Autumn 2006

Tideline

San Francisco Bay National Wildlife Refuge Complex

Volume 26, Number 3

Just an Ordinary Lizard

by Don Roberson

In the rural county where I was raised, we called 'em "blue-bellies." They were everywhere: running up logs, climbing up fences, basking in the sun. These were just basic gray lizards with chevron patterns on the back, and could be hard to spot until they ran. If you were fast enough to grab one, and turned it over, odds were that you'd see two blue belly patches. It was a nice lizard -- it didn't bite you when you caught it -- but it was just your ordinary lizard; nothing to get excited about.

As I grew older, I spent most of my free time looking through binoculars -- at birds, not lizards. Yet the lizards were still around, and I often saw them peripherally when birding, including at some of the National Wildlife Refuges around the Bay Area. My Stebbins' field guide [*A Field Guide to Western Reptiles and Amphibians* in the Peterson field guide series] called them Western Fence Lizard *Sceloporus occidentalis*, a widespread species from northern Baja California to Washington state, and inland to western Utah. As I traveled around California chasing after birds, fence lizards were often encountered from sea level to high mountains.

One summer morning in 1981, while birding in Andrew Molera State Park in coastal Monterey County, I came upon a Western Fence Lizard doing "push-ups." This is not a rare behavior but this guy was doing quite exaggerated push-ups and, as he held the "up" position, his otherwise flat throat popped out in an exaggerated dewlap. I knew that tropical anoles were known for exaggerated throat-flap displays, but our ordinary lizard? This was unanticipated.

Later I found a discussion of "pushup" displays in a wonderful little booklet called *The Lizard-Watching Guide* (1994) by Sherburn Sanborn. It covers the California deserts but his explanation applies to most members of the Iguanidae (which includes our fence lizards): "The pushup display is used by one lizard to tell other lizards, 'This is my space. Keep your distance.' All ages, including hatchlings, and both sexes perform pushup displays. Male iguanids perform more vigorous display, called challenge displays. The challenge is similar to the pushup display but may include all four legs, extension of the throat sac, and other movements that make the lizard appear larger and more colorful. The challenge display is most often performed during the spring, when males are establishing their territories and courting females. The male performs the challenge display from prominent rocks or perches within his territory or in territorial disputes when an intruding male comes too close. Battles between males are rare, and disputes are usually resolved through challenge displays followed by a chase."

A complex pattern of chevrons across its back make the Western Fence lizard difficult to spot among the rocks – until it runs. Photo June 2003 at Garrapata State Park, Monterey County.
Photo: Dan Roberson

Western Fence Lizard is a member of the widespread New World genus *Sceloporus*. This

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word is a Latinized form of a Greek word that combines "skelos," meaning "leg," and "porus," meaning "pore or opening." This refers to the femoral pores on the underside of the hind legs. Focusing on the rear surface of the hind legs for a yellowish or orange coloration will help separate this species of Sceloporus from other Sceloporus, such as Eastern Fence Lizard *Sceloporus undulatas* that occurs from S. Utah east, and from Sagebrush Lizard *Sceloporus graciosus* that occurs within the range of Western Fence Lizard. Although the Western Fence Lizard occurs within the same range as the Sagebrush Lizard, they prefer different habitats. I've since learned that in Monterey County, for example, Western Fence Lizards exist in all types of habitats – coastal scrub, riparian, oak woodland, chaparral, and rocky grasslands – but that Sagebrush Lizard is confined to montane chaparral at high elevations in the Santa Lucia Mountains.

An Exaggerated push-up with a flared throat dewlap and bright blue belly patch is both a territorial display and an enticement to female lizards. Photo June 1981 at Andrew Molera State Park, Monterey County.
Photo: Don Roberson

Fence lizards eat a lot of insects and spiders, but they also have many clutches of eggs and hatch many baby lizards. These baby lizards are, in turn, preyed upon by larger invertebrates, including scorpions and black widow spiders, not to mention many snakes, jays, hawks, and Greater Roadrunner.

While birding in eastern California, I sometimes marveled at how big and black-colored some of the fence lizards there were, especially in the rugged terrain north of Death Valley. Early editions of the Stebbins' field guide listed four subspecies of Western Fence Lizard: Northwestern Fence Lizard *S. o. occidentalis* (the nominate race ranging from Washington state south through all of northern California), the Great Basin Fence Lizard *S. o. biseratus* (Great Basin and southern California), the Sierra Fence Lizard *S. o. taylori* (in the southern Sierra Nevada) and Island Fence Lizard *S. o. becki* (on some of the California Channel Islands). [The latter is named after Rollo Beck, a famed bird collector at the turn of the 20th century.] It turned out that while the "Great Basin Fence Lizard" was "often gray or black below," this was not considered to be a key character. In the 1990s, more subspecies were recognized by the Center for North American Herpetology (CNAH). The CNAH website at **www.naherpetology.org** is a great internet resource about reptiles and amphibians.

In the 2003 edition of the Stebbins' field guide, you'll find that he recognizes no subspecies at all. This is because scientists are currently studying *Sceloporus occidentalis*. Their results will determine how many subspecies or even full species there are within populations of this lizard, and where they are distributed. In doing an on-line search, I found an announcement that Dr. James Archie, biology professor at California State University, Long Beach (CSULB), received a grant from National Science Foundation in 2000 to study the geographical patterns of genetic variation in the Western Fence Lizard.

In an interview given to the CSULB newspaper at the time, Dr. Archie said: "In studying the western fence lizard, my students and I have found that different genetic groups, or clades, of the lizard are isolated geographically, creating boundaries between different genotypes. Yet, there are no physical obstacles to prevent the dispersal and flow of genes between the various genetic groups. It's not known why this isolation or separation occurs, but I'm hoping to find an explanation for the presence of these boundaries."

In the field, Dr. Archie and his students use extended fishing poles to capture lizards unharmed by putting a small noose around their heads. After being caught, the lizards are measured, scanned with a computer scanner or photographed. A piece of the tail is also taken to permit genetic analysis. Then, the lizards are released. "The research will investigate the evolutionary significance of the clade boundaries. The findings have the potential to make a substantial contribution in the area of evolutionary biology of speciation." In addition, Dr. Archie "noted that the application of the research to conservation biology could also be important."

