



Volume 23, No. 4

Volunteers and National Wildlife Refuges: Partners for the Future

By Bryan W. Lapine and Marguerite Hills

For the last issue of our Centennial Year series of *Tideline*, it is fitting that we recognize the people who have been valued partners of the National Wildlife Refuge System over the past one hundred years. They contribute to almost every aspect of conservation work. They greet visitors, maintain roads and trails, construct and maintain facilities, conduct inventories, plant trees, and pull weeds. They work at national wildlife refuges and fish hatcheries, in environmental education centers, and in local schools. Some serve for a short while and others have been with us for years. Without their work, we would be unable to provide the level of public service that we do. They are our volunteers.

The U.S. Fish and Wildlife Service's volunteer program is robust and continues to grow. Last year alone, more than 37,000 volunteers contributed in excess of 1.3 million hours (or 650 human years) of their time, skills, and talents. With shared interests and common goals, volunteers have been behind past conservation successes and will only be more essential in meeting the challenges of the future.

The National Wildlife Refuge System itself was born because Paul Kroegel, a dedicated volunteer, cared deeply about the birds on a small island off the coast of Florida. He witnessed the slaughter of these birds for their feathers to adorn elaborate hats (at that time the plumes were worth more than gold). He worked tirelessly to spread the word that these birds needed protection.

Eventually, President Theodore Roosevelt heard about this special place and on March 14,

1903, signed an executive order establishing Pelican Island as the first federal bird sanctuary. This was the first time that the federal government set aside land for the sake of wildlife, which later became the National Wildlife Refuge System.

The early partnerships between government and communities forged by conscientious citizens like Paul Kroegel were built upon by successive generations of volunteers. In 1978, the partnership between volunteers and national wildlife refuges was further expanded by the *Fish and Wildlife Improvement Act*. This legislation opened refuges to greater public involvement and authorized the Secretary of the Interior to recruit and train volunteers.

Today, over twenty percent of all work performed throughout the Refuge System is done by volunteers. Volunteers have become valued members of the refuge team and enthusiastic spokespeople for refuges in their communities. The service of volunteers has become an indispensable part of everyday refuge operations.

This certainly holds true throughout the seven refuges which comprise the San Francisco



Refuge volunteer Allen Sprague leads Child Bird Walk at Don Edwards San Francisco Bay National Wildlife Refuge (Photo courtesy: Alvin Dockter).

Continued on page 2

Volunteers and National Wildlife Refuges:

Bay National Wildlife Refuge Complex. Last year alone, volunteers contributed a total of 22,205 hours throughout the Refuge Complex. If paid the California minimum wage of \$6.75 an hour, volunteers would have contributed \$149,884 worth of time.

Each refuge has been fortunate to draw upon the diverse talents of volunteers to accomplish everything from surveys of endangered salt



Above: Volunteers planting native plants at Antioch Dunes National Wildlife Refuge (USFWS).

marsh harvest mice to providing logistical support for high profile events like the *Drawbridge and Tramp and the Roughrider* centennial events of this past year. “If you think of every aspect of the refuge, there is a volunteer opportunity for that aspect,” says Deputy Project Leader Mike Parker. “The volunteer experience at our refuges has been mutually rewarding because whatever a volunteer’s skill or interest

might be, there is an opportunity to match it”.

One example of volunteer contributions to our refuges has been the Native Plant Nursery at the Don Edwards Visitor Center in Fremont. From its humble beginnings in the yard of the old Dumbarton Bridge toll plaza building over a decade ago, the Native Plant Nursery was a project initiated and operated by volunteers. Today, the Nursery has grown and expanded into a full greenhouse, providing ready stocks of California native plants for restoration projects on refuges throughout the Complex.

In July of 2002, Nursery volunteers were called to action when wildfires at Antioch Dunes National Wildlife Refuge destroyed twenty acres of critical habitat for endangered species, namely the Lange’s metalmark butterfly. Found nowhere else in the world, the Lange’s metalmark relies on its host plant, the native naked stemmed buckwheat, for food and shelter. The fires which engulfed this critical habitat resulted in a marked decrease in the butterfly population.

Biologists quickly assessed the situation and coordinated with Nursery volunteers to grow native Antioch Dunes species, including naked stemmed buckwheat, to re-vegetate the burned areas. After the young plants were large enough, vanloads of refuge volunteers made their way out to Antioch Dunes and participated in the hands-on planting.

Today, the Nursery-grown plants are thriving

and the Lange’s metalmark has moved back into the disturbed area. “The speed and efforts of the Native Plant Nursery allowed native plants to be planted before invasive weeds could move into the area and overtake the habitat,” notes Refuge Biologist Rachel Hurt. From sowing seeds and daily watering to planting in the field, volunteers played a crucial role in protecting an endangered species by restoring the unique habitat on which it depends.

In addition to the plants used at Antioch Dunes, the Nursery is also growing native plant species for restoration projects at Ellicott Slough and Marin Islands National Wildlife Refuges. At Ellicott Slough, Nursery-grown native plants such as coast live oak, California blackberry, coffeeberry, and sticky monkeyflower are being planted in areas where non-native eucalyptus trees have been removed. The native plants work to prevent invasive species from moving into the cleared areas.

Volunteers have also been actively contributing to many infrastructural improvements throughout the Refuge Complex, including benches, carpentry work, a mulch container built by Boy Scouts, a display case for the Visitor Center in Fremont, roofing at Marin Islands, an Education Pavilion and amphitheater used for field trip programs, and countless other projects.

Even in the least accessible refuge, volunteers have left their mark. In September of 2000, a series of boardwalks was constructed over a stretch of Farallon National Wildlife Refuge. The original boardwalks were deteriorating and threatening the sensitive wildlife habitat on the island. In a week’s time, a group of four volunteers assembled 1,476 two-by-six foot boards of recycled plastic lumber into eighteen boardwalks stretching over 800 feet in length.

The boardwalks confine the foot traffic of biologists studying and protecting the wildlife to specific areas, thereby limiting areas of human disturbance. Many seabirds, such as rhinoceros and Cassin’s auklets, burrow and nest under rocks or boards for protection. Because the burrows are shallow and excavated in loose soil, they are especially prone to collapsing from human disturbance.

The volunteer-constructed boardwalks also created wildlife habitat because auklets have begun nesting under them. In the summer of 2003, over one hundred burrows were counted under or near the boardwalks.

