks these pools are filled with newly hatched aquatic invertebrates. What may look like just a puddle is actually a rich habitat teeming with life. Aquatic invertebrates including the tiny ostracods (1mm blob-like), cladocera (“water fleas”), copepods (small red crustacean), aquatic beetles, the aptly named backswimmers and water boatmen can be found swimming alongside aquatic larvae of many insects such as mosquitos, dragonflies, damsel flies, midges, and mayflies. Filtered through the water column with a dipnet, all of these creatures can be seen with the naked eye upon close inspection.

In addition, Warm Springs provides habitat for two vernal pool-dependent or “vernal pool obligate” invertebrates, the endangered vernal pool tadpole shrimp and the versatile fairy shrimp. These species are crustaceans like crabs and lobsters, although they don’t look a whole lot like the marine crustaceans you may be familiar with. The vernal pool tadpole shrimp (VPTS) is full-sized at two inches-long, and has a smooth concave shell which protects the soft, segmented abdomen and 35 pairs of legs beneath. It has a pair of eyes centered on top of its shell and a long two-pronged tail. VPTS is endemic to California, found only in this state. It is found sporadically throughout its range in areas containing suitable vernal pool habitat. Tadpole shrimp

continued next page

are considered “living fossils” because their basic body characteristics are the same as can be seen in fossilized tadpole shrimp that lived over 300 million years ago.

As the winter rains fill the pools, the VPTS cysts hatch and can reach sexual maturity in as little as three weeks. After VPTS mate, females deposit cysts on vegetation, rocks, or other objects on the bottom of pools. Cysts, unlike eggs, are already fertilized and are essentially embryonic animals in a drought-resistant casing. If the rainfall season is long and sustained, such as the 2010 season at Warm Springs, these newly deposited cysts can hatch within the same winter and spur another wave of

reproduction. In dryer years, the cysts lay dormant and hatch the following winter or later. Embedded in the top layer of vernal pool soil sediments, VPTS cysts can remain dormant and viable for at least 10 years. It is this adaptation that has allowed the species to survive during the worst of California’s drought cycles. The cysts are dispersed among pools by migrating and breeding birds or grazing ungulates as they carry small bits of mud and dirt on their feet from pool to pool. In addition, any cysts inadvertently eaten by birds along with their prey items, will emerge from the bird’s digestive tract unharmed and able to hatch.

Another vernal pool crustacean that can be found at Warm Springs is the versatile fairy shrimp which has a life cycle similar to the vernal pool tadpole shrimp, although shorter. Fairy shrimp can be found in the ponds within one to two weeks of filling. Typically at Warm Springs they have only one life cycle per year and are found only in January, appearing before many of the other large invertebrates. However, similar to the VPTS, in 2010 the fairy shrimp experienced two distinct hatching cycles due to the favorable rainfall conditions. There are many species of fairy shrimp that thrive in California’s vernal pools. Although many of these species are on the federal endangered species list, the species present at Warm Springs (*Branchinecta lindahli*) is not. It is present throughout California and other



Biologists sampling for species

Credit: FWS Photo

states. Fairy shrimp are easily identifiable in the pools not only because of their translucency but by the way they appear to swim – upside down. These 1/2” to 1 1/2” creatures have 11 pairs of feathery swimming legs that move in a graceful, undulating rhythm giving them a delicate, perhaps “fairy-like” appearance. The adults live for only a matter of weeks, thereby disappearing from the pools as quickly as they magically appeared.

The rains have also “awakened” another vernal pool breeder, the California tiger salamander (CTS). CTS is a relatively large, stout salamander 7-8 inches long with the distinct coloration of yellow bars or spots on a shiny black body, earning it the “tiger” name. This amphibian has spent the hot, dry summer in a state of dormancy called aestivation, similar to hibernation. Deep within the ground, in ground squirrel or gopher burrows of the Warm Springs grasslands, CTS sleeps through the summer. As successive winter storms begin to fill the pools, it signals the beginning of the breeding season and CTS embark upon their migrations to the pools, usually within half a mile away. These migrations to and from the pools occur on rainy nights throughout the winter; their movements are slow and direct as they climb over or around anything in their way including your foot. During drought years, CTS may skip the breeding migration entirely. Even outside the breeding season, most above-ground

CTS movement occurs during rainy nights, making the species relatively unknown to the general public.

Males initiate their breeding migrations first, when the pools just start to fill, and patiently await the arrival of the females. Females require a greater quantity of cumulative rainfall to occur before making the trip. It is more energetically expensive to produce eggs, so females are evolutionarily better off ensuring that the pools will hold water for several months for reproduction to be successful.

Female CTS stay at the pools for a few days to two weeks, during which they breed and lay several hundred eggs. Males stay five to six weeks in order to maximize their chances of breeding. After the eggs are fertilized internally, they are attached to vegetation at the edge of pools or objects on the bottom. Eggs take approximately 10-14 days to hatch and salamander larvae require approximately three months to complete metamorphosis. As pools begin to dry and the external gills and tail fin from the larval phase are absorbed, the salamander is ready for its terrestrial juvenile phase. At this time, typically in May, the juvenile salamanders begin their nightly migrations away from the pools in search of a ground squirrel burrow or other suitable spot to call home. With luck, they’ll return to the pool to breed in two to three years.

Because of the long period of time

required for the salamander life cycle, pool duration is the principal factor determining whether a pool can support CTS. A longer period of inundation allows the larvae to grow larger and have time to complete metamorphosis. Therefore, only the deeper, longer-lasting pools at Warm Springs can support CTS, while a larger number of pools can support VPTS and fairy shrimp with their shorter aquatic life cycles.

As I look out my window on one cold and rainy January day, I smile as I imagine the little salamanders, fat with eggs, making their way to the breeding ponds that night. To many, it may not feel like the season of rebirth. Indeed, for many of the plant and animal species of the San Francisco Bay NWR Complex, it is spring that is most often associated with rebirth. However, at Warm Springs, the breeding season is in full gear. The winter rains have made the pools heavy with life, and the cycle begins anew.

Tours of Warm Springs will be offered in April during the wildflower bloom. Please contact Ivette Loredo by email at ivette_loredo@fws.gov if you are interested



Vernal pool tadpole shrimp

in attending.

Ivette Loredo is a Wildlife Refuge Specialist who manages the Warm Springs Seasonal Wetland Unit of the Don Edwards San Francisco Bay NWR. She received her

Masters in Ecology from U.C. Davis studying the California tiger salamander at Concord Naval Weapons Station. She has been working at the SFBNWR since 1999 in various biology and management positions.

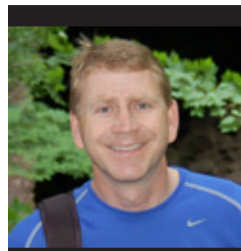
Coastal and Marine Spatial Planning

On June 2009, President Obama established an Interagency Ocean Policy Task Force charged with developing recommendations to enhance our ability to maintain healthy, resilient, and sustainable ocean, coasts, and Great Lakes resources. One of the recommendations from the report that was published in 2010 called for Coastal and Marine Spatial Planning (CMSP). Essentially a planning tool, CMSP is a comprehensive, adaptive, integrated, ecosystem-based, and transparent spatial planning process, based on sound science, for analyzing current and anticipated uses of ocean, coastal, and Great Lakes areas. In practical terms, CMSP provides a public policy process for society to better determine how these areas are sustainably used and protected – now and for future generations.