I emailed Dr. Archie to ask how the project was going, and he replied, "The story in Western Fence Lizard is quite complex," he wrote. Genetic research and DNA sequencing resulted in a finding that "there are about 15 distinct genetic groups (=clades) within the species, all of which are restricted geographically in their distribution" with very little overlap. Some of the clades differ up to 9% in their DNA sequences, "which is quite large and indicates that the species is quite old (likely >10 million years)." In the San Francisco Bay Area, for example, there are three clades: (a) Marin County north into Washington state, (b) San Francisco peninsula south to Santa Cruz and east to Livermore, and (c) Big Sur to Morro Bay.

There is yet another clade that exists from eastern Santa Clara County east across the San Joaquin Valley and includes the southern Sierra Nevada. That huge mountain range has been a barrier to fence lizard dispersal, although there is gene flow around both the north and south ends of the Sierra. The nominate subspecies, including lizards in Marin County, may represent a differ-

Just an Ordinary Lizard *continued*

ent species that ranges north into Washington state and east across the northern edge of the Sierra Nevada, but not into the Great Basin. Dr. Archie and his students are currently looking at the boundary areas between these lizards, and those from the Great Basin, in places like Reno, Susanville, and Bend, Oregon. "In the Marin County clade, the DNA data suggest that there was a post-Pleistocene range expansion north from northern California into Oregon and Washington."

In other words, a whole lot has happened within the evolutionary history of our ordinary lizards. The ancestors of our current lizards were subjected to, and likely fragmented by, the ice age glaciation and sea level changes back in the Pleistocene – when Wooly Mammoths roamed California – but have survived to this day in a variety of forms. "I'm afraid the story goes on and on," says Dr. Archie. The complexity of the situation – and trying to match up which historical events impacted which of the clades, and how – have delayed formal publication of the research. Dr. Archie hopes to have a paper submitted for publication in summer 2006.

What is clear is that we cannot look at our fence lizards in the same way again. There may be several species in what we once thought was just one, the Western Fence Lizard, and all of them are survivors from a long time ago. Our fence lizards have been masters of adaptation. Apparently a regimen that includes a lot of pushups works rather well. Not too bad for an "ordinary" lizard.

Don Roberson is a Monterey-based amateur naturalist with expertise in bird distribution and identification. He is the author of four books on birds, mostly recently "Monterey Birds" (2003). His web site ***www.montereybay.com/creagrus*** *focuses mostly on birds in Monterey County, plus such widely flung topics as the "Bird Families of the World" and birding trip reports from around the globe (recently: South Africa, Philippines, Borneo). Despite the avian emphasis, his interests include mammals and herps, and his web site includes information on California reptiles and amphibians. He thanks James Archie and Rita Carratello for comments on earlier drafts of this article.*

A Pacific Exchange

Refuge Reflections

By Mendel Stewart

From June 19 through July 3, 2006, I traveled to the People's Republic of China as part of a U.S. Fish and Wildlife Service (USFWS) delegation to review wetland management practices. Recognizing that wildlife knows no political boundaries, the USFWS has developed partnerships with other countries including China to promote cooperation and exchanges in the field of wildlife conservation and protected natural areas. The delegation consisted of me, three other Refuge Managers, a Wildlife Biologist, and our International Affairs liaison. We covered 2,000 miles in just 10 days visiting six wetland reserves in Northeast China's Heilongjian Province.

Our Chinese hosts were outstanding. We were impressed by the level of dedication and professionalism the land managers displayed. We flew into Beijing and then into Harbin where we began our visit by meeting with faculty and students at the Northeast Forestry University. We were given an overview of China's land protection and management practices which, it turned out, are very similar to our own - a system of national reserves that are complemented by provincial and local lands managed for wildlife. China has a relatively short history of setting aside lands for wildlife conservation-just 50 years. Despite its short history, national, provincial and local reserves in China today cover 15 percent of the country's land area with 265 national nature reserves.

One aspect we found particularly interesting was the use of a management zone strategy for their reserves. Each reserve is divided into core areas, buffer areas and experimental areas. Core areas are intended to maintain ecosystem functions and often contain the bulk of endangered wildlife species. The experimental areas allow scientific research, environmental education and tourism while the buffer areas provide a separation between the two. Impressed with this management strategy, we discussed ways of implementing similar management here at home. One reserve we visited was managed for the endangered red-crowned crane - a majestic bird as large as a whooping crane. We visited a captive breeding facility where the birds are being bred for release into the wild. Another flock is kept in captivity and is being trained to fly around the stadium at the opening ceremony of the 2008 Summer Olympics in Beijing. We were treated to a demonstration, giving us a great opportunity to see this magnificent bird in flight

After visiting the six reserves, we headed back to Beijing where we met with members of China's State Forestry Administration (China's counterpart to our U.S. Department of the Interior) and provided input and suggestions to improve environmental education, visitor services, and wildlife management. Fortunately, it was not all work. We saw several new bird species, experienced new foods and visited some very beautiful places. Plus, when we returned to Beijing we had time to visit Tiananmen Square, the Forbidden City and the Great Wall. The trip was one of the best professional experiences of my career and I look forward to hosting future Chinese delegations to our Refuges in the Bay Area.

Cousteau Media Visit To Farallon NWR

By Joelle Buffa

One of the earliest experiences that I can remember growing up, is curling up on a chair with my father to watch *The Undersea World of Jacques Cousteau*. Those images - even on a black and white TV typical of the 1960s - probably factored heavily in the career path I ultimately pursued as a wildlife biologist. I often wondered what it would be like to be in a Cousteau documentary....I recently found out.

On January 17, 2006, I arrived at Southeast Farallon Island with the Ocean Futures Society Expedition Team, consisting of Fabien Cousteau (Jacque's grandson), cameraman Chuck Davis, and sound technician Rick Chelew, and piles of pelican cases containing their camera gear. They had been dispatched by the Ocean Futures Society (the non-profit science/education organization led by Jacques' son, Jean-Michelle Cousteau) to film a documentary on National Marine Sanctuaries. Since the Gulf of the Farallones National Marine Sanctuary surrounds the refuge and had been chosen as one of 13 sanctuaries nationwide to be featured in a two-hour PBS special, the refuge was an ideal base camp location for the film team. As Manager of the Farallon NWR, I had already issued a Refuge Special Use Permit to them to film the connection between marine and island habitats from the refuge. Now my childhood fantasy was coming true.