Partners for the Future continued from page 1

Volunteers also continue to be at the forefront of visitor services and outreach efforts. They design, prepare, and lead environmental education programs, slide shows, guided walks, and interpretive programs. In this year alone, volunteers will have led nearly seventy independent educational and interpretive programs including bird walks for children, a tour of the Refuge by canoe in the tidal sloughs of the marsh, and viewing the wonders of the night sky by telescope. From meeting and greeting the public to staffing information booths at outreach events, volunteers actively work to increase the refuge presence in their communities.

While volunteers are contributing to our refuges more today than ever before, the needs and opportunities continue to become greater with each passing year. The conservation challenges which face refuge staff continue to grow and volunteer opportunities only increase.

At Salinas River National Wildlife Refuge, docents are needed to monitor and ensure the protection of the threatened western snowy plover. A Native Plant Garden is getting underway at San Pablo Bay National Wildlife Refuge to increase restoration efforts in the North Bay. And the Native Plant Nursery in Fremont is

looking for volunteers to help construct a new greenhouse this winter. Volunteers are wanted for any contribution they would like to make. There are as many work projects as there are talents that volunteers bring.

National Wildlife Refuges need all the support that they can get. The future depends on volunteers who will continue to play critical roles

in building community support, encouraging public involvement in activities, and helping achieve the Fish and Wildlife Service mission of working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.

Paul Kroegel's legacy has continued. For the last century, countless volunteers have helped

build and protect America's network of wild places. Volunteers serve because they care. They care about fish, wildlife, plants, and the places they call home. They care about the future of life on earth.

On the cusp of the next Century of Conservation, we salute the accomplishments of our volunteers and deeply appreciate their efforts.

For information about the volunteer program at the San Francisco Bay National Wildlife Refuge Complex or to become a volunteer, please contact the Volunteer Coordinator at (510) 792-0222.



Volunteers construct boardwalks at Farallon National Wildlife Refuge (USFWS).

Bryan Lapine is the interim Volunteer Coordinator at the San Francisco Bay National Wildlife Refuge Complex and editor of Tideline. He was formerly the Visitor Services Intern for the Complex through the Student Conservation Association Internship Program and a recent graduate of John Carroll University in Cleveland, Ohio.

Marguerite Hills is the Visitor Services Program Specialist for the U.S. Fish and Wildlife Service Pacific Region. She was formerly Refuge Manager of Cypress Creek National Wildlife Refuge in southern Illinois and has served at eight National Wildlife Refuges including Sacramento, Salton Sea, and Hopper Mountain in California. She serves as regional coordinator for Refuge Support Groups and Volunteers and assist refuges with wildlife-oriented recreation programs and other visitor services.

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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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THE EIGHTH ANNUAL

SAN FRANCISCO BAY
Flyway Festival

January 23 - 25, 2004 — Mare Island, California

Friday, January 23 3 pm - 9 pm

Saturday, January 24 9 am - 4 pm

Sunday, January 25 9 am - 3 pm

Join us at Building 505, Mare Island at San Pablo Bay National Wildlife Refuge!

Explore Refuge trails on a self-guided walk to the edge of San Pablo Bay with spotting scope walks along the way, or sign up for guided tours to SPBNWR at Tolay Creek.

Meet the National Wildlife Refuge's famous Blue Goose! on Saturday and Sunday from 12:00 p.m. - 1:00 p.m. at Buildings 505 and 897.

Visit Festival Headquarters at Building 897 for even more activities:

- More than 50 exhibits including live animal visitors!
- Slide and video presentations about migratory birds, wetland restoration and habitat conservation.
- Book Signing: *America's Wildlife Refuges* by Jeanne Clark, hosted by Wildlife Stewards.
- Games and activities for children!
- And much, much more!



Birding and wetland walks all weekend at San Pablo Bay National Wildlife Refuge and throughout the San Francisco Bay Area.

For a detailed Flyway Festival brochure or for more information, call (707) 649-WING (9464) or visit www.SFBayFlywayFestival.com.

Find out more about Refuge events and activities at the San Francisco Bay National Wildlife Refuge Complex at <http://desfbay.fws.gov>.

Sponsored by: US Fish & Wildlife Service Coastal Program, San Pablo Bay National Wildlife Refuge, other Bay Area environmental organizations, natural resources agencies and businesses.

NATIONAL WILDLIFE REFUGE SYSTEM 1903 - 2003



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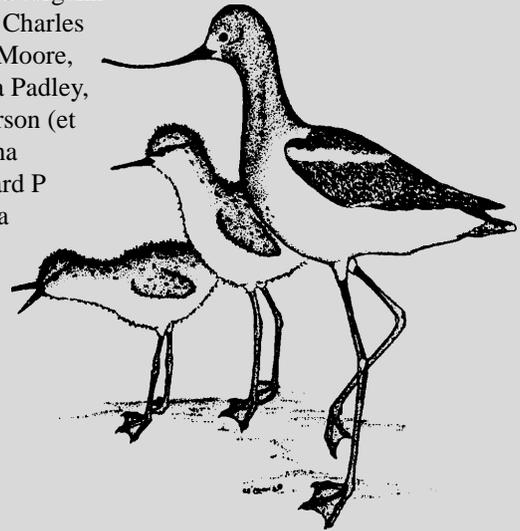
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Thank you for your support!

Clean-Up at Farallon NWR

By Jesse Irwin

Many have heard of Farallon National Wildlife Refuge's diverse seabird and marine mammal life. However, few are aware of its storied history of human occupation by the Lighthouse Service, U.S. Navy, and U.S. Coast Guard over the past 150 years. Due to numerous shipwrecks, the Lighthouse Service found it necessary to erect a lighthouse to guide ships in the 1850s. The U.S. Navy had erected a manned radio station in 1905, and the U.S. Coast Guard took over the lightkeeping duties in 1939. In order to carry out their operations, the various agencies erected radio towers, conduits, pipelines, and diesel tanks. As these systems corroded, the old materials were simply left in place as new infrastructure was installed. As a result, valuable wildlife habitat on the island had been diminished.

However, wildlife habitat on Farallon NWR is improving thanks to the U. S. Coast Guard. In an effort spearheaded by Roy Clark of the Coast Guard's Civil Engineering Unit and Farallon Refuge Manager Joelle Buffa, considerable debris that remains from historical human occupation of the island is currently being removed.