This planning process in the United States will include the territorial sea, out to 200 nautical miles offshore and the Continental Shelf, and will extend landward to the mean high-water line including bays and estuaries. Because these resources make up the vast majority of the refuges we manage, I recently attended a workshop on

this new effort where representatives from a variety of Federal agencies met to discuss what implementation will mean to our respective organizations. This effort equates to the National Wildlife Refuge System's

However, it is clear that CMSP provides, for the first time, a science-based and transparent road map for coastal communities to plan the future of their waters. Many of our National Wildlife Refuges in the Bay Region, particularly Farallon NWR, Don



Refuge Reflections

by Mendel Stewart

Comprehensive Conservation Planning process where we strive to describe the desired future conditions of a refuge and provide long-range management direction to achieve refuge purposes. Coastal and marine spatial planning is already being used effectively by other countries—and by states like Massachusetts and Rhode Island.

It is not clear when this effort will kick-off in the San Francisco Bay Region or which Federal agency will take the lead.

Edwards San Francisco Bay NWR and San Pablo Bay NWR, will directly benefit from this type of large scale planning and we look forward to participating. You can find out more about CMSP by visiting the following websites:

Read Executive Order 13547 and the goals of the Coastal and Marine Spatial Planning: <http://www.whitehouse.gov/files/documents/2010stewardship-co.pdf>

NOAA's Coastal and Marine Spatial Planning website: <http://www.msp.noaa.gov/>

Alien Plant Invasions

By Brian Alfaro

When our prehistoric ancestors revamped their hunter-gatherer lifestyles with tools, farming, fire, and wheels, they unconsciously created a vehicle for opportunistic plants to divide and conquer. Opportunistic plants growing outside of their native habitat become invasive weeds, and often gain notoriety because of their terrible effects on landscapes and wildlife. A native biotic community is analogous to an organism, and invasive plants to a spreading malignant tumor. First, they are transported from one region to another by vessels on migratory routes, such as emigrant wagon trails and harbors. After first establishment, their extended ranges could be spread further through its natural means of dispersal, or by humans. An invasive species usually lose its natural predators and competitors, which allows it to reproduce and spread at astonishing high rates, overthrowing native species. In most cases, they convert native communities into unsightly landscapes that may turn fallow.

The most devastating invasive plants in western Northern America were introduced centuries ago. For example, the “golden” hills of California used to be perennial grasslands—sporadic mosaics of vibrant green bunchgrasses and shrubs that exploded into a splendid display of color in spring time. When the Spanish settled in Alta California, they brought annual grasses to feed their cattle. Now, most of this region’s rangelands are dominated with a horde of annual grass species, such as riggut brome, non-native rye, slender wild oat, and mouse barley. These plants are responsible for California mudslides because they do not have structural support that roots of native bunchgrasses provide. Due to their high flammability, they also increase the frequency of wildfires in California. In the Intermountain West, invasive grasses have been traced back to overland emigrant wagon trains from the Eastern Seaboard, likely led by Meriwether Lewis, William Clark, and John Bidwell.

In California and western North America, Mediterranean and Eurasian species have followed suit of annual grasses. Giant reed and Himalayan blackberry stifles the streams of southwestern United States. Ice plant rapidly wears away captivating coastal bluffs and terraces, which were

formed by perpetual waves of the Pacific Ocean. The Mexican fan palm, which is symbolic of glamorous streets in Los Angeles, works its way from concrete drainages with castor bean and pepper tree to choke gullies, tributaries, and river mouths. Invasive plants such as yellow star thistle and closely related taxa have occupied once productive rangelands, reducing forage and habitat for wildlife and cattle.

Many scientists agree that these invasions have slowly extirpated a multitude of local species, including important pollinators and dispersers of native plants. About 42 percent of the species on threatened or endangered species lists are at risk primarily because of invasive plants and animals. In 2005, a study at Cornell University revealed that the cost of damage and loss related to invasive species was approximately \$120 billion dollars annually in the United States. The same study tallied approximately 50,000 alien species and the number is still increasing.

In the San Francisco Bay National Wildlife Refuge Complex (Refuge), biologists wrestle with enduring colonies of weeds, such as the New Zealand spinach on Southeast Farallon Island and upstart colonies in the South Bay. In the marshes and salt pond restoration sites, new weeds such as perennial pepperweed have vast strangleholds that may decimate habitats of endangered wildlife. More common on upland habitats are stinkwort, fennel, and various thistles. Refuge biologists, land



Stinkwort

Credit: ©Tom Cochrane

managers, and volunteer citizens, however, are engaged in the field battling these terrible plants.

How can one help combat this epidemic? Take part in the Going Native Garden Tour on April 17 (see ad below) and learn about native plants. Plant a native plant in your yard. Pull out invasive plants every Tuesday at the Environmental Education Center in Alviso at 9:30 a.m. Call Genie Moore at 408-262-5513 to participate. Or, become a Weed Wrangler at Refuge Headquarters in Fremont. Beginning in March, the Don Edwards Refuge will hold weeding parties once a month to remove invasive weeds. For information about becoming a Weed Wrangler, call Meg Marriott at 510-792-0222 ext. 132.

• SAVE WATER • SAVE ENERGY • GROW NATIVE PLANTS • CREATE HABITAT •

Visit gardens at the Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center in Alviso and other local gardens during the

**Ninth Annual
Going Native
Garden Tour**

Sunday, April 17, 2011, 10 am-4 pm

A free, self-guided tour of over 50 gardens landscaped with California native plants • Locations throughout the Santa Clara Valley and Peninsula • Many private home gardens, some public native gardens • Visit as many as you like — for ideas, for photos, for inspiration.

Free admission • Register at:
www.GoingNativeGardenTour.org

Seeking
Gardens &
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Visit website for details