Ocean Futures Expedition Team filming elephant seals. Left to Right: Fabien Cousteau, Rick Chelew, Chuck Davis

When we arrived, the cliffs on the north side of the Island were covered with common murres. During the non-breeding season, murres (the refuge's most numerous nesting seabird with a population exceeding 225,000) periodically "attend" their nesting colonies. "Attend" is a fancy biological term that means loafing around on the spots where they will later nest. Seeing murres at point blank range is an unusual occurrence during the winter and everyone went into high gear schlepping the heavy equipment quickly ashore by Zodiac. PRBO Conservation Science (formerly Point Reyes Bird Observatory) Farallon Biologist Derek Lee switched roles from boatman to biologist, escorting the Cousteau team to the murre observation blind to film the colony. Good thing. That was the last time the murres made an appearance during the team's stay.

Over the next three days, Derek, three PRBO Conservation Science interns (Danny Roemer, Michelle Millunzi, and Sandy Rhoades), and myself expected to be mostly "behind the scenes" but found that we were occasionally in front of the camera as well. One morning the interns took the crew out to the Sand Flat elephant seal breeding colony. As the interns explained how they keep tabs on pregnant cows and sort out pups and "weaners" (pups recently weaned from their mothers), two bulls began fighting a territorial battle, knocking snouts and trumpeting, quickly becoming center stage. On subsequent island walks the weather and lighting cooperated perfectly while wildlife performed on cue, keeping the camera and sound crew busy and entertained.

The Cousteau team entertained us too, with their sense of humor and enthusiasm at filming everything about island life. One evening we invited them over for dinner, and they arrived with full camera and sound paraphernalia. Cameras rolled while we cooked and ate dinner and shared the daily ritual of recounting the day's wildlife discoveries. Since 1968 island biologists have faithfully recorded each day's events in the Farallon Journal. Each species observed and type of activity performed (e.g. maintenance, habitat management, etc.) has its own page.

By the end of the Cousteau team's four-day stay, we were used to the camera and microphone following us around on daily activities - they became part of the background Farallon ambiance, much like gulls' constant clamor or the nightly Cassin's auklet serenades. The team's respect for the refuge and what we were doing, their unpretentious nature, and their positive attitude put us all at ease.

For instance, rather than fret over a missed appointment with a television executive in New York when the team got stuck on the island an extra day because of sea conditions and a recalcitrant motor, Fabien Cousteau rolled up his sleeves and asked if he could help pull invasive weeds. You probably won't see that part in the documentary, though, because the camera man was helping me haul scrap pipe at the same time!

Media efforts such as this one by the Ocean Futures Society help bring the refuge to the public. You can read further about the Cousteau film crew visit and other more recent refuge happenings on the blog spot at **http://www.losfarallones.blogspot.com**. More information about Ocean Futures Society can be found at www.oceanfutures.org. And certainly watch the documentary: America's Underwater Treasures, which will air in two parts on KQED: September 20 and September 27, 2006 at 8:00 p.m. Pacific Time.

Trails Of The Don Edwards San Francisco Bay NWR

Did you know that the Don Edwards San Francisco Bay National Wildlife Refuge spans nine cities and three counties, and contains over 30 miles of hiking trails? In upcoming issues of *Tideline*, Refuge Manager and birding enthusiast Clyde Morris will highlight trails found on America's first urban National Wildlife Refuge.

Name: Shoreline Trail

Miles One Way: 4.5 miles

Degree of Difficulty: Easy

Uses Permitted: Walking and bicycling only; dogs not permitted.

Trail Surface: Compacted dirt levee. Trail can be extremely muddy after rain.

Highlights: Wildlife viewing, remote from roads, and sweeping views of San Francisco south along San Mateo County to the Dumbarton Bridge

Directions to Trailhead: The trailhead is at the Dumbarton Fishing Pier parking lot, three miles past the Visitor Center on Marshlands Rd. From Highway 84 on the east side of the Dumbarton Bridge in Fremont, take the Thornton Ave exit. Drive 0.6 miles south on Thornton Ave and turn right onto Marshlands Rd. Follow Marshlands Rd until it dead ends into the Dumbarton Fishing Pier parking lot. During bird nesting season (April-August), the three-mile Marshlands Rd from the Visitor Center to Dumbarton Fishing Pier is closed to motorized vehicles but open to bicycles and walking. Shuttles to the Fishing Pier can be reserved on the weekends during the closure by calling the Visitor Center at 510-792-0222.

Introduction: This trail is on a salt pond levee separating San Francisco Bay from the Newark Salt Ponds. It is a perfect place to get away from the congestion of our urban community. Look for the "Shoreline Trail" sign on a chain-link fence under the Dumbarton Bridge to begin the hike.

Trail Details: The trail begins with 1.25 miles of riprap shoreline which then gives way to Ideal Marsh, a small tidal salt marsh. At 2.5 miles from the trailhead, the Shoreline Trail connects with an unnamed trail we call No Name Trail. This 1.3 mile trail goes east directly to the Coyote Hills Regional Park. Continuing on the Shoreline Trail for 2 additional miles brings you to the Alameda Creek Trail. You may turn around and backtrack toward the refuge, or explore East Bay Regional Park's Alameda Creek Trail and Coyote Hills Park.

Wildlife Viewing: Depending on the height of the tide, the entire length of the North Shoreline Trail can offer close views of feeding shorebirds on the Bay's mudflats and Bay ducks in the deeper waters. In the summer, as you approach the trailhead, look for the mud nests of cliff swallows attached to the south side of the Dumbarton Bridge. As the levee trail begins, one of the best shorebird viewing areas in the refuge is just to your right in the corner of the salt pond. Small mud islands are favored by wintering and migrating shorebirds for roosting at high tide. At the height of spring and fall migration, hundreds of birds pack this small island including willets, marbled godwits, sanderling, western and least sandpipers, ruddy turnstones, and occasionally red knots. Care should be taken not to approach too closely and disturb the resting birds. Endangered California clapper rails and salt marsh harvest mice live in Ideal Marsh. An occasional Alameda song sparrow, a species of special concern in California can be sighted there. The salt ponds adjacent to the northernmost section of the Shoreline Trail attract many fish-eating birds such as terns, cormorants and brown and American white pelicans. In the late summer, the endangered California least terns feed in these ponds. After nesting in Alameda near the Oakland Bay Bridge, the adults use these ponds to teach the younger birds how to perfect their hunting techniques. Ducks such as northern shoveler, ruddy ducks and gadwall are seen in the winter. During the summer, thousands of California gulls nest along the levees with smaller numbers of Caspian terns.

