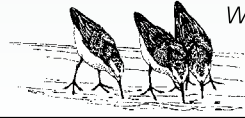


Autumn 2005

Tideline

San Francisco Bay National
Wildlife Refuge Complex



Phalaropes of San Francisco Bay

By Hilary Papendick And Sarah Warnock

Think of a shorebird, and what comes to mind? A long-legged sandpiper, probing the soft substrate of a protected lagoon, or perhaps a snowy plover hunkered down in a dune? Less commonly thought of as a shorebird is a tight little ship of a bird, bobbing in open seas, leagues from the nearest shore... Phalaropes, the only free-swimming shorebird, are one of the oddest - and fascinating - members of the diverse shorebird order Charadriiformes, a group that also includes oystercatchers, stilts and avocets, sandpipers and plovers.

Often considered their own family, the three species of phalaropes are tucked taxonomically in at the end of the shorebird section of field guides. Red phalaropes, plump little tomato-colored birds with white cheeks and yellow bills, are the most pelagic (ocean-going) of the three, and the rarest in San Francisco Bay. Their visits are accidental, and often tied to storm events. In the case of red phalaropes, the Don Edwards San Francisco Bay National Wildlife Refuge means exactly that - a refuge from tempestuous seas.

More common in the San Francisco Bay are Wilson's phalaropes and the more abundant red-necked phalaropes, which appear regularly each spring and fall as they make their way across hemispheres between breeding and wintering areas. Their natural migration stopover sites, - hyper-saline lakes and ponds packed with brine shrimp and brine flies - have been dwindling over the past century. Food resources and calm waters in San Francisco Bay's salt ponds have become an important alternative.

Identification and Breeding

Both red-necked and Wilson's phalaropes are small (7.5" - 9.5"), triangular birds with

slender necks, small heads, dark, needle-sharp bills, and lobed toes that are similar to grebes and coots. Due to the rather unorthodox mating strategy of phalaropes, females in breeding plumage are more brightly colored than males.



Phalaropes are only territorial during breeding season, and females will fight ferociously for males during courtship. The females' brighter colors are as much for attracting males as for intimidating other females.

As a group, shorebirds exhibit almost every mating strategy known to ornithologist - including monogamy, in which both male and female share responsibilities of caring for young, and polygamy, in which one male will mate with several females and has no hand in rearing the young. Phalaropes are one of the few bird species that exhibit polyandry - an unusual strategy for birds since it involves the laying of more than one clutch by a female within a short time span, each with a different male. Because each clutch can weigh nearly as much as the female, this is no mean feat. The females then leave incubation and chick-rearing to the males.

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Red-necked phalarope
Photo USFWS

Continued page 2

Phalaropes of San Francisco Bay continued

Feeding Behaviors

Each shorebird group forages for invertebrates in its own characteristic manner. Sandpiper bills are equipped with chemosensory nerves at the tip to help them locate invertebrates hidden in the mud. The large eye of plovers helps them to spot fast-moving prey which they pluck neatly from the surface of mud or sand.

Phalaropes, on the other hand, call for take-out. By spinning like a top on the surface of water, their food is delivered directly to them. As phalaropes spin, the water directly underneath is displaced to the outside, and replaced by deeper waters. Along with the deeper waters come invertebrates from lower down in the water column.

Now within reach of the phalarope's

needle-sharp bills and quick reflexes, the invertebrates are captured and swallowed using a newly discovered feeding mechanism that was first described in phalaropes. Called surface tension transport, this behavior occurs so quickly it was only discovered through the use of high-speed video. After plucking the

invertebrate from the water, phalarope bills do not clamp down, and there is no conveyor belt to carry the prey item to the throat. So, how does the prey get up the 1 1/2" bill?

Video stills show the prey is captured along with a drop of water. The water molecules on the surface of the drop adhere to the lower and upper mandibles of the bird's bill. Instead of closing the bill phalaropes actually open it wider, increasing surface area of the drop. As the bill widens, the base of the bill becomes narrower and the water molecules, seeking a surface to cling to, are drawn up the mandible. The invertebrate, still packaged inside the droplet, goes along for the ride. Total elapsed time: 2/100th of a second.