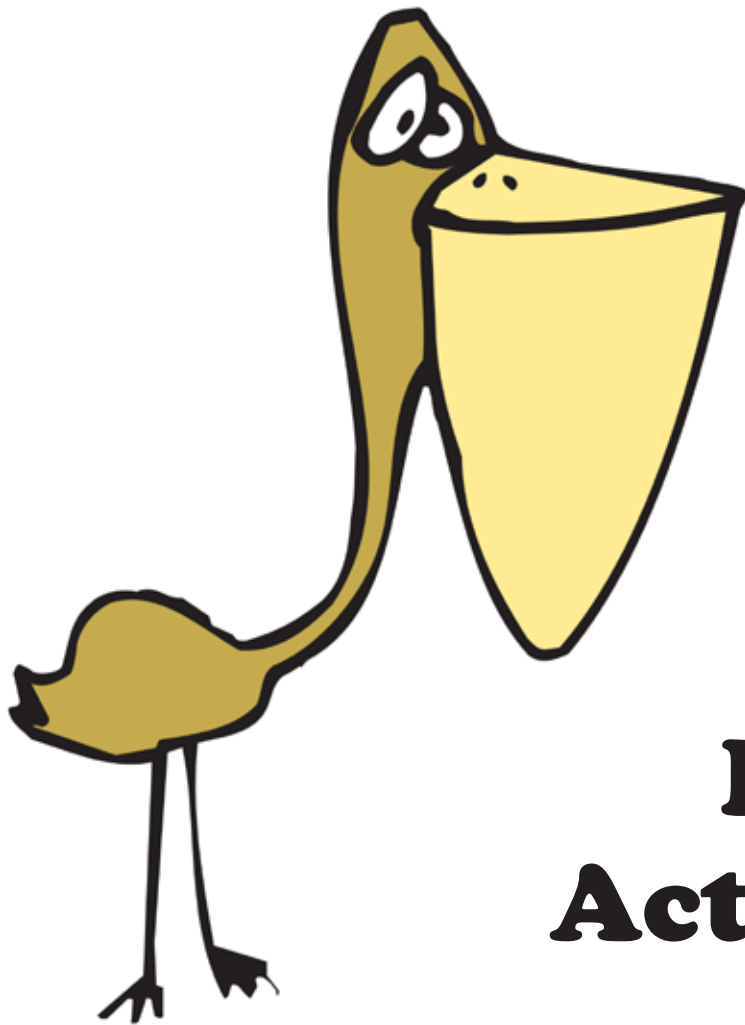
REDUCE CHEMICAL USE • PROTECT THE ENVIRONMENT •

PROTECT THE ENVIRONMENT • GROW NATIVE PLANTS • SAVE MONEY •

South Bay Bird Fest!

Gobble up some fun!

On Saturday, May 14th from 12 to 3pm
At Don Edwards San Francisco Bay National Wildlife Refuge
Environmental Education Center in Alviso.



Face Painting
Crafts
Games
Live Bird
Show
Bird Walks
Exhibits
Puppet Show

Free
Activities!

Visit our website for directions and more information
at <http://fws.gov/desfbay/> or call (408) 262-5513

South Bay Bird Fest is sponsored by: City of San Jose, San Francisco
Bay Wildlife Society, Santa Clara Valley Urban Runoff Pollution
Prevention Program, Wildlife Center of Silicon Valley and
US Fish & Wildlife Service



Teens take action!

BE A HABITAT HERO

July 18- 22, 2011 for new participants
& July 21-22, 2011 for returning Habitat Heroes



If you are a teen entering 7th grade or above and have the desire to develop leadership skills through team-building activities and community service on a National Wildlife Refuge this is a program for YOU! This year, we are offering 2 types of programs. New participants will attend all 5 days of program, July 18-22. Returning Habitat Heroes will join us for the refresher portion of the program July 21-22. We are specifically recruiting Junior Leaders who will serve at our Marsh-In Summer Camp in Alviso, August 1-5, 2011. The program is FREE, but space is limited. Applicants must commit to attending the program (or the refresher) AND serving at our summer camp this year.

How to apply: Please submit a letter (one page) of interest (with your name, age, address, phone number, parent/guardian's name), why you would like to participate, AND a letter of reference from someone who knows you well (teacher, coach, neighbor, etc.). Application deadline is 5:00 p.m. on Friday, June 10, 2011. Participants will be notified by mail and subject to parent/guardian approval. Questions? Please call Tia at 510-792-0222 x 474.

Please send your letters to: Habitat Heroes
 c/o EE Specialist
 9500 Thornton Avenue
 Newark, CA 94560

Let's Go Outside!

Be a Refuge Rambler!

The Don Edwards San Francisco Bay National Wildlife Refuge enters its fourth season of the Refuge Rambler club. This walking club is fun way to explore the refuge, meet new people, and to become more fit. Once a month from April to October, members of the Refuge Rambler club will gather at designated times and locations on the Don Edwards Refuge (or areas adjacent to the refuge) to walk refuge trails together. Staff or a volunteer will be present to greet the group, check off trail passports and walk the trail. These walks will range from 1.5 - 9 miles and will be located in Fremont, Alviso, Menlo Park, Sunnyvale and Mountain View.

These walks are self-paced. Take your time to enjoy the outdoors, discover nature, and meet fellow nature-lovers. People of all ages are welcome.

Becoming a Refuge Rambler is easy and free. You are under no obligation. Complete the registration form below, or download the form on the refuge web site at <http://www.fws.gov/desfbay>. Mail it to Carmen Minch, 9500 Thornton Ave, Newark, CA 94560. In a couple of weeks, you will receive a Refuge Rambler patch, a trail passport, a schedule, and a description of the trails featured for 2011.

The trail passport helps keep track of all the trails you completed. If you complete 7 out of the 8 trails featured, you become a Refuge Rambler All-Star! Submit your passport in person at the Visitor Center on October 15 and receive your 2011 t-shirt. Or, you can mail your passport to the refuge by October 31 and the t-shirt will be mailed to you. All passports will be returned.

Want to join in on the fun but don't want to be a member? No problem. All trails will be advertised in *Tideline* and on our web site. Choose the trails you want to walk and show up at the designated location and time. No reservations needed. Bring your friends! There are over 30 miles of hiking trails on the refuge just waiting to be explored!



Sign me up for the Refuge Rambler Club!

Complete the form below and receive a patch, a schedule, trail descriptions, and a passport. Mail the form to Carmen Minch, 9500 Thornton Ave, Newark, CA 94560 or email carmen_leong-minch@fws.gov with the information.

Name: _____

Address: _____

Phone Number: _____

Email Address: _____

Don Edwards San Francisco Bay National Wildlife Refuge

Earth Day Cleanup

Saturday, April 23, 2011 • 9:00 a.m. - 12:00 p.m.

Help us protect wildlife and the environment while enjoying great Bay views!

Join the refuge and Save the Bay at our Annual Earth Day Cleanup at Ravenswood Point in East Palo Alto. We'll supply latex gloves and trash bags. Wear sturdy shoes, a hat, and sunscreen. Prepare to get dirty and to have fun! Minors must be accompanied by an adult.

RESERVATIONS REQUIRED. Please reserve your spot today at www.savesfbay.org or call Natalie LaVan at (510) 452-9261 x109

For additional information, please call (408) 262-5513 x106



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, 2010 and December 31, 2010. 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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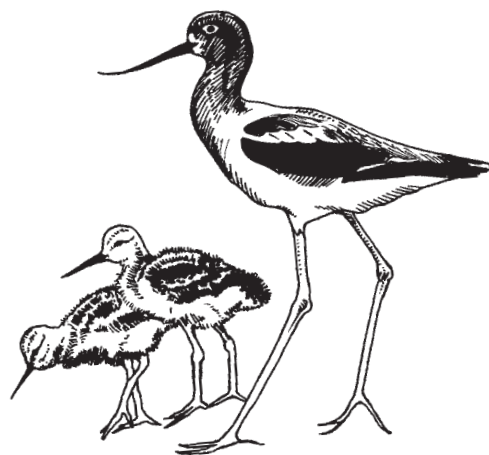
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Help Us Help the Refuge

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 510-745-8170.