Cliff swallow nests on the underside of Dumbarton Bridge

Other Notes of Interest: In the spring of 1991, a 35-foot long gray whale washed into Ideal Marsh. Portions of this whale's backbone and baleen are on display in the Visitor Center. In the fall of 2005, a lone Chilean flamingo was recorded using the salt ponds.

For More Information: For trail maps and refuge activities, consult the web site www.fws.gov/desfbay or call 510-792-0222.

Spooky Slough

Saturday, October 28th • 7:00 p.m. – 9:30 p.m.

Join Marsh Creatures on this Moonlit Night for a Slightly Scary Adventure

Wear your favorite costume • Bring a bag to gather treats

Dress warmly – Bone Chilling weather predicted

Bring a flashlight just in case...

FREE! Reservations Required: Call (408) 262-5513

Don Edwards San Francisco Bay National Wildlife Refuge Environmental Education Center

1751 Grand Blvd, Alviso

Don Edwards San Francisco Bay National Wildlife Refuge

Duck Drawing Workshop

Join Award-Winning Local Artist

Rich Radigonda

Saturday October 14

1:45 p.m.-2:45p.m.

Learn the basics of drawing ducks with renowned wildlife artist Rich Radigonda.

Paper and pencils will be provided. Suitable for all ages. For more information call Carmen Minch at 510-792-0222.

Workshop will be held at the Newark Slough Learning Center (down the hill from the Visitor Center) on 1 Marshlands Rd, Fremont.

Connections to Pier Fishing

Don Edwards San Francisco Bay National Wildlife Refuge in Fremont

Saturday, October 7, 2006

8 a.m. – 12 p.m.

Learn how to fish on the Dumbarton Fishing Pier!

Space is limited to the first 50 people.

All equipment will be provided. Please come on time.

Call 510-792-0222 ext. 43 for reservations.

For more information, see page 11.

Return of the Salt Marsh Harvest Mouse

By Joelle Buffa, Supervisory Wildlife Biologist

Little did "Team Salty 2006" know when our alarms went off at 5:00 am on July 12 that a surprise was waiting for us in the 25-acre parcel on Don Edwards San Francisco Bay NWR (Refuge) known as the "Mouse Pasture." This parcel, located in South Fremont near Fremont Blvd. and Gateway, had been acquired by the Refuge in 1987 as mitigation for the adjacent Bayside Business Park development, with the objective of restoring it's habitat for the federally endangered salt marsh harvest mouse (SMHM). Water control structures were installed and other modifications were made to manage the area as a periodically flooded pickleweed marsh. The SMHM depends on pickleweed for just about all of its needs: food, water, cover, and nesting sites.

Small mammal trapping was conducted in the Mouse Pasture in 1985, when one Salt Mouse Harvest Mouse (SMHM) was captured, and in 1989, when seven SMHM were captured. Refuge biologists became concerned in 2004 when no SMHM were captured. In fact, rodent density overall was strangely sparse with only five house mice captured. The Refuge staff determined that poor quality pickleweed, lack of water management, and predation were all potential factors.

When we set up the small mammal sampling grid in early July, the pickleweed looked a lot greener and healthier than it did in 2004. Would the SMHM agree? Even more important, would a three-inch long mouse that weighs 10 grams be able to negotiate a 35-foot wide levee and a slough that separates the Mouse Pasture from another marsh immediately to the south that does contain SMHM?

On the morning of July 12, Refuge Operations Specialist Eric Mruz opened Trap D21 and inside was a healthy looking male SMHM! Even more thrilling, in the very next trap – about 10 meters away – was a female SMHM! We took the necessary measurements to confirm they were in fact our target species since it is very difficult to tell "salty" apart from the more common western harvest mouse. We quickly released them so they could go on to repopulate the Mouse Pasture.

What a happy ending, we thought, but that was not all. The next day we caught another female SMHM in Trap F27. A total of 89 individual animals, including other native species - 38 California voles and one shrew - were captured over a four-day period.

Not many jobs reward you with a sense of accomplishing something positive for wildlife. I'm glad I have one of them. Thanks to all the individuals who helped improve habitat for "salty" including Rene Widmont and Randy Roelling from ProLogis; John Rusmisel, Neil Campbell and Pat Turney from Alameda Mosquito Abatement District; and The San Francisco Bay Wildlife Society. Thanks to "Team Salty 2006" volunteers (Carole and Nathan Foster, Michelle Giolli, Brian Hattenbach, Tim Kask, Sandra Murcia Judy Parrish, Ben Perlman, Jen Stankawitz, Isa Woo) and Refuge staff who helped in the rediscovery of "Salty".

Eric Mruz and Salt Marsh Harvest Mouse.
Photo: Susan Euing

Sale of Native Plants

Saturday, October 14, 2006 • 1:00 p.m. – 5:00 p.m.

Attract hummingbirds and butterflies to your neighborhood with California native plants.
Sale will be held at the Newark Slough Learning Center down the hill from the Visitor Center.

Don Edwards San Francisco Bay National Wildlife Refuge • 1 Marshlands Rd, Fremont, CA
For more information, call Carmen Minch at 510-792-0222

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 April 8, 2006 and July 14, 2006. These gifts will be used for capital, environmental education, habitat restoration, and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.

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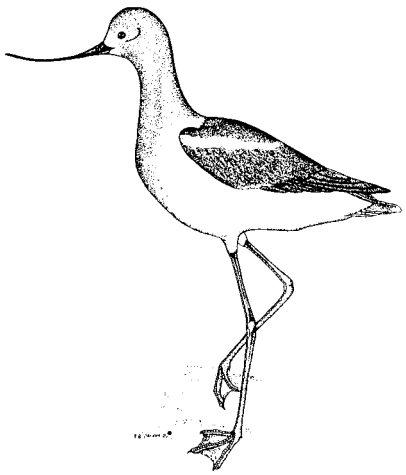

Help Us Help the Refuge

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

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

San Francisco Bay Wildlife Society is a nonprofit 501(c)(3) organization which raises money and awareness for the San Francisco Bay National Wildlife Refuge Complex.

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

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

☐ Check ☐ Visa or MasterCard # _____ Exp. Date _____

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Address _____ City _____ State _____ Zip _____

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

San Francisco Bay National Wildlife Refuge Complex

San Francisco Bay
National Wildlife Refuge Complex

Open House

October 14, 2006 1 p.m. - 6 p.m.

Come discover what your National Wildlife Refuges in the San Francisco Bay Area are up to.