Clean-up projects on the Farallons have continued to be an essential habitat management tool since 1968. The dramatic reduction in the amount of human debris on the island will directly benefit its wild inhabitants. For example, Cassin's and rhinoceros auklets, seabirds that nest by burrowing into the soil, now have more areas that were once covered by cement available for nesting. Hazardous structures, such as a 650 square-foot diesel containment structure that has been known to occasionally trap and drown birds, were also removed this fall.

In early September, many of the old infrastructure components were removed through the hard work of Roy Clark, myself, and five volunteers. One of the main projects undertaken was removing the expansive web of grounding wire from an old toppled radio tower. Pieces of wire that were above ground were cut into sections and rolled up, while underground pieces were left in place to minimize disturbance of Cassin's and rhinoceros auklet burrows.

While part of the group worked on removing this grounding array, others labored with power tools removing over 1,000 feet of abandoned pipeline. Using sawz-alls, mini-grinders, and a portable generator, the volunteers cut and moved the various sizes of pipe in preparation for removal by helicopter.

Although the work was demanding, the volunteers were rewarded by experiences unique to the Farallons. Following the fresh lingcod dinner that I cooked for them, the Coast Guard volunteers helped biologists release some hoary bats that had

been captured for data collection. Shortly before their departure, I led them into Rabbit Cave, one of the few places on the Farallons where there is no wind and no kelp flies. While none of the endemic camel crickets were spotted, numerous burrow entrances of rhinoceros and Cassin's auklets were observed. There are even artificial nest boxes placed far back in the cave. Shortly after emerging from the cave it was time to journey home.

This work party was a prelude to the Coast Guard-contracted clean-up which began on October 1, 2003. Brittan Construction of Bakersfield was contracted to remove two 5,000 gallon diesel tanks, the toppled radio tower and associated conduit, an old water line dangerously close to falling into a gulch, and the huge timbers that formerly made up the North Landing derrick. All of the pipes to and from the diesel tanks, including the stainless pipe leading to the East Landing was also removed.

What could be reused will remain on the island for other purposes. For example, straight sections of the stainless pipe will be kept for future repairs of Farallon Railways - a rail line used by biologists to transport materials without damaging sensitive habitat. The cement cradle that supported the diesel tanks will also be re-used. The smashed pieces of cement from it will be recycled and used to expand habitat for a small, but growing new colony of common murrets.

These are some of the many steps being taken to dramatically reduce the amount of human debris on the island for the benefit of wildlife. Refuge staff, Point Reyes Bird Observatory personnel, and volunteers will continue to improve wildlife habitat through these clean-up projects in the many months to come. Thanks in large part to Joelle for pushing projects ahead and Roy for wading through the Coast Guard system, the Refuge is looking less like a military facility and more like wildlife habitat.

Jesse Irwin is the Refuge Operations Specialist for Farallon National Wildlife Refuge.



Volunteers Jeb Boba (left) and Dave Stalthers used Farallon Railways to move the pipe in preparation for removal.



Cassin's Auklet found on Farallon NWR (Mike Parker, USFWS).



SAN FRANCISCO BAY NATIONAL

Refuge Dispatches



Refuge Intern Michelle Giolli taking vegetation measurements in the marshes of Don Edwards San Francisco Bay NWR (Photo: Joy Albertson, USFWS).



"Before" and "During" pictures of the Eucalyptus removal project at Ellicott Slough NWR (Ivette Loreda, USFWS).

Antioch Dunes National Wildlife Refuge

Antioch Dunes NWR has had a great year. The three endangered species found at Antioch, Lange's metalmark butterfly, Antioch Dunes evening primrose, and Contra Costa wallflower, have all increased in population size. We attribute the success to the immense amount of weeding done by staff, interns, and volunteers (Thank you all!!!), as well as the lack of wildfires in 2003 (which in the near past have destroyed some prime butterfly habitat).

We also celebrated the Centennial of the National Wildlife Refuge System by leading weekend tours for 353 people of all ages and backgrounds. Each tour was coordinated with the peak count of each of the three endangered species: April to see blooming wallflower, May to see blooming primrose, and August to see the Lange's in flight. The turnout was well above our expectations, with visitors from as far away as Reno and Arcata!

Don Edwards San Francisco Bay National Wildlife Refuge

California clapper rail airboat surveys began the last week of November and another round is scheduled for the end of December. Refuge biologists and interns are also busy setting up vegetation transects throughout LaRiviere marsh to observe how the marsh develops over time. In the future, samples will be taken at intervals to record vegetation coverage and types of species. Refuge staff is continuing efforts to eradicate exotic cordgrass which overtakes native species and alters the habitat. In the long-term, Refuge biologists are working closely with the California State Coastal Conservancy and its partners to finalize a Bay-wide plan to manage invasive cordgrass.

Several construction and renovation are also underway and should be completed by the end of the year.

Ellicott Slough National Wildlife Refuge

Work crews are finishing clearing a one acre site where non-native eucalyptus trees were fallen earlier this year.

Eucalyptus trees are invasive, often forming dense stands such as at this project site. The endangered Santa Cruz long-toed salamander does not use eucalyptus groves as habitat, and in general eucalyptus provide poor quality habitat for native wildlife. The project area will

eventually be planted with native vegetation such as coast live oak, coffeeberry, California blackberry, and sticky monkeyflower.

Farallon National Wildlife Refuge

The Refuge System turned one hundred years old this year, but that's barely a teenager compared to a birthday recently celebrated at the Farallon National Wildlife Refuge. 2003 marked the 400th anniversary of the naming of these islands by Spanish explorer Sebastian Vizcaino, who named them, "Los Farallones de Los Frayles," - the Promontories of the Friars. A proclamation, signed by Mayor Willie Brown of San Francisco, proclaimed August 15th as "Farallon Island Day".



Presentation of "Farallon Island Day" proclamation to Refuge Manager Joelle Buffa (Courtesy: Bob Wilson).

Dignitaries from the California State Legislature, the media, and government agencies including the Environmental Protection Agency and California Coastal Commission recreated a portion of the explorer's trip on August 15 in a boat that left San Francisco and circumnavigated the South Farallon Islands, 28 miles west of the west of the Golden Gate Bridge. The event was organized by the Gulf of the Farallones National Marine Sanctuary and the California Heritage Council. Since the Refuge has no docking facilities, and is closed to public visitation to protect sensitive wildlife habitat, the group could not tour the island. Instead, Refuge Manager Joelle Buffa boarded the boat and regaled the seafarers with tales of island wildlife and daily life on the island.