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 \$200 Corporation \$500 Sustainer
- \$35 Individual \$75 Supporter \$250 Sponsor \$1,000 Leader

Check Visa or MasterCard # _____ Exp. Date _____

Signature _____

Name _____

Address _____ City _____ State _____ Zip _____

Phone _____ **Thank you for your support!**

Spring Activity Schedule

MARCH

Saturday, March 5

Bird Watching at the Hollow Happy Hollow Park and Zoo, San Jose 8:30 a.m. – 10:00 a.m.

Join our Interpretive Specialist, Debra King, for a fun new program at Happy Hollow Park and Zoo. We'll present an interactive discussion on local bird habitats and adaptations, provide you with the basics on how to conduct a successful bird watching session, and guide you on a birdwatching tour through Happy Hollow. Please note: there is a fee for this program, and registration is made with Happy Hollow Park and Zoo. Call Happy Hollow for more information at 408-794-6420.

***Beginning Birding Clinic** Environmental Education Center, Alviso 9:30 a.m. – 12:00 p.m.

If you can't tell your egrets from your cormorants this class is for you! We'll learn about binoculars, identification books, and other birding basics through hands-on activities and conversation. Then we'll go out into the field to practice our new skills. Binoculars and books provided during the class. Be prepared to be outdoors in the weather for about an hour. Reservations Required. Call 408-262-5513 ext.106.

***Marshlands of Dreams** Visitor Center, Fremont 10:30 a.m. – 11:30 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. There are opportunities for bird watching as well.

Sunday, March 6

Nature Drawing for Kids Visitor Center, Fremont 10:30 a.m. – 12:30 p.m.

Does your child have an interest in the arts? Introduce your child to outdoor sketching in this workshop by Travis Turner and increase their observations skills. We will learn how to draw what we see by incorporating common shapes, and learn about color value. We will then head out onto the trail and practice the various techniques. Paper and pencils will be provided. This program takes place outside so dress warmly. Rain cancels. Kids age 7-12 only! Call for reservations at 510-792-0222 ext. 363. Bring binoculars if you have them.

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

What's that wiggling and squiggling? Think that brown stuff is just mud? Think again! A living colony of organisms is at work in the mucky-muck. Discover how the smallest of creatures have the largest impact on the ecosystem. We'll filter a mud sample and use our microscopes to investigate the creepy crawlies of the sloughs. RESERVATIONS RECOMMENDED – All ages are welcome. Call Eric 408-262-5513 at ext. 104.

Saturday, March 12

Bird Photography Hike Ravenswood Unit (SF2), Menlo Park 8:30 a.m. – 11:30 a.m.

Explore through your camera the newly restored wetlands in our Ravenswood Unit. Docent Alex Baranda will lead you on a hike to several locations to photograph shorebirds and waterfowl. Rain or shine. Reservations Required. Call 408-262-5513 ext. 106.

*** Monster Bacteria and 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, some of whom love rotten eggs, and some of whom 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 Debra at 408-262-5513 ext. 102 for reservations.

***The Salt Marshes: Then and Now** Learning Center, Fremont (Near Visitor Center) 2:00 p.m. – 3:30 p.m.

Approximately 85% of San Francisco Bay's wetlands have disappeared over the last 200 years due to industry and development, impacting the wildlife that lived in and around them. Some of the plants and animals have made a comeback. Learn the history of the salt marshes and the species affected by the changes. The presentation includes a slide show followed by an optional walk (approximately 45 minutes, weather permitting) to view a salt marsh and the remains of a salt evaporation pond. Led by Gregg Aronson. Call 510-792-0222 ext. 363 for reservations.

Sunday, March 13

In Search of: California Grey Fox Visitor Center, Fremont 2:00 p.m. - 3:00 p.m.

Come learn about the California Grey Fox, the only canine that can climb trees. What do they look like? What do they eat? When is the best time to see them? What's in our habitat that makes them unique to the Bay Area? We will share information about this fox to optimize your chances of capturing a glimpse of them. The program includes a two-mile hike. Dress warmly and bring binoculars and rain gear. Led by Roy Sasai.

Saturday, March 19

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

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 various other jobs that help protect wildlife. It's a great service project for scout groups, high school community service, church groups, or home-schooled groups. 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 Debra for reservations at 408-262-5513 ext. 102.

***Salt Pond Remodel - A Work in Progress** Ravenswood Unit (SF2), Menlo Park 11:00 a.m.

Docent Jane Moss will lead you on a 1-mile walk through the ever-changing panoramas surrounding a former salt pond. Learn about the exciting ways this area is being reshaped as wildlife habitat. Trail is easy and level. All ages and abilities welcome. For information, call 408-262-5513 ext. 106.

Water, Water, Everywhere Environmental Education Center, Alviso 1:30 p.m. – 3:00 p.m.

Where does the water come from and where does it go? Learn about water cycles and watersheds. Build your own watershed model and see if you can predict where the water will go! Recommended for ages 7 and up. Led by Ed Kantack. Call Debra at 262-5513 ext. 102 for reservations.

WebMaster Needed!

The San Francisco Bay Wildlife Society is looking for a WebMaster

This individual will modernize our web site at SFBWS.org and handle periodic updates. Currently the updates are quarterly. This is subject to change, depending on activities. If you are interested please contact us with a description of your experience including some web sites you have designed or updated. Also include your fees for redesign and routine maintenance of the site. Send information to San Francisco Bay Wildlife Society, PO Box 234, Newark, CA 94560-0234.

*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.

Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Spring Activity Schedule

San Francisco Bay: From the Gold Rush to Today

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

Since the Gold Rush, human development has caused dramatic changes to the San Francisco Bay. Join docent Art Garibaldi as he shares the incredible history of the death and rebirth of the Bay. Learn how local citizens struggled to save the Bay and its wetlands. Their success has led us to promising new future. Program is outdoors. All are welcome.

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 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 ext 363. Led by Mary and Gene Bobik.

Sunday, March 20

Intro to Nature Drawing for Adults

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

Learn the basics of sketching nature. We will learn how to draw with negative shapes and shadows, and how to use color and light to add dimension. We will discuss how the changing horizon lines can offer depth. There will be opportunities to practice these techniques on the trail. Paper and pencils will be provided. Dress for the weather. Bring binoculars if you have them. Call for reservations at 510-792-0222 ext. 363. Led by Travis Turner.

*Wetlands Restoration:

The 50-year Journey

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

Follow the progress of the largest wetlands restoration project on the West Coast. Learn about the 50-year plan to restore a mix of wetlands habitats to the South Bay. Program will begin indoors but will move outside via an easy 0.25-mile trail to a view of the salt ponds. All are welcome!

Saturday, March 26

Ravenswood Hike

Bedwell Bayfront Park, Menlo Park
10:00 a.m. – 12:00 p.m.

The 2.3-mile trail at Bedwell Bayfront Park offers great opportunities to discover winter wildlife and to discuss how future wetlands restoration will shape this piece of the Bay.