- Speakers
- Native Plant Sale
- Beginning Duck Drawing Workshop with award-winning artist Rich Radagonda
- Guided Walks
- Mud Creature Lab Activity
- Reception with light refreshments featuring local wildlife photographers

For a complete schedule and times, log on to our web site at www.fws.gov/sfbayrefuges or call (510)792-0222.

San Francisco Bay National Wildlife Refuge Complex is located at 1 Marshlands Rd, Fremont 94536

Autumn Activity Schedule

September

Saturday, September 9

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal birdwatching field guides, 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.

Salt Pond Tour
Meet at Bayfront Park, Menlo Park
10:00 a.m. – 12:00 p.m.

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

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

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

Sunday, September 10

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, September 16

Coastal Cleanup!
Visitor Center Parking Lot, Fremont
8:30 a.m. – 12:00 p.m.

Join thousands of people around the world for International Coastal Clean-Up Day. Bring a hat, sturdy shoes, water, sunscreen, and gloves if you have them. No reservations needed. All groups welcome. For more information, contact Carmen Minch at 510-792-0222.

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. Ray spent most of 2004 researching 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 Salt Pond Restoration Presentation
Visitor Center Auditorium, Fremont
3:00 p.m. – 4:00 p.m.

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, hear about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older. Call 510-792-0222 ext. 43 for reservations.

Sunday, September 17

SUN Day
Environmental Education Center, Alviso
1:00 p.m. – 3:00 p.m.

Sure, the sun is a big, bright, bodacious star in the sky but it's a lot more than that! It's the center of our Solar System. Without it, our planet would be just a hard, cold rock. You could call it the "sol of the refuge." Come celebrate that big ball of gas in the sky with NASA presenter Joe Jordan. We will explore some sizzling sun facts, learn how the sun is connected to brushing your teeth, look at sunspots through a high powered telescope, and make solar ovens to take home. All ages welcome. Reservations required. Call Tina at 408-262-5513 ext. 104.

Salt Pond Tour
Meet at Bayfront Park, Menlo Park
2:00 p.m. – 4:00 p.m.

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

Saturday, September 23

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

Join Ed Kantack for a slow and easy 5.5-mile bike ride around the salt ponds and New Chicago Marsh with several planned stops to view birds and Drawbridge. Learn some history about the ghost town, the town of Alviso, and the salt ponds. Helmets are a must. Bikes with knobby tires highly recommended along with water and sunscreen. Geared for ages 10 and up. RESERVATIONS REQUIRED. Call Laurie McEwen at 408-262-5513 ext. 102.

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

Discover the diverse fall 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.

Twilight Marsh Walk
Visitor Center, Fremont
6:00 p.m. – 7:30 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. Meet at the observation deck. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Mary and Gene Bobik.

Saturday, September 30

Shark Day!
Environmental Education Center, Alviso
1:00 p.m. – 4:00 p.m.

They're baaack! Just when you thought it was safe to visit the refuge… Live, wild, San Francisco Bay leopard sharks will be visiting us once again. This year we'll have small group encounters with live sharks and Marine Science Institute educators. RESERVATIONS ESSENTIAL. Call Laurie at 408-262-5513 ext.102 for reservations.

Autumn Activity Schedule

October

Sunday, October 1

Mysteries of Wastewater Treatment
Environmental Education Center, Alviso
1:00 p.m.—3:00 p.m.

Are you curious about where wastewater goes after we flush, rinse, wash, and shower? Come enjoy a presentation on how the San Jose/Santa Clara Water Pollution Control Plant cleans wastewater. After the presentation we will clean our very own mock sewer sample, and then embark on a short hike to view how refuge habitats are involved with wastewater. Appropriate for ages 7 and up. Reservations required. Call Tina at 408-262-5513 ext.104.

Saturday, October 7

Connections to Pier Fishing
Dumbarton Fishing Pier, Fremont
8:00 a.m. – 12:00 p.m.

Have you ever wanted to try fishing but didn't know how to begin? Learn the fundamental basics of catch and release fishing at the Dumbarton fishing pier! Discover the types of wildlife living in the San Francisco Bay, learn the safety and ethics of fishing, and then try your luck out on the pier with our fishing poles. All participants receive free box with tackle. Space is limited to the first 50 people! You must arrive at 8 a.m. to participate. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 to reserve yourself a spot.

Native Plant Gardening Seminar
Environmental Education Center, Alviso
10:00 a.m. – 12:00 p.m.

Get yourself in gear for upcoming fall native plant sales. Join our native plant specialist, June Smith, to find out which natives are best suited for your yard. Then take a guided walk through our demonstration gardens. Program intended for adults. RESERVATIONS REQUIRED. Call Laurie McEwen at 408-262-5513 ext. 102.

Sunday, October 8

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

Are you feeling the itch to go exploring? Come take a walk and discover the exciting world of wetland habitats! We will explore the salt marsh, sloughs, salt ponds under restoration and more on this short and easy trek. We will identify plants, birds, and other animals we see and learn how people have impacted their habitat. All ages welcome. Reservations required. Call Tina at 408-262-5513 ext 104.

Saturday, October 14

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

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

National Wildlife Refuge Week is October 7-14!

Salt Pond Tour
Meet at Bayfront Park, Menlo Park
10:00 a.m. – 12:00 p.m.

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

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. Ray spent most of 2004 researching 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.

SF Bay National Wildlife Refuge Complex Open House
Newark Slough Learning Center, Fremont
(Down the hill from the Visitor Center)
1:00 p.m. – 6:00 p.m.

Discover what your National Wildlife Refuges in the San Francisco Bay Area are up to. The San Francisco Bay National Wildlife Refuge Complex Headquarters will offer insight into wildlife and management through exhibits and speakers. Browse through our native plants and purchase one for your home. Learn how to draw ducks with award-winning artist Rich Radigonda, take a nature hike, and examine the creatures that make up our food web! For a complete schedule and times, log on to our web site at **http://www.fws.gov/sfbayrefuges** beginning in September.

Native Plant Sale
Newark Slough Learning Center, Fremont
(Down the hill from the Visitor Center)
1:00 p.m. – 5:00 p.m.

This is your chance to purchase that perfect native plant to add to your garden! Whether you're looking to re-landscape your yard with drought-resistant plants, or you want to create habitat for neighborhood birds and butterflies, this is the place to be. Follow the signs to the sale.

Duck Drawing Workshop with Rich Radigonda
Newark Slough Learning Center, Fremont
(Down the hill from the Visitor Center)
1:45 p.m. – 2:45 p.m.