Marin Islands National Wildlife Refuge

The U.S. Fish and Wildlife Service has teamed up with Save the Bay and the California Department of Fish and Game to develop and implement a plan to enhance and restore native plants on the islands. Planning is currently underway. Also this winter, the Refuge will be continuing its partnership with Save the Bay's Discover the Bay program. Save the Bay volunteers kayak to the islands and help in restoration efforts such as weeding, collecting seeds, planting native plants,

WILDLIFE REFUGE COMPLEX



and cleanup efforts on the islands. For more information, visit www.savesfbay.org/discover.html.

In other news, Connie Peabody, a member of the Crowley family who once owned the Marin Islands, will be meeting with Refuge staff to help document the human history of the island. One interesting tidbit: stone from a quarry on the east side of the island was used in the original construction of San Quentin prison.

Salinas River National Wildlife Refuge

The snowy plover breeding season is now over and the refuge had a record year! There were forty-eight nests total on the refuge with at least thirty-five chicks fledged. This beats last year's totals of thirty-six nests and sixteen chicks fledged and 2001's totals of twenty-six nests and thirty-two chicks.

San Pablo Bay National Wildlife Refuge

There are two ongoing restoration projects underway at the San Pablo Refuge. In the last several years, levees were breached in the Tolay Creek and Tubbs Setback units of the Refuge, returning these areas to tidal action. Both sites are developing well. Native plants are colonizing the areas and great numbers of waterfowl and shorebirds have been observed. Restoration planning is also taking place for 1,500 acres of Cullinan Ranch. U.S. Fish and Wildlife and U.S. Geological Survey staff are currently monitoring birds, mammals, fish, plants, sediments, and elevations. Other biological surveys scheduled to take place include Estuary-wide waterfowl surveys this January and California clapper rail

surveys in the spring.

In Environmental Education news, the San Pablo Bay Refuge field trip program has wrapped up for the fall season. This year's field trips have nearly doubled the number of school groups coming out to the Refuge from the previous year. Finally, the Eighth Annual Flyway Festival will take place January 23rd - 25th (see page 4 for details).

Proposed Alameda National Wildlife Refuge

California least terns and California brown pelicans have remained at Alameda to breed and roost, respectively, for another year. In 2003, the Alameda colony of California least terns experienced an increase in breeding pairs and had a high chick hatching rate, however only an estimated 178 fledglings were produced. This winter we will be expanding the colony fence to accommodate the increasing colony size. The brown pelicans and harbor seals will have extra protection from now on thanks to the Friends of Alameda Wildlife Refuge (FAWR), who graciously donated three signs to be posted on Breakwater Island.



Refuge Dispatches

Save the Bay volunteers kayaking to Marin Islands NWR to help with restoration efforts (Courtesy: Save the Bay).

Refuge Dispatches contributors: Rachel Hurt, Joy Albertson, Michelle Giolli, Bryan Lapine, Jen Collier, Ivette Loreda, Joelle Buffa, Giselle Downard, and Taryn West.

CELEBRATING A CENTURY OF CONSERVATION

Thank you to all who helped make the National Wildlife Refuge System Centennial year a spectacular success! From the Time Capsule Ceremony to the *Tramp and the Roughrider*, to the *Drawbridge Revisited – A Salt Marsh to be Restored* events, the San Francisco Bay National Wildlife Refuge would like to thank all our hard-working volunteers and the following:



San Francisco Bay Wildlife Society

NATIONAL WILDLIFE REFUGE SYSTEM 1903 - 2003



Winter Activities Schedule

at Don Edwards San Francisco Bay National Wildlife Refuge

NOTICE: The Environmental Education Center will be closed the following days this winter: December 26, December 27 and January 2.

December

Watershed Diorama Demonstrations

Environmental Education Center, Alviso
Every Sunday in December

1:00 p.m. - 4:00 p.m.

Have you been thinking about stopping by the Education Center for an activity, but the scheduling never seems to work out? Well, drop in any Sunday afternoon this winter for a hands-on demonstration of our amazingly detailed and functioning South Bay watershed diorama. It is sure to dazzle and educate visitors of all ages. Learn what a watershed is and see how important our actions are towards maintaining healthy South Bay habitats! All ages welcome.

Saturday, December 6

Tiny Tracks

Visitor Center, Fremont

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

Calling all trackers! Who left that footprint? Where did the fox go? What did the owl eat for dinner? Why is that scat there? Come make a field guide to take home and go take a hike at the Refuge to find answers to these mysteries. See the Refuge through new eyes as we explore tracks, trails, pellets, and poop. Geared toward ages 5-12. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Ken Clarkson.

Sunday, December 7

Marsh Mud Mania

Environmental Education Center, Alviso

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

What's that wiggling and squiggling? Think that brown stuff is just mud? Think again!!! Come take a slough hike, collect some ooey-goey mud, and discover which critters the birds find during a low-tide feast. We'll also compare mud creatures from two different habitats to see what they can tell us about the health of these muddy homes. Reservations required, call 408-262-5513 x104.

Saturday, December 13

Community Service Day

Environmental Education Center, Alviso

10:00 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. Come out to fight non-native plants in the EEC's habitats. Bring gardening gloves if possible. A few pairs are available for loan. 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.

Holiday Scavenger Hunt

Environmental Education Center, Alviso

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

Where are those gifts? Come search out the hidden gifts all around the Refuge and find out about the habitats, all at the same time! You might even get to take your own gift home to remember the Refuge. Please let us know if you're coming, call 408-262-5513 x 102. Great for all ages. Led by Laurie McEwen.

Twilight Marsh Walk

Visitor Center, Fremont

4:00 p.m. - 5:30 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands Trail (1 1/3 miles). 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. 43. Led by Mary and Gene Bobik.

Night Skies

Visitor Center Parking Lot, Fremont

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

Observe the stars from the San Francisco Bay Refuge. Learn a couple of constellations and star names and view a star cluster through a telescope. Great fun for the whole family. RESERVATIONS REQUIRED! Call (510) 792-0222 ext. 43. Led by Ralph Libby.

Sunday, December 14

Holiday Water Art

Environmental Education Center, Alviso

12:30 p.m. - 2:00 p.m.

Take an artistic break from holiday errands. Create different crafts related to water to take home for your own, or give to a friend for a holiday gift. Make a shark print, or a crayon resist underwater scene. Optional half-hour trail exploration at 1:30 p.m. Call Laurie McEwen at 408-262-5513 x 102 to join the fun.