Offered by the refuge and the Friends of Bedwell Bayfront Park. Meet at the main parking lot bathrooms at Bedwell Bayfront Park. Call 408-262-5513 ext. 106 for information.

*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. Call 510-792-0222 ext. 363. Led by Drew Jones.

Sunday, March 27

*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.

*Tracking Through The Slough

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

During this program we will look at the different types of movement that animals use to get around and what that tells us about their lifestyle. Afterwards we will explore the marsh and identify what we find. Discover the stories that the tracks leave behind. RESERVATIONS RECOMMENDED – All ages are welcome. Call Eric at 408-262-5513 ext. 104.

APRIL

Saturday, April 2

*Marshlands of Dreams

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

Join a 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.

*Why Tides Matter

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

Docent Laurel Stell will talk and walk you through all things tides. What are they? How do they affect wildlife? How have humans reshaped the Bay's tidal lands? Program starts indoors but will move outside for an easy 0.5-mile walk. All are welcome.

Friday, April 8

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! RESERVATIONS REQUIRED. Call Debra at 408-262-5513 ext. 102.

Saturday, April 9

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. Hear about the on-site salt production, railroads, and homes that were located on the refuge grounds until the 1950s. Using a collection of old photographs, the last vestiges of a way of life can be traced back to the 1850s that led to the construction of the town of Newark in 1876.

* Kids in the Watershed

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

Are you ready for a fun adventure? If so, come out with Watershed Watchers Intern Julie Kahrnoff to learn about environmental science as you scan stream banks for vegetation cover and other signs of a healthy habitat. Test your chemistry skills while assessing water quality for your local watershed! Find out how to protect and keep your local watersheds clean. Open to ages 11 and up. Be prepared for wet hands and feet! Space is limited to 15 people. Call Debra for reservations at 408-262-5513 ext.102.

San Francisco Bay: From the Gold Rush to Today

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

Since the Gold Rush, human development has caused dramatic changes to the San Francisco Bay. Join docent Art Garibaldi as he shares the incredible history of the death and rebirth of the Bay. Learn how local citizens struggled to save the Bay and its wetlands. Their success has led us to promising new future. Program is indoors. All are welcome.

Wildflower Photography

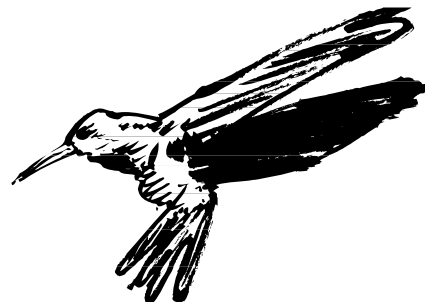
Environmental Education Center, Alviso
2:00 p.m. – 4:00 p.m.

Bring your camera and spend the afternoon enjoying spring-time in our native plant gardens. Docent Alex Baranda will lead the group as you look for wildflowers and native plants. Reservations Required. Call 408-262-5513 ext. 106.

*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. Call 510-792-0222 ext. 363. Led by Drew Jones.



*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.

Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Sunday, April 10

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 and/or beach towel. 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. Call 510-792-0222 ext. 363. Led by Carmen Minch.

Wetlands Water Cafe

Environmental Education Center, Alviso

11:00 a.m. – 12:30 p.m.

Chow down! During this program we will explore food chains and learn about the different food sources provided by our wetlands (both for humans and wildlife). We will use lab equipment to look at marsh organisms and their relationship to each other, followed by a guided walk through the wetlands. RESERVATIONS RECOMMENDED – All ages are welcome. Call Eric at 408-262-5513 ext. 104

Saturday, April 16

Earth Day Community Service

Environmental Education Center, Alviso

10:00 a.m. – 12:00 p.m.

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 various other jobs that help protect wildlife. It's a great service project for scout groups, high school community service, church groups, or home-schooled groups. 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 Debra for reservations at 408-262-5513 ext. 102.

*Rebirth of a Former Salt Pond – An Earth Day Gift

Ravenswood Unit (SF2), Menlo Park

11:00 a.m.

Docent Jane Moss will lead you on a 1-mile walk through the ever-changing panoramas surrounding a former salt pond. Learn about the exciting ways this area is being reshaped as wildlife habitat. Trail is easy and level. All ages and abilities welcome. For information, please call 408-262-5513 ext. 106.

* Living Wetlands

Environmental Education Center, Alviso

1:30 p.m. – 3:00 p.m.

Our refuge consists of salt marsh, salt ponds, and tidal sloughs. Learn about human and wildlife dependence on our wetlands. How does the marsh affect a nice seafood dinner at your favorite restaurant? The answers can be found by enjoying a slideshow depicting the life and death struggles of our marsh inhabitants. Open to all ages. Led by Ed Kantack. Call Debra at 408-262-5513 ext. 102 for reservations.

*The Salt Marshes: Then and Now

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Approximately 85% of San Francisco Bay's wetlands have disappeared over the last 200 years due to industry and development, impacting the wildlife that lived in and around them. Some of the plants and animals have made a comeback. Learn the history of the salt marshes and the plant and animal life affected by the changes. The presentation includes a slideshow followed by an optional walk (approximately 45 minutes, weather permitting) to view a salt marsh and the remains of a salt evaporation pond. Led by Gregg Aronson. Call 510-792-0222 ext. 363 for reservations.

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 ext 363. Led by Mary and Gene Bobik.

Sunday, April 17

Drawbridge Slideshow

Environmental Education Center, Alviso

10:00 a.m. – 11:30 a.m.

There's a ghost town in 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? Enjoy a slideshow program by Ceal Craig. Program is intended for adults. Note: This program is a slideshow - there will not be a driving tour. Call Debra at 408-262-5513 ext. 102 for reservations.

Spring into Drawing - for Kids

Visitor Center, Fremont

10:30 a.m. – 12:30 p.m.

Does your child have an interest in the arts? Join Travis Turner in this outdoor sketching workshop and increase their observation skills. We will focus on drawing young animals in honor of spring by incorporating common shapes, and learn about color value. We will then head out onto the trail and practice the various techniques. Paper and pencils will be provided. Rain cancels. Kids age 7-12 only! Call for reservations at 510-792-0222 ext. 363. Bring binoculars if you have them.

*Botany Bash

Environmental Education Center, Alviso

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

Can't tell a poppy from pickleweed? Then this program is for you! We will explore the fascinating world of flowering plants, pollinators, and seeds. Wildflowers and other native plants can be found all around you. The gardens at the Environmental Education Center have some great examples of native landscaping – learn how you can incorporate these ideas around your home while helping the environment. RESERVATIONS RECOMMENDED – all ages are welcome. Please call Eric at 408-262-5513 ext. 104.

In Search of: California Clapper Rail

Visitor Center, Fremont

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

Come learn about the endangered and rarely seen Califor-

Spring Activity Schedule

nia Clapper Rail. What do they look like? What do they eat? What's in our habitat that makes them unique to the Bay Area? We will share information about this rarely seen bird to optimize your chances of capturing a glimpse of them. The program includes a 1.5-mile hike. Dress warmly and bring binoculars and rain gear. Led by Roy Sasai.