Learn the basics of drawing ducks with renowned wildlife artist Rich Radigonda. Paper and pencils will be provided. Suitable for all ages.

Habitat Comparison Walk
Newark Slough Learning Center, Fremont
(Down the hill from the Visitor Center)
2:30 p.m. – 3:30 p.m.

Five different habitats exist within the Don Edwards San Francisco Bay National Wildlife. We'll explore them all on this easy hike and seek out the plants and animals in them. Led by Ed Kantack.

Oct. 14 continued next page

Autumn Activity Schedule

Saturday, October 14

A Taste of the Refuge

Newark Slough Learning Center, Fremont (Down the hill from the Visitor Center)
3:00 p.m. – 4:00 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.

Twilight Marsh Walk

Visitor Center, Fremont
5:30 p.m. – 7:00 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands (1 1/3 mile) Trail. At the setting of the sun we will observe the beginning of nature's night shift. Come discover the sights, sounds, and smells of the refuge as night descends. Meet at the observation deck. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Mary and Gene Bobik.

Saturday, October 21

Botanical Wanderings

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

Discover the diverse fall 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.

Bats In Our Watershed

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

Meet a few of those nocturnal flying mammals up close and personal. Find out what you can do to protect bats living in your watershed. Bat Conservation Fund's, Maggie Hooper, will demystify some of the mysteries surrounding bats and their lives. Plus, several live bats will be at the program. Find out which bats can be found in the Bay Area. All ages welcome. Call Laurie at 408-262-5513 ext 102 for reservations. Space is limited.

South Bay Salt Pond Restoration Presentation

Visitor Center Auditorium, Fremont
3:00 p.m. – 4:00 p.m.

The South Bay Restoration Project will transform South San Francisco Bay in the next few decades. How will this affect habitat, wildlife, and wildlife-oriented recreation? In this slide presentation, hear about the project, the role of the Don Edwards San Francisco Bay National Wildlife Refuge, and how you can become involved with the largest tidal wetland restoration project on the West Coast. Geared for ages 12 and older. Call 510-792-0222 ext. 43 for reservations.

Sunday, October 22

Salt Pond Tour

Meet at Bayfront Park, Menlo Park
2:00 p.m. – 4:00 p.m.

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

Adult Beginning Birdwatching

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

Can you tell an avocet from a black-necked stilt? If not, join birding enthusiast, Ceal Craig, for a beginning birdwatching program and get to know the most common refuge visitors. Start with a slide show to learn how to recognize the regulars, then borrow a pair of binoculars and try your new skills on the trail with Ceal. Program intended for adults. RESERVATIONS REQUIRED. Call Laurie McEwen at 408-262-5513 ext. 102.

Saturday, October 28

Spooky Slough

Environmental Education Center, Alviso
7:00 p.m. – 9:30 p.m.

Costumed kids are invited to take this slightly scary journey through the marsh and over the slough meeting creatures along the way. The creatures may tell you a story or challenge you with a riddle. Knowing what you can do to protect wildlife will help you on your journey. Bring a bag for trick-or-treating. Bone chilling weather is predicted, so dress warmly, and bring a flashlight just in case… Fun for all ages. RESERVATIONS REQUIRED. Call Laurie McEwen at 408-262-5513 ext. 102.

November

Saturday, November 4

Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal birdwatching 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.

Community Service Day

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

Do you need to fulfill community service requirements? Come help remove invasive non-native plants from our chemical-free demonstration gardens. Bring your own gloves or borrow a pair of ours. Tools provided. Dress in layers, long pants and long sleeved shirts over T-shirts recommended. Be prepared to get dirty and wet. Recommended for age 9 and up. Reservations required. Call Laurie McEwen at 408-262-5513 ext. 102.

Marsh Walk

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

Take a break from your busy week and join a refuge volunteer for a relaxing stroll through New Chicago Marsh. Suitable for all ages. Dress warmly as it can get quite breezy. Trail is mostly level – wheelchair and stroller accessible. Distance covered is less than 1 mile. RESERVATIONS REQUIRED. Call Laurie at 408-262-5513 ext. 102.

Sunday, November 5

Introduction to Ducks

Visitor Center, Fremont
10:00 a.m. – 11:30 a.m.

Thousands of ducks winter in the San Francisco Bay every year. View a short slide show on duck identification. Then we'll head out on the trail to try your new skills. A limited number of binoculars are available to borrow. Led by Carmen Minch.

Autumn Activity Schedule

Sunday, November 5

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, gooey 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. Recommended for ages 5 and up. Reservations required. Call Tina at 408-262-5513 ext. 104.

Saturday, November 11

Exploring the Dunes

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

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

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

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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 (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. Meet at the observation deck. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Mary and Gene Bobik.

Sunday, November 12

Slough Whoo?

Environmental Education Center, Alviso
2:00 p.m. – 3:30 p.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 watch a slide show on owls, hike the habitats and search for owl clues, and get a chance to dissect owl pellets to discover exactly who that owl ate! Reservations required. Call Tina at 408-262-5513 ext. 104.

Saturday, November 18

Discovery Hike

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

Join naturalist Ed Kantack for an enlightening hike around the Education Center. Find out what critters are enjoying the refuge during this time of year. Look for seasonal changes in our wetland habitats. Geared for ages 7 and up. Reservations required. Call Laurie at 408-262-5513 ext 102 .

Botanical Wanderings

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

Discover the diverse fall 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.

South Bay Salt Pond Restoration Presentation

Visitor Center Auditorium, Fremont
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Sunday, November 19

Salt Pond Tour

Meet at Bayfront Park, Menlo Park
2:00 p.m. – 4:00 p.m.

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

Friday, November 24

Sunset Stroll

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

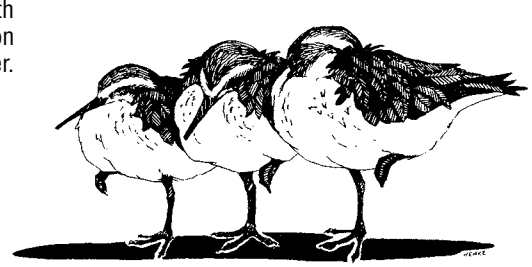
Had enough turkey? Need some fresh air? Join us for an easy walk around the Education Center. Discover what critters come out as the sun goes down. Enjoy sunset over the marsh, then head home recharged for the holiday season. Suitable for all ages. RESERVATIONS REQUIRED, please call Laurie at 408-262-5513 ext.102 to make a reservation.