Botanical Wanderings

Visitor Center, Fremont

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

Discover the diverse winter habitats from the hilltops to the marsh. Use our free plant list to help identify the great variety of plants that thrive in this unique urban refuge. Bring binoculars to get a better look at birds and animals we may encounter on the trail, or borrow a pair of ours. Led by Alvin Dockter.

Saturday, December 20

Decorating for the Birds!

Environmental Education Center, Alviso

12:00 p.m. - 1:30 p.m.

Holidays are approaching! Come explore some ideas for making this a happy holiday season for your neighborhood birds while decorating your house for the season. All materials provided. Reservations recommended, call 408-262-5513 x 102. Led by Laurie McEwen.

Sunday, December 21

Slough Whoo?

Environmental Education Center, Alviso

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

Whoo...whoo...whoo did that owl eat? Bet you can find out! Come solve the mystery of who ate whom and learn a bit about these nocturnal predators. We will hike the habitats, search for owl clues, and get a chance to dissect owl pellets, discovering exactly who that owl ate! Reservations required, call 408-262-5513 x104.

ATTENTION! The Visitor Center in Fremont may be under construction this winter. Some programs are subject to cancellation. Please call (510) 792-0222 for program information.

<http://desfbay.fws.gov>

For information and reservations, phone between 10:00 am and 5:00 pm. For directions, see page 16

Visitor Center, 1 Marshlands Road, Fremont (510) 792-0222

Environmental Education Center, 1751 Grand Blvd., Alviso, (408) 262-5513

Winter Activities Schedule

at Don Edwards San Francisco Bay National Wildlife Refuge

Twilight Solstice Walk

Environmental Education Center, Alviso
4:00 p.m. - 5:30 p.m.

Come celebrate the longest night of the year and find out what comes out in the marsh as the sun goes down. Do you know why these creatures come out at night? Come find out on this leisurely evening stroll. Suitable for all ages. Reservations recommended, please call Laurie McEwen at 408-262-5513 x 102 to make a reservation.

Saturday, December 27

Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. 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 ext. 43. Led by Eileen McLaughlin.

Sunday, December 28

Water Wizards

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

Don't sit at home being bored, come play with the magic water jar! Or how about water fireworks displays? Water does some WEIRD things! Come find out why as you play and experiment with water games that will dazzle your friends. Geared for ages 7 and up. Space is limited. RESERVATIONS REQUIRED, call Laurie McEwen at 408-262-5513 x 102.

Monday, December 29

Making Tracks with the Blue Goose

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

Can you find the Blue Goose? Does it really exist? Follow the animal tracks wherever they may lead (find out what animals left the tracks), and put together all the clues they leave behind. If you can solve the mystery, you'll discover who the Blue Goose is, and you might even catch a glimpse of one. After the chase is over, remember all the tracks you learned by making a track scarf to take home with you. Geared for children ages 7 to 10. Minimum of 5 children needed. Reservations recommended with Laurie McEwen at 408-262-5513 x 102.

January

Watershed Diorama Demonstrations

Environmental Education Center, Alviso
Every Sunday in January
1:00 p.m. - 4:00 p.m.

Have you been thinking about stopping by the Education Center for an activity, but the scheduling never seems to work out? Well, drop in any Sunday afternoon this winter for a hands-on demonstration of our amazingly detailed and functioning South Bay watershed diorama. It is sure to dazzle and educate visitors of all ages. Learn what a watershed is and see how important our actions are towards maintaining healthy South Bay habitats! All ages welcome.

Saturday, January 3

Refuge Resolutions

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

A new year has begun! Come out for an invigorating stroll around the Refuge, dress warmly. Learn about Refuge history, where the Refuge is now, and where it's going in the future. Bring binoculars or borrow ours! Suitable for all ages. Led by Laurie McEwen.

Sunday, January 4

Avian Antics

Environmental Education Center, Alviso
9:00 a.m. - 10:00 a.m.

Join us at the Refuge as we explore the trails and attend a low tide feast. Learn a little bird trivia along the way, like why some birds eat their own feathers or which Refuge bird finds a mate for life? Bring your own binoculars, or borrow a pair of ours! Reservations required, call 408-262-5513 x104. Subject to cancellation due to weather.

Saturday, January 10

Community Service Day

Environmental Education Center, Alviso
10:00 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. Come out to plant new natives or wage war on invasive exotics in the EEC's habitats. Bring gardening gloves if possible. A few pairs

are available for loan. 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.

Gardening for the Birds

Environmental Education Center, Alviso
1:30 p.m. - 3:00 p.m.

Winter is in full swing! That means birds are searching high and low for food and safe havens around the Bay Area. How can you play a role in providing habitat for migrating and wintering birds? Take a look at some good plants for Bay Area gardens that not only attract birds and beauty to your garden, but do not require watering. Led by Laurie McEwen.

Botanical Wanderings

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

Discover the diverse winter habitats from the hilltops to the marsh. Use our free plant list to help identify the great variety of plants that strive in this unique urban refuge. Bring binoculars to get a better look at birds and animals we may encounter on the trail, or borrow a pair of ours. Led by Alvin Dockter.

Saturday, January 17

Sunset Marsh Walk

Environmental Education Center, Alviso
4:00 p.m. - 5:30 p.m.

Long work week? Come wind down with an evening at the Refuge. Start off at 4:00 p.m. with a twilight walk around our trails. Experience a completely different environment as the sun goes down and the night creatures come out. Finish off the evening with coffee and hot chocolate inside. Dress warmly, and call ahead in the event of rain, 408-262-5513 x 102. Led by Laurie McEwen.

Twilight Marsh Walk

Visitor Center, Fremont
4:00 p.m. - 5:30 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands Trail (1 1/3 miles). 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. 43. Led by Mary and Gene Bobik.

<http://desfbay.fws.gov>

For information and reservations, phone between 10:00 am and 5:00 pm. For directions, see page 16

Visitor Center, 1 Marshlands Road, Fremont (510) 792-0222

Environmental Education Center, 1751 Grand Blvd., Alviso, (408) 262-5513

Winter Activities Schedule

at Don Edwards San Francisco Bay National Wildlife Refuge

Saturday, January 17

Night Skies

Visitor Center Parking Lot, Fremont

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

Observe the stars from the San Francisco Bay Refuge. Learn a couple of constellations and star names and view a star cluster through a telescope. Great fun for the whole family. RESERVATIONS REQUIRED! Call (510) 792-0222 ext. 43. Led by Ralph Libby.