Saturday, April 23

*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 408-262-5513 ext. 106. RESERVATIONS ARE REQUIRED. Please reserve your spot through www.savesfbay.org. Minors must be accompanied by an adult.

Sunday, April 24

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.

Saturday, April 30

Mallard Slough Trail

5.5 mile loop

Environmental Education Center, Alviso

9:00 a.m.

Let's Go Outside!

Meet new people while getting fit and healthy! This is the 1st walk featured in the Refuge Rambler club. This trail is compacted dirt, flat and level. The walk is self-paced and you may turn

back at any time. You do not need to be a Refuge Rambler to join this walk. To become a Refuge Rambler, see page 7. No reservations are needed. Hats, water, and sunscreen are strongly recommended. Led by Carmen Minch.

Exploring the Refuge by Bike

Alviso Marina County Park, Alviso

10:00 a.m. – 1:00 p.m.

Bring your bike and join docent Steve Dill on a 9-mile journey to learn about the history, biology and restoration of the refuge's salt pond landscape. This trail will appeal to both bicyclists and birders. Ride is moderately strenuous over unpaved but level levees. Helmets and water requested. Binoculars and camera encouraged. Reservations required at 408-262-5513 ext. 106. Rain cancels.

*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.

Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Spring Activity Schedule

Special Presentation: Wildlife Center of Silicon Valley Environmental Education Center, Alviso 1:00 p.m. – 2:00 p.m.

Join us at the EEC for a very special presentation by the Wildlife Center of Silicon Valley. Learn all about this wonderful organization and what they do for injured wildlife here in the South Bay. Learn what over-rescues are and what the rehabilitation process entails. Hear stories of amazing successes. Don't miss out – we'll meet one of their live education animals as well! RESERVATIONS REQUIRED - call Debra at 408-262-5513 ext. 102.

MAY

Sunday, May 1

Nature Drawing for Kids Visitor Center, Fremont 10:30 a.m. – 12:30 p.m.

Does your child have an interest in the arts? Join Travis Turner in this outdoor sketching workshop and increase their observation skills. We will learn how to draw what we see by incorporating common shapes, and learn about color value. We will then head out onto the trail and practice the various techniques. Paper and pencils will be provided. Rain cancels. Kids age 7-12 only! Call for reservations at 510-792-0222 ext. 363. Bring binoculars if you have them.

*Wetlands Restoration: The 50-year Journey Environmental Education Center, Alviso 11:00 a.m. – 12:00 p.m.

Follow the progress of the largest wetlands restoration project on the West Coast. Learn about the 50-year plan to restore a mix of wetlands habitats to the South Bay. Program will begin indoors but will move outside via an easy 0.25-mile trail to a view of the salt ponds. All are welcome!

Saturday, May 7

Explore the Weep! Environmental Education Center, Alviso 10:00 a.m. – 1:00 p.m.

Join microbial ecologist Dr. Wayne Lanier on a short van ride to study microbial communities. The Weep is a shallow persistent pond fed by seepage. Over the year it undergoes very wide swings in salinity, and the result is a uniquely rich microbial community of Cyanobacteria, Archeobacteria, Diatoms, Dinoflagellates, and protozoa. Boots are recommended! Ages 10 and up. RESERVATIONS REQUIRED – Call Debra at 408-262-5513 ext. 102.

*Marshlands of Dreams

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

Join a 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.

*Why Tides Matter

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

Docent Laurel Stell will talk and walk you through all things tides. What are they? How do they affect wildlife? How have humans reshaped the Bay's tidal lands? Program starts indoors but will move outside for an easy 0.5-mile walk. All are welcome.

*Family Bird Walk

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

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. Call 510-792-0222 ext. 363. Led by Drew Jones.

* Let's Celebrate Wetlands!

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

May is American Wetlands Month and in celebration of one of nature's most productive ecosystems, we will be working to protect it! This is a great opportunity to better understand what a wetland is, where wetlands can be found, and the importance of wetlands. So test your chemistry skills as we assess the water quality in our very own watershed. Be prepared for wet hands and feet! Led by Watershed Watchers Intern Julie Kahrnoff. Open to ages 11 and up. Call Debra for reservations at 408-262-5513 ext.102.

Sunday, May 8

* Mother's Day Beginning Bird Watching Environmental Education Center, Alviso 9:30 a.m. – 11:30 a.m.

Come join us for a special Mother's Day Beginning Bird Watching! This will be a great way to spend time with family and also learn about many local and migratory birds. 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 Debra at 408-262-5513 ext. 102 for reservations.

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 and/or beach towel. 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. Call 510-792-0222 ext. 363. 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 shape these vital communities. Easy short hiking level. Ages 9-90 years. Call 510-792-0222 ext. 363 for reservations.

Saturday, May 14

Exploring the Refuge by Bike Alviso Marina County Park, Alviso 10:00 a.m. – 1:00 p.m.

Bring your bike and join docent Steve Dill on a 9-mile journey to learn about the history, biology and restoration of the Refuge's salt pond landscape. This trail will appeal to both bicyclists and birders. Ride is moderately strenuous over unpaved but level levees. Helmets and water requested. Binoculars and camera encouraged. Reservations required at 408-262-5513 ext. 106. Rain cancels.

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. Hear about the on-site salt production, railroads, and homes that were located on the refuge grounds until the 1950s. Using a collection of old photographs, the last vestiges of a way of life can be traced back to the 1850s that led to the construction of the town of Newark in 1876.

* 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 real refuge 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 Debra at 408-262-5513 ext. 102 or Eric at ext. 104.

San Francisco Bay: From the Gold Rush to Today

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

Since the Gold Rush, human development has caused dramatic changes to the San Francisco Bay. Join docent Art Garibaldi as he shares the incredible history of the death and rebirth of the Bay. Learn how local citizens struggled to save the Bay and its wetlands. Their success has led us to promising new future. Program is outdoors. All are welcome.

*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.

Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

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 ext. 363. Led by Mary and Gene Bobik.

Saturday, May 21

Bird Photography Safari

Ravenswood Trail, Menlo Park

8:30 a.m. – 11:30 a.m.

Photograph shorebirds during their nesting season along the Ravenswood Trail with docent Alex Baranda. Program will require travel both by van and by foot. Please be prepared to hike up to 3.5 miles. Reservations Required. Rain cancels. Call 408-262-5513 ext. 106.

National River Cleanup Day

Environmental Education Center, Alviso

9:00 a.m. – 12:00 p.m.

Help with urban runoff pollution as we join others around the world in an effort to keep our rivers clean! Together, with the City of San Jose, we'll pick up trash and tidy up a local body of water. Come with a hat, sunscreen, and a great attitude, and we'll provide the rest! Space is limited. Call Debra at 408-262-5513 ext. 102 for reservations.

Bike the Levees

Environmental Education Center, Alviso

10:00 a.m. – 12:00 p.m.

Join Ed Kantack for an easy 5.5-mile bike ride along the levees. Get a glimpse of Drawbridge and see a variety of our spring and summer birds. Helmets are required and knobby tires are recommended. Open to all ages. Parental discretion is advised. Space is limited. Call Debra at 408-262-5513 ext. 102 for reservations.