Range and Migration

The red-necked phalarope nests throughout Alaska and Canada's northern territories. Wilson's phalaropes breed in the western interior of the U.S. and Canada, from north-east California to the Dakotas to northern Saskatchewan. Both species construct grass-lined nests, nestled among low vegetation near the edge of small ponds or lakes. Once the chicks

reach a few weeks of age and can fend for themselves, they leave the breeding grounds. Females depart before the males. The juveniles undergo their first migration on instinct alone. Alaskan red-necked phalaropes migrate along the west coast of the U.S. and Canada. Millions have been recorded in the Prince William Sound area in spring on their way to their northern breeding grounds. Most Alaskan red-necked phalaropes spend the winter in the Pacific waters of South America. Less ocean-oriented than the red-necked, Wilson's phalaropes migrate through the Great Basin to the highland plains of Bolivia and Argentina. A phalarope's one-way migration may cover a distance of as much as 8000 miles. Considering they may live as long as 15 years, a phalarope could log a quarter of a million migratory miles, or the distance between Earth and the moon. Pretty good for a bird that weighs only a few ounces! The eastern range of the red-necked's fall migration route overlaps with the western range of the Wilson's in San Francisco Bay. Phalaropes of both species begin to arrive in early July, and numbers peak in late July and August. By the end of October, almost all phalaropes will have departed for the wintering grounds.



Red phalarope

Photo Eric Taylor, USFWS

Threats to phalarope populations

Trends in phalarope populations are difficult to determine but are likely declining, as are most shorebird species, due to habitat loss and degradation throughout their breeding, migration and wintering areas. The propensity of shorebirds such as the phalaropes to gather in huge concentrations in a single migration area like Prince William Sound leaves them especially vulnerable to human-caused disasters, such as oil spills. For many years, up to 20,000 red-necked phalaropes also stopped to feed and rest in the western Bay of Fundy in New Brunswick. In the mid-1980s, bird numbers decreased, and by the 1990s, not a single phalarope appeared at the site. The disappearance of a group of phalaropes is alarming. More information is needed to determine whether the phalaropes simply shifted to a new feeding site or whether a catastrophe has occurred to the population.

In California, the loss of Owen's Lake, the near-loss of Mono Lake, and the possible loss of

Considering they may live as long as 15 years, a phalarope could log a quarter of a million migratory miles, or the distance between Earth and the moon.

Phalaropes of San Francisco Bay continued

the Salton Sea due to water diversions means a potentially huge loss of the phalaropes' favored migration stopover areas. These invertebrate-packed hyper-saline lakes play a crucial role in the migration of grebes and other shorebirds. Political and scientific collaborations are underway to preserve enough of these unusual yet critical habitats for both the birds and for the health of local human populations.

People are mobilizing to reduce another threat to millions of night-migrating birds, including phalaropes. Fatally attracted to tall, brightly-lit buildings, especially in wet weather, phalaropes are in danger of collision with windows that reflect the night sky, and of becoming confused by the lights of buildings. Unable to escape the brightness, they grow exhausted and fall to the ground, prey for urban scavengers. Birders and building managers in large cities across the nation are working together to reduce building lights during peak migration, saving thousands of birds' lives.

Role of the South Bay Salt Ponds

Of five bay-wide surveys conducted by PRBO Conservation Science in the late 1980's, 60-70% of all shorebirds in the San Francisco Bay were located in the southern regions of the Bay, including nearly all phalaropes. Greater availability of high-tide foraging habitat in the salt pond system was cited as one probable reason for shorebird affinity to the South Bay. Why are the ponds so influential to bird diversity and abundance? The answer lies in the mix of low and high salinity ponds that are maintained dur-

ing active commercial salt production. Because salinity levels determine which invertebrates and fish can survive, and pond depth determines the availability of the prey to different bird predators, a diversity of ponds leads to a diversity of birds.

Low salinity ponds support a variety of invertebrates as well as fish, which in turn support sandpipers, terns, pelicans, and waterfowl. At higher salinities, fish and most invertebrates can no longer survive, but brine shrimp, brine fly and water boatmen populations explode. These large invertebrate blooms are visible even from the air. Taking advantage of the feast are the phalaropes, black-necked stilts, eared grebes by the hundreds of thousands, and flocks of delicate Bonaparte gulls.

The recent acquisition of more than 15,000 acres of South Bay salt ponds provides an unprecedented opportunity to restore marshlands and improve the Bay ecosystem. Because of their affinity to salt ponds, and because hyper-saline habitats are disappearing throughout their range, phalaropes stand to lose by the conversion of ponds to other habitats. For this reason, scientists from state, federal, private and non-profit agencies and organizations are working with managers to engineer a comprehensive plan to develop a mix of managed habitats to maximize diversity of birds and other animals. This mix would include vegetated marsh with large, permanent ponded areas managed for high-salinity to attract the invertebrates so necessary to the phalaropes, grebes and other species to ensure these important habitat resources will remain.