Sunday, January 18

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 408-262-5513 x104.

8th Annual Flyway Festival on Mare Island, Vallejo, January 23-25, see page 4 for details.

Saturday, January 24

Family Bird Walk

Visitor Center, Fremont

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. 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 ext. 43. Led by Eileen McLaughlin.

Beginning Birdwatching

Environmental Education Center, Alviso

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

It's a bird, it's a plane, it's....well, it's a bird. But what kind of bird is it? Come find out, and make your very own bird book so you can always remember. Dress warmly, bring binoculars or borrow ours and wear sturdy walking shoes. Great for ages 5 and up. Please call ahead so we'll know you're coming, 408-262-5513 x 102. Led by Laurie McEwen.

Sunday, January 25

Making Tracks with the Blue Goose

Environmental Education Center, Alviso

12:00 p.m. to 1:30 p.m.

Can you find the Blue Goose? Does it really exist? Follow the animal tracks wherever they may lead, find out what animals left the tracks, and put together all the clues they leave behind. If you can solve the mystery, you'll discover who the Blue Goose is, and you might even catch a glimpse of one. After the chase is over, remember all the tracks you learned by making a track scarf to take home with you. Geared for children ages 7 to 10. Minimum of 5 children needed. Reservations recommended with Laurie McEwen at 408-262-5513 x 102.

Quacky's Quirky Adventure

Puppet Show

Environmental Education Center, Alviso

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

Who's Quacky? What happened to him? First explore Quacky's home in a brief nature walk, and then come back to the Center to warm up. Grab a mug of hot chocolate and a bag of popcorn. Then sit down to watch Quacky's quest to save his home, and learn about our role in helping him. Wear sturdy walking shoes and come prepared to explore. If you'd like, bring your favorite blanket or pillow to use during the puppet show. Please let us know you're coming, call 408-262-5513 x 102. Led by Laurie McEwen.

Saturday, January 31

Gardening for the Birds

Environmental Education Center, Alviso

9:30 a.m. - 11:00 a.m.

Winter is in full swing! That means birds are searching high and low for safe havens around the Bay Area. How can you play a role in providing habitat for migrating and wintering birds? Take a look at some good plants for Bay Area gardens that not only attract birds and add beauty to your garden, but do not require watering. Led by Laurie McEwen.

ATTENTION! The Visitor Center in Fremont may be under construction this winter. Some programs are subject to cancellation. Please call (510) 792-0222 for program information.

February

Watershed Diorama Demonstrations

Environmental Education Center, Alviso

Every Sunday in February

1:00 p.m. - 4:00 p.m.

Have you been thinking about stopping by the Education Center for an activity, but the scheduling never seems to work out? Well, drop in any Sunday afternoon this winter for a hands-on demonstration of our amazingly detailed and functioning South Bay watershed diorama. It is sure to dazzle and educate visitors of all ages. Learn what a watershed is and see how important our actions are towards maintaining healthy South Bay habitats! All ages welcome.

Sunday, February 1

Community Service Day

Environmental Education Center, Alviso

10:00 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. Come out to plant new natives or wage war on invasive exotics in the EEC's habitats. Bring gardening gloves if possible. A few pairs are available for loan. 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.

Habitat Hike

Environmental Education Center, Alviso

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

Ever wonder how many habitats are here at the Refuge? Come take a walk and see them all! See the salt marsh, sloughs, salt ponds and more on our short and easy trek! We will look at and try to identify plants, birds, and whatever other animals we see and learn how people have affected their habitat. Reservations required, call 408-262-5513 ext 104 to make a reservation.

Saturday, February 7

Botanical Wanderings

Visitor Center, Fremont

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

Discover the diverse winter habitats from the hilltops to the marsh. Use our free plant list to

<http://desfbay.fws.gov>

For information and reservations, phone between 10:00 am and 5:00 pm. For directions, see page 16

Visitor Center, 1 Marshlands Road, Fremont (510) 792-0222

Environmental Education Center, 1751 Grand Blvd., Alviso, (408) 262-5513

Winter Activities Schedule

at Don Edwards San Francisco Bay National Wildlife Refuge

help identify the great variety of plants that thrive in this unique urban refuge. Bring binoculars to get a better look at birds and animals we may encounter on the trail, or borrow a pair of ours. Led by Alvin Dockter.

Sunday, February 8

Beginning "Duckwatching" for Kids

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

Quack! Can't tell a mallard from a shoveler? How about a bufflehead? 'Tis the season for spotting ducks. Make your very own duck identification book to take home, and then go out and find as many ducks as you can. This program will operate rain or shine. Come out in warm clothes and good walking shoes. Bring binoculars or borrow ours. Spotting scope will be used for viewing from our tower. Recommended for kids age 5 and up. Pack a lunch or get a quick bite at a local restaurant and join us for Water Wizards at 12:30pm. Please call ahead to let us know you're coming, 408-262-5513 x 102. Led by Peg Bernucci.

A Ghost Town in San Francisco Bay?

Visitor Center, Fremont
2:00 p.m. - 3:00 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. Led by Pat Anthony.

Saturday, February 14

Salt Marsh Hearts

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

What makes a salt marsh tick? What's the heart of the marsh? Come find out on this introductory marsh walk. Then return to the building to make a marsh valentine. Geared for ages 6 and up. Call to let us know you're coming, 408-262-5513 x 102. Led by Laurie McEwen.

Sunday, February 15

Critter Café

Environmental Education Center, Alviso
10:00 a.m. - 11:30 a.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 macro invertebrates and plankton – the tasty treats that shorebirds are eating at our five-star marsh 'cafes' at the Refuge. Reservations required, call 408-262-5513 ext 104 to make a reservation.

Saturday, February 21

Twilight Marsh Walk

Visitor Center, Fremont
4:30 p.m. - 6:00 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands Trail (1 1/3 miles). 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. 43. Led by Mary and Gene Bobik.

Night Skies

Visitor Center Parking Lot, Fremont
6:00 p.m. - 7:30 p.m.

Observe the stars from the San Francisco Bay Refuge. Learn a couple of constellations and star names and view a star cluster through a telescope. Great fun for the whole family. RESERVATIONS REQUIRED! Call (510) 792-0222 ext. 43. Led by Ralph Libby.

Sunday, February 22

Water Wizards

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

Don't sit at home being bored... come play with the magic water jar! Or how about water fireworks displays? Water does some WEIRD things! Come find out why as you play and experiment with water games that will dazzle your friends. Geared for ages 7 and up. Space is limited. RESERVATIONS REQUIRED with Laurie McEwen at 408-262-5513 x 102.