*We Built it For the Birds

Ravenswood Unit (SF2), Menlo Park

11:00 a.m.

Docent Jane Moss will lead you on a 1-mile walk through the ever-changing panoramas surrounding a former salt pond. Learn about the exciting ways this area is being reshaped as newly created wildlife habitat. Trail is easy and level. All ages and abilities welcome. For information, call 408-262-5513 ext. 106.

Endangered Species Day

Art Reception & Endangered

Species Walk

Refuge HQ Auditorium, Fremont

1:00 p.m. – 3:00 p.m.

Celebrate Endangered Species and attend an artists' reception at the Refuge Complex HQ auditorium. View artwork submitted by K-6 students, learn about two local endangered species while making a craft to take home, and go on a walk at 2 p.m. with June Smith to see endangered species habitat first-hand. Refreshments will be served at the reception. All are welcome.

*The Salt Marshes: Then and Now

Visitor Center, Fremont

2:00 p.m. – 3:30 p.m.

Approximately 85% of San Francisco Bay's wetlands have disappeared over the last 200 years due to industry and development, impacting the wildlife that lived in and around them. Some of the plants and animals have made a comeback. Learn the history of the salt marshes and the plant and animal life affected by the changes. The presentation includes a slideshow followed by an optional walk (approximately 45 minutes, weather permitting) to view a salt marsh and the remains of a salt evaporation pond. Led by Gregg Aronson. Call 510-792-0222 ext. 363 for reservations.

Drawbridge Van Excursion

Environmental Education Center, Alviso

2:30 p.m. – 5:00 p.m.

There's a ghost 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 is intended for adults and space is very limited. RESERVATIONS ARE ESSENTIAL. Call Debra at 408-262-5513 ext. 102. (Note: we do not visit the town itself – we go to the closest spot that one can legally view Drawbridge.)

Sunday, May 22

*A Taste of the Refuge

Visitor Center, Fremont

11:00 a.m. - 12:30 p.m.

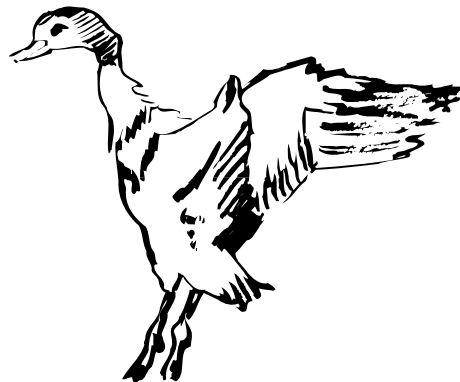
Take a guided walk on Tidelands Trail and discover which plants are edible or have medicinal uses. We'll taste some of these plants on the refuge, or in commercially made products. Led by Carmen Minch.

Mysteries of Wastewater Treatment

Environmental Education Center, Alviso

1:00 p.m. – 2:30 p.m.

The San Jose-Santa Clara Water Pollution Control Plant treats hundreds of millions of gallons of wastewater from millions of people every day using some of the most advanced treatment technologies available. Come and learn about what it takes to make this interesting process happen through a slideshow and hands-on activities at the refuge. RESERVATIONS RECOMMENDED – All ages are welcome. Call Eric at 408-262-5513 ext. 104. A tour of the Plant is **not** included in this program.



Spring Activity Schedule

Saturday, May 28

Ravenswood Trail – 4 mile loop

Meet at the Trailhead in Menlo Park.

Directions Below

9:00 a.m.

Let's Go
Outside!

Meet new people while getting fit and healthy! This is the second walk featured in the Refuge Rambler club. This trail in Menlo Park is four miles, flat, and level. The walk is self-paced

and you may turn back at any time. You do not need to be a Refuge Rambler to join this walk. To become a Refuge Rambler, see page 7. No reservations are needed. Hats, water, and sunscreen are strongly recommended. Refuge staff will be there to greet you at 9 a.m. Directions: Ravenswood Trail is on the west side of the Dumbarton Bridge. From the East Bay, cross over the Dumbarton Bridge and exit at the Ravenswood Unit sign. Drive east 0.3 miles on the frontage road until you see a brown metal gate and the Ravenswood Trail Sign. From Menlo Park, drive Hwy 84 toward the Dumbarton Bridge. Exit at the Ravenswood Unit sign and drive east on the frontage road. Cross under the bridge and back west 0.6 miles until you see the brown metal gate and refuge sign.

Exploring the Refuge by Bike

Alviso Marina County Park, Alviso

10:00 a.m. – 1:00 p.m.

Bring your bike and join docent Steve Dill on a 9-mile journey to learn about the history, biology and restoration of the Refuge's salt pond landscape. This trail will appeal to both bicyclists and birders. Ride is moderately strenuous over unpaved but level levees. Helmets and water requested. Binoculars and camera encouraged. Reservations required at 408-262-5513 ext 106. Rain cancels.

Sunday, May 29

Intro to Nature Drawing for Adults

Visitor Center, Fremont

10:30 a.m. – 12:30 p.m.

Learn the basics of sketching nature. We will learn how to draw with negative shapes and shadows, and how to use color and light to add dimension. We will discuss how the changing horizon lines can offer depth. There will be opportunities to practice these techniques on the trail. Paper and pencils will be provided. Program begins in the pavilion. Bring binoculars if you have them. Call for reservations at 510-792-0222 ext. 363. Led by Travis Turner.

*Trails are generally level. Surface and trail conditions vary. Please call for accessibility information.

Visitor Center, 2 Marshlands Road, Fremont – (510) 792-0222 ext. 363 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Field Trips to the Refuge

General Field Trip 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 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.

Educators and adult leaders conduct their own field trips after attending a Field Trip Orientation Workshop. The Orientation Workshop allows 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 Orientation Workshop. It is our policy that lead educators must attend training every two years. Location of activities and trail conditions may vary. Please call for accessibility information.

Field Trips at the Learning Center in Fremont

Wetland Round-Up

Explore the habitats of the refuge! Investigate creatures of the mud flats, collect plankton from the slough, and taste pickleweed from the salt marsh. This field trip is designed for grades K-6, for up to 65 students. Wetland Round-Up will be offered Tuesday – Friday from March to mid-June, 2011. **There are a few Spring 2011 field trip dates remaining. Call Jennifer Nielson, Environmental Education Intern, at 510-792-0222 ext. 475 or on her cell phone at 510-377-7269. Mail-in registration for Fall 2011 will begin on August 31, 2011.**

NEW MAIL-IN RESERVATION PROCEDURES can be found on our web site at http://www.fws.gov/desfbay/EE_Registration.htm.

Field Trip Orientation Dates at the Learning Center in Fremont

Wednesday, February 23	4:00 p.m. - 7:30 p.m.
Tuesday, March 8	4:00 p.m. - 7:30 p.m.
Saturday, March 19	9:30 a.m. - 1:00 p.m.
Thursday, April 7	4:00 p.m. - 7:30 p.m.

Call the Environmental Education Intern at 510-792-0222 ext. 475 for further information.

Field Trips at the Environmental Education Center in Alviso

Wetland Round-Up

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. Wetland Round-Up is offered Monday – Thursday from March to May, 2011.