Sunday, November 26

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.



Field Trips to the Refuge

General Field Trip Program Information

FREE field trip programs are offered at two sites at the Don Edwards San Francisco Bay National Wildlife Refuge. Wetland Round-Up and Trekking the Refuge field trip programs are offered at the Visitor Center in Fremont, and Wetland Round-Up and Slow the Flow 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 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 going to the Fremont site must attend every two years.

Field Trips at the Visitor Center in Fremont

Wetland Roundup - Investigate creatures of the mud flats, plankton and other creatures in the slough, and the pickleweed in the salt marsh. This field trip is designed for grades K-6, for up to 65 students. Wetland Roundup is offered Tuesday-Friday from October to December, 2006.

Trekking the Refuge - 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 Tuesday through Friday from October to December, 2006.

*****Reservations for Fall 2006 field trips will begin on THURSDAY, September 7th from 4:00 p.m. - 5:00 p.m. Call 510-792-0222 ext 0 on this date to reserve a fall field trip. ** For more information or to schedule a field trip after the initial call- in date, call the Environmental Education Intern at 510-792-0222 ext 42.***

Field Trip Orientation Dates at the Visitor Center in Fremont

Call the Environmental Education Intern at 510-792-0222 ext. 42 to attend an orientation.

Wetland Round-Up Field Trip Orientations
Visitor Center in Fremont
4:00 p.m. - 7:30 p.m.

Wednesday, October 4, 2006
Tuesday, October 24, 2006

Trekking the Refuge Field Trip Orientations
Visitor Center in Fremont
4:00 p.m. - 7:00 p.m.

Thursday, October 5, 2006

For more information about field trips at the Don Edwards San Francisco Bay National Wildlife Refuge in Fremont, call the Environmental Education Intern at 510-792-0222 ext. 42.

Field Trips at the Environmental Education Center in Alviso

Wetland Round-Up Field Trips

Investigate the butterflies in the butterfly garden, taste pickleweed in the salt marsh, or discover the creatures that live in the slough water on a Wetland Round-Up Field Trip. This field trip program is designed for up to 65 students in grades K-6. Wetland Round-Up is offered Monday - thursday from October to December, 2006.

*****Reservations for Fall 2006 field trips will begin on THURSDAY, September 7th from 4:00 p.m. - 5:00 p.m. Call 408-262-5513 on this date to reserve a fall field trip.** For more information or to schedule a field trip after the initial call-in date, call the Environmental Education Intern at 408-262-5513 ext 103.***

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

NEW A Wetland Round-Up Field Trip Orientation Refresher is now available at the Environmental Education Center in Alviso. This is for teachers who have attended two or more regular orientations. Teachers who have not attended two or more orientations and all adult volunteers must attend the regular orientations.

Call Genie Moore at 408-262-5513 to attend an orientation.

Wetland Round-Up Field Trip Orientation
4:00 p.m. - 7:30 p.m.

Tuesday, October 3, 2006
Thursday, October 19, 2006
Wednesday, November 1, 2006

Wetland Round-Up Field Trip Orientation Refresher
4:00 p.m. - 6:00 p.m.

Monday, October 2, 2006

The Slow the Flow Program

Slow the Flow provides an experiential learning environment for students and educators to explore the topics of water use, waste-

Field Trips to the Refuge

water treatment, and habitat preservation. Activities and presentations focus on the relationship between personal habits and their effects on local habitats. Slow the Flow is an environmental education program offered at no cost through the cooperating efforts of the City of San Jose, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society. The program offers field trips at the refuge, classroom presentations, and outreach presentations

Programs are geared for 5th - 12th grades. 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 Programs are available throughout the year in Alviso. Reservations for the ***Slow the Flow*** program are on a first come basis. Call Tina Simmons at 408-262-5513 ext. 104 for more information, or to schedule a field trip or presentation.

General Education Program Information for San Pablo Bay National Wildlife Refuge in Petaluma

San Pablo Bay National Wildlife Refuge offers FREE in-class programs in Petaluma. These programs actively involve students in investigating the bay habitats and wildlife of the refuge. The hands-on, small-group activities teach basic ecological concepts and introduce endangered species and migratory birds to the students. Programs have been correlated to the appropriate State of California Education Standards.

Mud Creatures and the Watershed – 3rd grade

This 55-minute program features hands-on observation of mudflat creatures and connects students to the health of mudflats through a "Who Dirty the Water" activity. The program ends with a watershed model presentation.

Food Webs and Food Chains – 4th grade

This 55-minute program features the interconnection of food chains and food webs through student collaboration that includes how toxic substances can harm bay habitat wildlife. The program ends with a watershed model presentation.

For more information about the in-class programs of the San Pablo Bay National Wildlife Refuge, leave your name and phone number for the Environmental Education Intern Erika, at 707-769-4200 in Petaluma or Fran McTamaney at 408-262-5513 ext. 101 in Alviso.

TIDELINE

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

Volume 26, Number 3

Editor: .....Carmen Minch

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

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.

Project Leader:..... Mendel Stewart
Deputy Project Leader:..... John Bradley
Don Edwards San Francisco Bay
Refuge Manager:.....Clyde Morris
Don Edwards Warm Springs
Unit Manager: ..... Ivette Loredo
Don Edwards Refuge
Operations Specialist: .....Eric Mruz
Farallon Refuge Manager: .....Joelle Buffa
Farallon Refuge Operations Specialist:... Jesse Irwin
San Pablo Bay, Marin Islands,
Antioch Dunes Manager:.....Christy Smith
North Bay Refuges
Wildlife Specialist:..... Louis Terrazas
Salinas River and
Ellicott Slough Manager:..... Diane Kodama
Refuge Planner: .....Winnie Chan
Chief of Visitor Services:..... Karla Tanner
Outdoor Recreation Planner:.....Carmen Minch
Environmental Education Specialists: .....
Fran McTamaney, Genie Moore
Volunteer Coordinator:.....Tia Glagolev
Law Enforcement Officers:.....Sean Reier
Biologists: .....Joelle Buffa, Joy Albertson,
Giselle Downard, Rachel Hurt, Gerry McChesney,
Danielle LeFer, Susan Euing
Administrative Staff:.....Lucinda Ballard,
Ellen Tong, Tess Dumaop
Maintenance Staff: .....Larry Wade, Juan Flores,
Michael Springman, James Griffin, Robert Stump