Hilary Papendick has a B.A. from Scripps College and attended the School for International Training in Ecuador, and the University of Otago in New Zealand. She has taught environmental education in Alaska, Montana, and Ecuador, where she received a grant to improve education programs in a small coastal town. Hilary was recently an education intern at PRBO and is now working at the Montana Outdoor Science School in Bozeman.

Sarah Warnock, Director of Education and Outreach at PRBO Conservation Science, has a B.A. in biology from U.C. Berkeley, an M.S. in ecology from California State University, Hayward, and has spent 15 years following shorebirds from Alaska to Mexico. She also holds a teaching credential from Mills College in K-12 general science.

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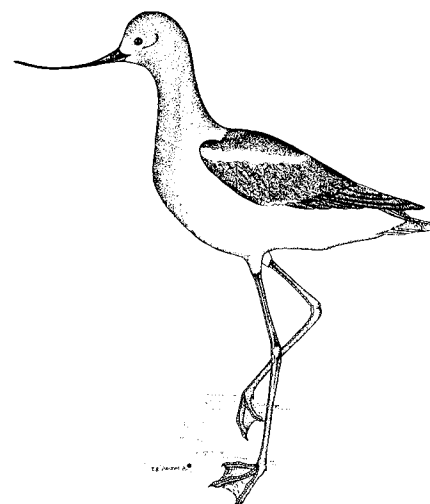
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Mail your donation to: **San Francisco Bay Wildlife Society, P.O. Box 234, Newark, CA 94560.** You may also fax your membership donation using a Visa or MasterCard number to 510-792-5828.

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
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Check Visa or MasterCard # _____ Exp. Date _____

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We Need Your Help!

Board Members and Advisory Committee Members Needed

The San Francisco Bay Wildlife Society is looking for individuals who support the goals of the Wildlife Society, to serve on the Board of Directors or assist as members of Advisory Committees. If you can share your experience in fund raising, finance, membership recruitment or event planning, we would be grateful for your participation. The Board is a governing, volunteer board dealing with the policy and financial

oversight of the organization. The Board meets four times a year, with additional committee meetings as needed. Since your time is valuable, we keep meeting time to a minimum.

If you would like to volunteer your service and time as a Board member or a Committee Advisor please send a letter of interest and a brief resume to San Francisco Bay Wildlife Society, PO Box 234, Newark, CA 94560.

Coming Soon to a Refuge near You...

SHARK DAY 2005

Swim by on October 8th

11am - 4pm

**At the Don Edwards San Francisco Bay National Wildlife Refuge
Environmental Education Center in ALVISO
at Grand Blvd and Los Esteros Rd.**

Pet Live Leopard Sharks!
**Hands-on activities, guided walks, games
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Serial Killers Apprehended: Get Second Chance At Warm Springs

By Joelle Buffa, Manager Farallon National Wildlife Refuge

For months, biologists stationed on Farallon National Wildlife Refuge (NWR) knew there was a killer in their midst, but he was difficult to pin down. He'd taken to living in rock crevices during the day, coming and going under the cover of darkness, swiftly killing his victims.

Their break came in early April. While doing rhinoceros auklet nest checks, biologists detected a pile of ashy storm-petrel carcasses outside a rock crevice, and this evidence led quickly to the culprit a burrowing owl holed up in one of the auklet nesting crevices.

My cell phone rang Saturday afternoon, April 2nd. Russ Bradley, the Farallon Seabird Biologist with PRBO Conservation Science – the USFWS's cooperator in monitoring and caretaking the refuge's wildlife – spoke excitedly on the other end. "We've got the burrowing owl cornered in an auklet burrow and we're going to try and lure him out into a trap tonight. This

one's probably eaten at least two or three dozen petrels, but he's not going to kill another petrel under my watch!"

The call set in motion many actions to prepare for the owl's planned boat evacuation to the mainland. I called the California Department of Fish and Game manager in Yountville, letting him know that we were preparing to translocate a burrowing owl, a State Species of Special Concern, to the Don Edwards San Francisco Bay NWR (DESF). I could sense his eyes rolling. Over the past several years we had tried un-

successfully to capture a number of petrel-munching owls on the Farallon Islands, and he probably chalked this up as another false alarm. Next, I called the DESFB Warm Springs Unit Manager, who called Pacific Commons' biologists (who monitor private vernal pools adjacent to Warm Springs in Fremont), to find a vacant artificial burrow that would be the owl's future home. A contractor scheduled to drop workers off at the Farallons on Monday agreed to give the owl a ride back to the mainland. A refuge biological technician was assigned to meet the boat in Half Moon Bay.