Saturday, February 28

Tiny Tracks

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

Calling all trackers! Who left that footprint? Where did the fox go? What did the owl eat for dinner? Why is that scat there? Come make a field guide to take home and go take a hike at the Refuge to find answers to these mysteries.

See the Refuge through new eyes as we explore tracks, trails, pellets, and poop. Geared toward ages 5-12. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43.

Community Service Day

Environmental Education Center, Alviso
10:00 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. Come out to plant new natives or wage war on invasive exotics in the EEC's habitats. Bring gardening gloves if possible. A few pairs are available for loan. 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.

Sunday, February 29

Slough Who?

Environmental Education Center, Alviso
1:00 p.m. - 3:30 p.m.

Who...who...who did that owl eat? Bet you can find out! Come solve the mystery of who ate whom and learn a bit about these nocturnal predators. We will hike the habitats, search for owl clues, and get a chance to dissect owl pellets, discovering exactly who that owl ate! Reservations required, call 408-262-5513 ext. 104 to make a reservation.

Gardening for the Birds

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

It's Leap Year! Use this extra day to good advantage. Learn how you can play a role in providing habitat for migrating and wintering birds. Spring is just around the corner. That means birds are searching high and low for safe havens around the Bay Area. Take a look at some good plants for Bay area gardens that not only attract birds and add beauty to your garden, but do not require watering. Led by Laurie McEwen.

ATTENTION! The Visitor Center in Fremont may be under construction this winter. Some programs are subject to cancellation. Please call (510) 792-0222 for program information.

<http://desfbay.fws.gov>

For information and reservations, phone between 10:00 am and 5:00 pm. For directions, see page 16

Visitor Center, 1 Marshlands Road, Fremont (510) 792-0222

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 both Don Edwards San Francisco Bay National Wildlife Refuge in the South Bay and San Pablo Bay National Wildlife Refuge in the North Bay. These programs actively involve teachers, adult volunteers, and students in investigating the diverse habitats and wildlife of the Refuges. 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 Youth Group Leaders conduct their own field trips after attending a **Field Trip Orientation Workshop**. The Orientation Workshops provide the information you need 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.

Don Edwards San Francisco Bay National Wildlife Refuge

The Refuge offers field trip programs at both our Visitor Center in Fremont and Environmental Education Center in Alviso.

Field Trips at the Visitor Center in Fremont

Educators and Youth Group Leaders:

Investigate creatures of the mud flats, the plankton and other creatures in the slough, and the pickleweed in the salt marsh on the **Wetland Round-Up Field Trip**. This field trip is designed for grades K-6, for up to 65 students. Wetland Round-up is offered Monday - Friday.

Trek the 1 mile Tidelands Trail, and learn about the natural history of the Refuge! Then explore the pickleweed in the salt marsh, the brine shrimp in the salt pond, and the plankton in the slough!! Available only at the Visitor Center in Fremont, **Trekking the Refuge Field Trip** is designed for grades 3-6, for up to 36 students. Trekking the Refuge is offered 7 days a week.

Sign up for Wetland Round-Up Field Trips and Trekking the Refuge Field Trips at the Visitor Center for Spring 2004 (February - June). *Field Reservations begin Monday, December 8, 2003 from 4:00 p.m. - 5:30 p.m. Field trips will begin the week of February 9, 2004. Call Ken Clarkson, Environmental Education Specialist, at 510-792-0222 ext 36, to reserve a date for your field trip at the Visitor Center this spring! For more information call Ken, or email him at ken_clarkson@fws.gov.*

Field Trip Orientation Dates at the Visitor Center in Fremont

Attention Educators and Youth Group Leaders: Call to reserve a place for yourself and any interested adult volunteers planning to lead activities on your field trip. It is our policy that you must attend every 2 years. Call the education staff at 510-792-0222.

Wetland Round-Up Field Trip Orientations at the Visitor Center in Fremont

Weekdays, 4:00 p.m. - 8:00 p.m.

Thursday, February 5, 2004
Thursday, March 4, 2004
Tuesday, March 23, 2004
Thursday, April 8, 2004
Thursday, April 29, 2004
Thursday, May 13, 2004

Trekking the Refuge Field Trip Orientations at the Visitor Center in Fremont

Weekdays, 4:00 p.m. - 8:00 p.m.; Weekends, 10:00 a.m. - 2:00 p.m.

Saturday, February 21, 2004
Saturday, March 13, 2004
Thursday, April 15, 2004
Thursday, May 6, 2004

PASS IT ON!! Please help us spread the word about our **FREE, fun, and educational field trip programs!!** If you know a teacher that would be interested in these programs please pass on your copy of *Tideline* or have them give us a call for more information!! Thank you for your help!

Field Trips at the Environmental Education Center in Alviso

Educators and Youth Group Leaders:

Wetland Round-Up Field Trips

Investigate the butterflies in the butterfly garden, taste pickleweed in the salt marsh, or discover the creatures that live in the slough water on a Wetland Round-Up Field Trip. This field trip program is designed for up to 65 students in grades K-6.

Sign up for a Wetland Round Up Field Trip this Spring (February - June). *Field trip reservations begin Monday, December 8, 2003 from 4:00 pm - 5:30 pm. Field trips will begin the week of February 9, 2004. Call Genie Moore at 408-262-5513 ext 100, to reserve a date for your field trip at the Environmental Education Center in Alviso this spring! For more information call Genie, or email her at genie_moore@fws.gov.*

The Slow the Flow Program

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

Field trip orientation workshop at the Refuge

Field Trips to the Refuge

Classroom presentations
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.

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.

Reservations for the *Slow the Flow* program are on a first come, first served basis. To schedule a field trip, a presentation, to sign up for a field trip orientation workshop, or for more information, please call Carrie Wright at (408) 262-5513 ext 104 or email her at sfbay_slowflow@yahoo.com.

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

Attention Educators and Youth Group Leaders: Call to reserve a place for yourself and any interested adult volunteers planning to lead activities on your field trip. It is our policy that you must attend every 2 years. Call the education staff at 408-262-5513.

Wetland Round-Up Field Trip Orientation Workshops Weekdays, 4:00 p.m. - 8:00 p.m.