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 is On-Line

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

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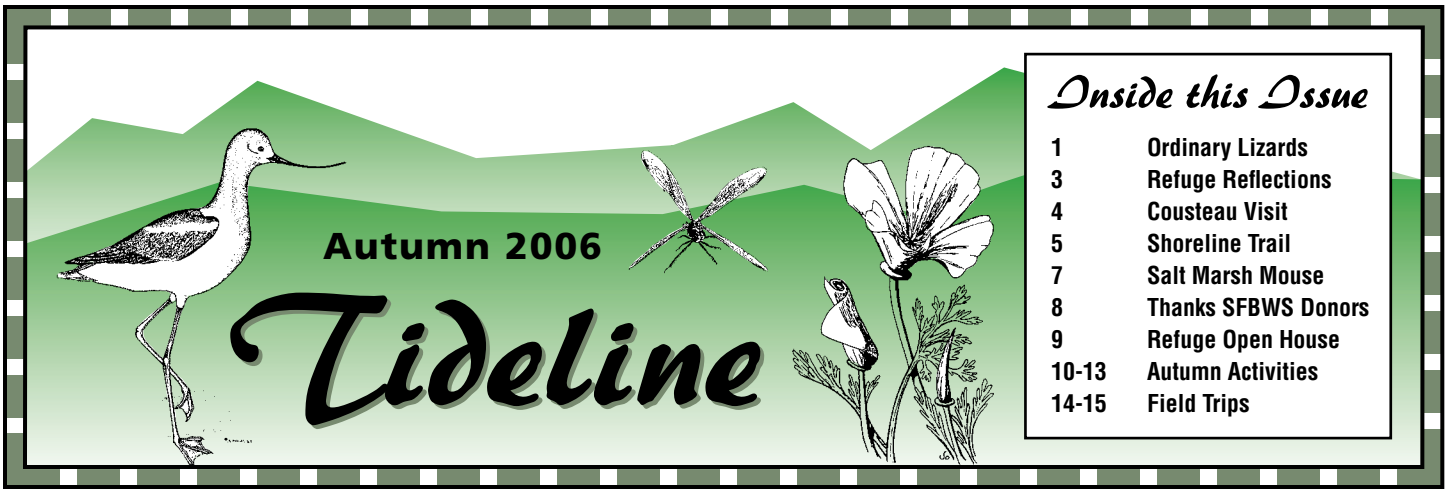

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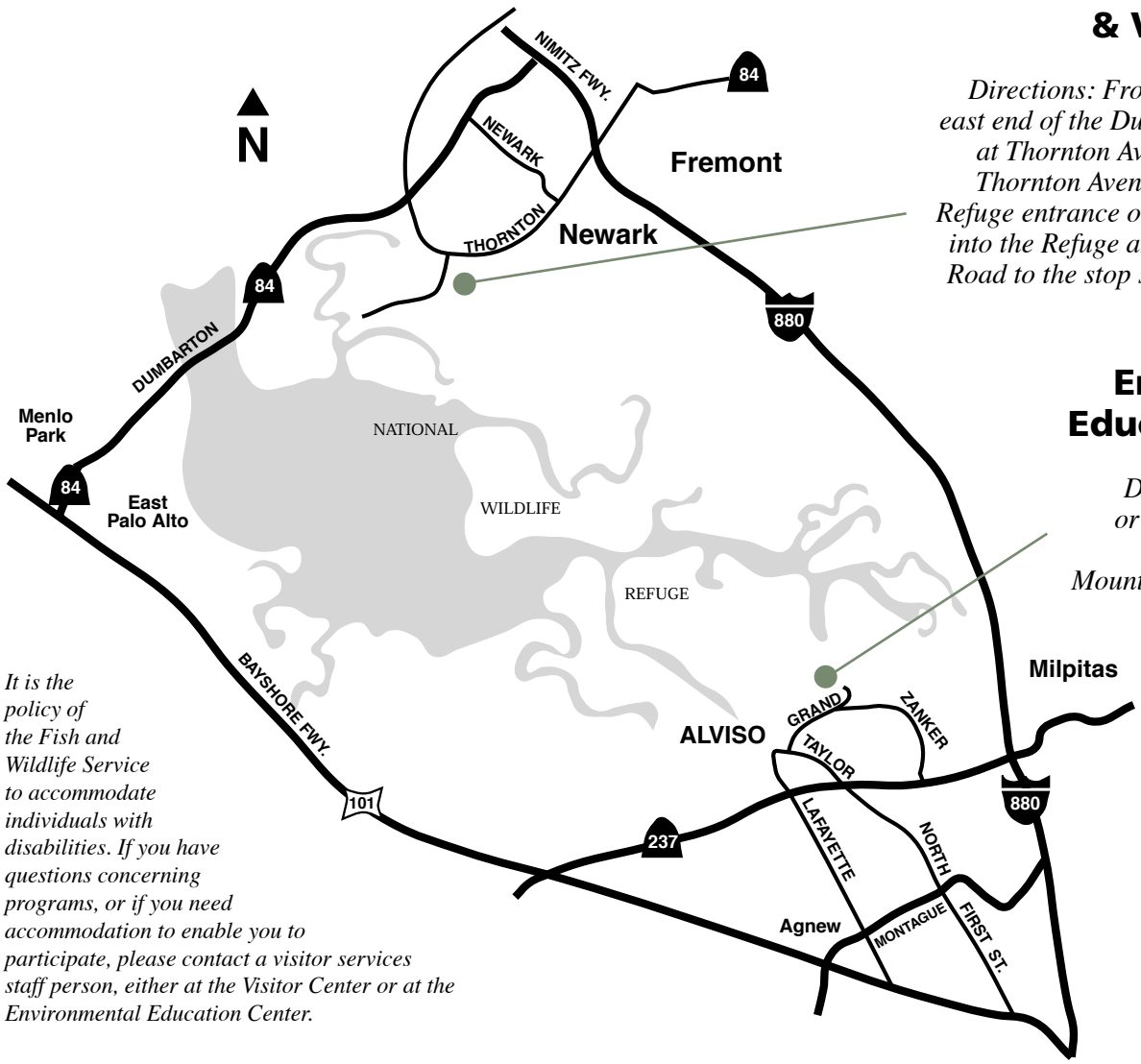
10-13	Autumn Activities
14-15	Field Trips



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.

Environmental Education Center

(408) 262-5513

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

It is the policy of the 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.