We are fully booked for Spring 2011. If you would like to put your name on the wait list or find out how to schedule a field trip for the 2011-2012 school year, please call Mary Williams, the Environmental Education Intern, at 408-262-5513 ext. 103.

Field Trip Orientation Workshop Dates at the Environmental Education Center in Alviso

All orientations are from 4:00 p.m. - 7:30 p.m.

Thursday, February 17
Thursday, March 24
Thursday, April 21
Thursday, May 5

Call Mary Williams at 408-262-5513 ext. 103 to attend an orientation. ** Please note: The cut off date to make a reservation is the Friday before each orientation date.

The 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. 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.

Programs are offered to 5th – 12th grade students. A modified field trip is available for college groups. Educators are encouraged to contact us to discuss options for customizing field trips and classroom presentation activities and schedules.

Reservations for the Slow the Flow program are on a first-come basis. For more information or to make a reservation for Spring/Summer 2011, call Eric McKee, the Slow the Flow Program Coordinator at 408-262-5513 ext. 104 or email at sfbay.slowtheflow@gmail.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. *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. Call Debra at 408-262-5513 ext. 102.

Saturday, March 12

*** Webelos Naturalist Badge**
Environmental Education Center, Alviso
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.

Saturday, April 23

*** Brownie Eco-Explorer Patch**
Environmental Education Center, Alviso
2:00 p.m. – 4:00 p.m.

Come and learn about habitats, food chains, and how you can help wildlife. Then take a walk to explore the habitats at the south end of the bay. Space is limited to 20 people and program fills quickly.

Saturday, April 30

*** Junior Girl Scout Wildlife Badge**
Environmental Education Center, Alviso
9:30 a.m. – 11:30 a.m.

Calling all Junior Girl Scouts of Santa Clara County! Anyone out there need to earn a Wildlife badge? We've got the program just for you! Come to the Wildlife Refuge and learn about features of different creatures, observe animal behavior, see how you can help wildlife, and so much more. Take a walk to explore the habitats at the south end of the bay.

Youth Group Programs at the Refuge Headquarters in Fremont

The Refuge Headquarters offer Webelos programs for up to 15 Webelos. Call 792-0222 ext. 363 for reservations. All programs are led by June Smith.

Saturday, March 12 Sunday, April 10 and Saturday, May 28

Webelos Naturalist Program
10:00 a.m. – 12:00 p.m.

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

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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:Mendel Stewart

Deputy Project Leader:.....John Bradley

Wildlife Refuge Specialist:.....Val Urban

Don Edwards Refuge Manager:Eric Mruz

Don Edwards Wildlife Specialist:Melisa Helton

Don Edwards Warm Springs Unit Manager: Ivette Loreda

Farallon Refuge Manager:Gerry McChesney

Farallon Refuge Wildlife Specialist:Zach Coffman

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

Outdoor Recreation Planners:Jennifer Heroux
and Carmen Minch

Environmental Education Specialists:Tia Glagolev,
Genie Moore, and Kimby Wells

Volunteer Coordinator:Paul Mueller

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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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Tideline, at <http://www.fws.gov/desfbay>

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San Francisco Bay NWR Complex



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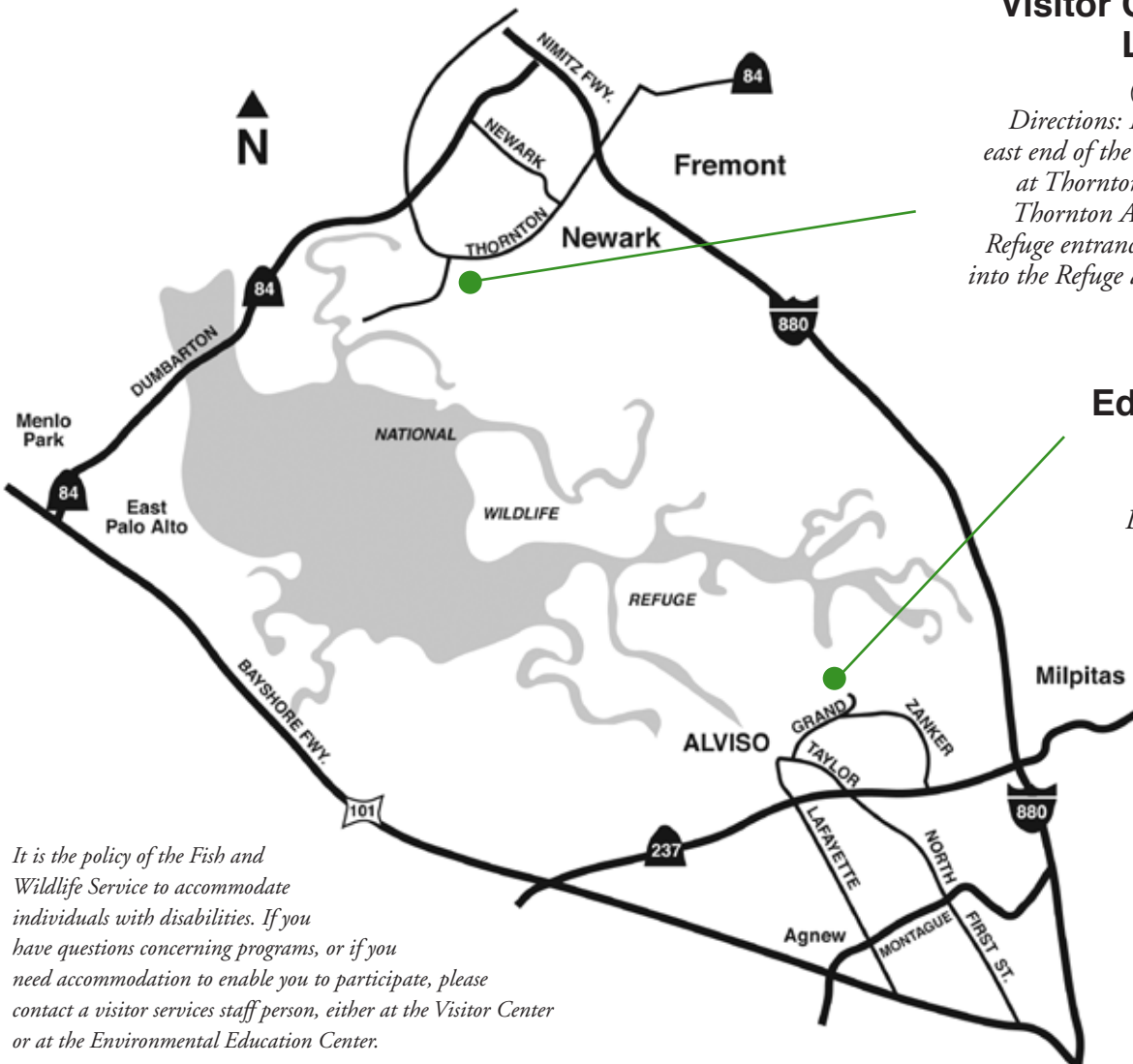
Tideline



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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 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 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.