Tuesday, February 10, 2004
Wednesday, March 3, 2004
Thursday, March 25, 2004
Wednesday, April 7, 2004
Tuesday, April 27, 2004
Wednesday, May 12, 2004

Slow the Flow Field Trip Orientation Workshops Weekdays, 4:00 p.m. - 6:30 p.m.

Field Trip Orientations are scheduled on an as needed basis

Environmental Education Programs at San Pablo Bay NWR

In the Marsh on Mare Island is a FREE educator-led field trip program for grades K-12, for up to 40 students. Students participate in a variety of hands-on activities which teach them about the different habitats and wildlife found in the North Bay.

In order to come on a field trip to the Refuge, teachers must attend one of our teacher orientation workshops. These workshops provide the educator with the information needed to have a successful field trip.

In the Marsh on Mare Island Field Trip Orientation Workshops at San Pablo Bay NWR:

Tuesday, Feb. 3rd

Wednesday, Feb. 18th

Tuesday, March 16th

All workshops are from 3:45 p.m. - 7:30 p.m.

Mud Creatures and the Watershed Connection is a one-hour, hands-on, in-class activity for 3rd grade students in Solano and Napa counties. Students study creatures that are found in the mudflat habitat while examining marsh mud. They also learn about the impact humans have on the Bay waters and how their everyday actions can affect all living creatures. This program is also FREE!

To schedule a teacher orientation date, field trip, or in-class activity please contact the Environmental Education Intern at (707) 562-2473.

Environmental Education Curriculum Available!

Are you a K-12 educator? Curriculum developer? Scout leader? Are you planning a field trip? Do you want to teach your child more about the environment? Are you looking for some Spanish-English bilingual material?

The EEC Curriculum and Resource Library may have just the thing to help you. Within our 200 resource items available at the EEC, you can find...

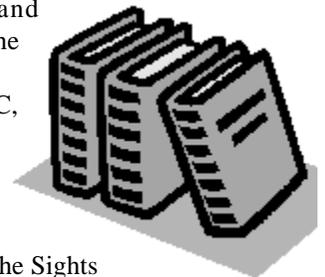
On Sandy Shores: Teachers Guide - Five detailed activities for grades 2-4: Beach Bucket

Scavenger Hunt; Sand on Stage; The Sights That Sand Has Seen; Build a Sandy Beach; Oil on the Beach. Material provides good background information for teacher. Activities are designed for classroom use with projected times.

Conservation Biology: A Curriculum for High School Students - "Activities that reflect the problems and questions facing conservation biologists." Seven lessons address biological diversity including species extinction. Each unit has handouts and presentation pages for transparencies. Each lesson is organized including goals, duration, prerequisite knowledge/skills, background data, instructional strategy, and teacher tips.

Spanish-English and English-Spanish dictionaries of specific scientific terms are available in a California Aquatic Science Education Consortium (CASEC) Spanish supplement to a five volume series available in Spanish and English.

How can you gain access to this treasure trove? This resource library can be used by appointment during the week or from 10 am - 5 pm on Saturday and Sunday. Call the education staff, (408) 262-5513, to find out how you can peruse an Excel database of the resource library, find a particular item, and then be able to copy and use it!



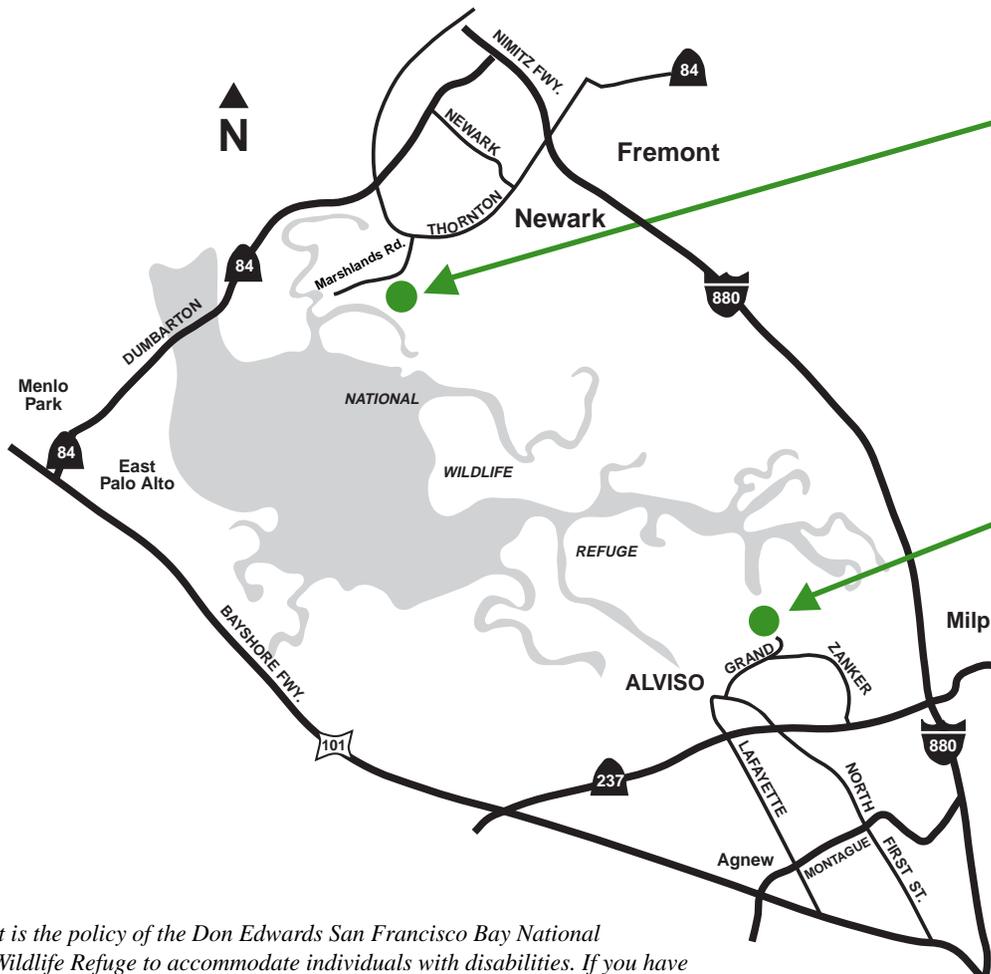
UNITED STATES
 DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
 DON EDWARDS SAN FRANCISCO BAY
 NATIONAL WILDLIFE REFUGE
 P.O. BOX 524
 NEWARK, CALIFORNIA 94560
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 PENALTY FOR PRIVATE USE, \$300

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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 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.