Everything was ready by Sunday, except for the owl. He'd refused to come out of the burrow on Saturday night despite offerings of mice, fresh chicken, and burrowing owl love songs belting from the boom box. Finally on Sunday night, the owl was lured out of the crevice and into the trap (a home-made invention of PVC pipe, duct tape, and a box) with taped calls ... the song of ashy storm-petrels!

Why go through such great lengths to catch a burrowing owl on a refuge where letting nature take its course is the usual management strategy? While burrowing owls are native to California, their situation on the Farallons is human induced. The species does not breed on the Southeast Farallon Island (SEFI) but every fall some owls, probably dispersing juveniles, find their way to SEFI (like many other species of landbirds). Most landbirds move on after several days. However a few burrowing owls stay to over-winter, attracted by the abundant food supply of house mice – a non-native species that was introduced by earlier human occupants before it became a refuge. Like many rodents, house mice are cyclic, peaking in the fall just when the burrowing owls arrive. Winter rains flood mouse burrows and the mouse population crashes. Starving owls turn to eating ashy storm-petrels, a small seabird whose main stronghold is the Farallon and Channel Islands.

The situation is neither good for petrels or owls. Between 1972 and 1992, the Farallon ashy storm-petrel population declined over 40%, mainly due to predation by gulls and burrowing owls. Petrels produce one chick per year at most and some years not any. It's hard for a species

Continued next page



Farallon Refuge Manager Joelle Buffa releases burrowing owl at the Don Edwards SF Bay NWR in Fremont

Don Edwards San Francisco Bay National Wildlife Refuge

Presents

Coastal Clean-Up Day

Saturday, September 17, 2004

8:30 a.m. - 12:00 p.m.

Join thousands of people around the world for
International Coastal Clean-Up Day.
Help wildlife and the environment in your own backyard.

We'll supply latex gloves and trash & recycling bags.
You supply energy, sturdy shoes, sun protection,
and clothes you don't mind getting dirty.
All groups are welcome. No reservations needed! For more information,
contact Carmen Minch at 510-792-0222

Burrowing owls *continued from page 6*

to rebound from this level of predation without some help. Most of the burrowing owls that over-winter on the Farallon Islands are found dead in the spring by biologists – either emaciated or pecked in the head by gulls defending their breeding territories in March.

This explains why I felt we were contributing to conserving both burrowing owls and ash storm-petrels when we released “Burrowing Owl #1 on April 4th into Artificial Burrow W-19 on the Pacific Commons mitigation parcel, and on April 22nd when “Burrowing Owl #2” (also captured on SEFI) was released nearby into Artificial Burrow W-3. White mice bought from pet stores were brought daily to the artificial burrow release sites of each owl for about a week after their translocation to entice them to stay in the area.

The translocated owls were also monitored by refuge staff and interns. Owl #1 disappeared from the artificial burrow site after we stopped bringing mice. Owl #2 continues to hang out

around her release burrow, and may have found a mate since two owls are often seen by the burrow entrance. The owls are banded, but bands are difficult to see, and since the Warm Springs area has a large number of owls, Owl #1 could easily have blended into the population.

One thing that we do know for certain is that neither owl has returned to the Farallon NWR - unlike the human penal system, where released offenders often return to their crimes.

Right: Burrowing owl captured on Southeast Farallon Island



The Beginning of a New Era: Leader Mendel Stewart Arrives

By Ashley McElmurray

This summer not only brought recently hatched birds to the refuge, it also brought the arrival of Mendel Stewart, the new Project Leader for the San Francisco Bay National Wildlife Refuge Complex. As Project Leader, Mendel is in charge of all seven National Wildlife Refuges in the greater San Francisco Bay Area, and all research projects involving refuge personnel. Being responsible for all programs and issues surrounding these refuges will be a challenge,



*New project leader
Mendel Stewart*

but it's the challenge that draws Mendel here. Having the opportunity to "work on the largest habitat restoration project (the South Bay Salt Pond Restoration Project) in the west, and one of the largest in the world" is what prompted Mendel to leave sunny San Diego for Northern California.

Mendel is a native of western Kentucky and was raised in Hopkinsville. He attended Western Kentucky University where he earned a Bachelor of Science in Biology. With an interest in natural resources, and with the ambitious and noble goal of "wanting to save the world", Mendel volunteered with the U.S. Fish & Wildlife Service Regional Office in Atlanta writing environmental documents for land acquisitions. It was his first experience "saving land and protecting resources." The Regional Office, impressed with his work, hired him as a biological technician on land planning acquisition. It was the start of a 20-year career with the Fish & Wildlife Service. In addition to being a biological technician, he was refuge manager

of Merritt Island and Hobe Sound National Wildlife Refuges - both in Florida, and later, a Wildlife Management Biologist in the Division of Migratory Birds in Memphis, Tennessee.

In his desire to learn more about how our government functions, Mendel returned to school and earned a Masters Degree in Public Administration at the University of Memphis. He moved to Washington, D.C. for five years and worked for the Fish & Wildlife Service Ecological Services program and the National Wildlife Refuge System. He was named Project Leader of the San Diego National Wildlife Refuge Complex in 2000.

To gain a better understanding on how the U.S. Government operates, he accepted a six-month detail assignment with the Fish & Wildlife Service's Office of Congressional and Legislative Affairs in Washington, D.C. While in D.C., Mendel became familiar with different government agencies and private organizations. He realized that the agency that was most compatible with his goals and aspirations was the one he was already employed by.

Mendel's goal for this refuge complex is to continue protecting the Bay Area's natural resources and to continue the extensive efforts of the salt pond restoration project. He also wishes to further land acquisition for the establishment of new national wildlife refuges. He values environmental education programs, wanting to "support and continue its efforts, because without understanding, people won't care."

When not at the refuge, Mendel enjoys spending time with his two daughters Kylie and Tori and his wife Kristin. His hobbies include golf, flying, hunting, and exercise. He looks forward to getting out and running the trails of the refuge.

Mendel has already proved himself to be a friendly and caring supervisor. He never passes anyone in the office without a greeting. He has shown himself to care just as much about those who work here as he does about the refuge and its pleasant critters.



National Wildlife Refuge Week October 7-15, 2005

Join us as we celebrate the largest and most complex network of lands devoted to protect wildlife! The San Francisco Bay National Wildlife Refuge Complex has something for everyone to enjoy.

Join in on one, or all of these activities!

Campfire Sing-Along with Mary Miche

Friday, October 7 in Fremont
7:30 p.m.-8:30 p.m.



Salt Pond Tour

Sunday, October 9 in Menlo Park
10:00 a.m. - 12:00 p.m.

Connections to Pier Fishing

Saturday, October 15 at the
Fishing Pier in Fremont
8:00 a.m. - 12:00 p.m.



National Wildlife Refuge System Slide Show

Saturday, October 15 in Alviso
2:00 p.m. - 3:00 p.m.

Twilight Marsh Walk

Saturday, October 15 in Fremont
5:30 p.m. - 7:00 p.m.



Shark Day

Saturday, October 8 in Alviso
10:00 a.m. - 4:00 p.m.

Exploring the Dunes

Saturday, October 8
at Antioch Dunes NWR
10:00 a.m. - 11:00 a.m.

Native Plant Nursery Sale

Saturday, October 15 in Fremont
10:00 a.m. - 3:00 p.m.



**For program descriptions see
Activities section, or call Carmen at
510-792-0222.**

Autumn Activity Schedule

September

Saturday, September 10

NEW! Bike the Levees

Environmental Education Center, Alviso
9:30 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. There should be good bird viewing and a glimpse of Drawbridge. Learn a little about the history of Drawbridge, Alviso, and the salt ponds. Helmets are a must. Bikes with knobby tires highly recommended along with water and sunscreen. Geared to age 10 and up. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102 to make a reservation.

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 4

It's Not My Fault!

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

The San Francisco Bay region is a complex maze of faults, mountains, and other geologic formations. In this 1-mile walk, we will explore the formation of the San Francisco Bay and the hill upon which the Visitor Center sits. Geared toward adults. Led by Carmen Minch.

Saturday, September 10

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 begin-

ning 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. Led by Mary and Gene Bobik.

Sunday, September 11

Bird Adaptation Creations!

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

Ever wondered what it would be like to be a bird living at the refuge? Come uncover the mysteries of the bird world. Learn about bird adaptations, explore the skeleton of a bird, and make human-sized bird wings, beaks, and feet to take home. A short refuge walk will be included to check out the feathery beasts. All ages welcome! Reservations required. Call Tina at 408-262-5513 x104.

Sunday, September 18

SUN Day

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

The summer sun is calling and it's inviting all who love summer to come explore that big ball of energy in the sky. An expert from NASA Ames Research Center will enlighten the group on solar power, the renewable energy of the future. A high-powered telescope will be set up for viewing sunspots. Make and use a solar oven to take home. Reservations required. Call Tina at 408-262-5513 x104.

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 try your new skills on the trail. Program intended for adults. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102.

Saturday, September 17

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.

Salt Pond Tour

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

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

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

New! 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.

Change of Season

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

Take a leisurely walk around New Chicago Marsh and the salt ponds with naturalist, Ed Kantack. Learn about the migrants and look for signs of autumn. Recommended for ages 8 and up. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102.

Don Edwards San Francisco Bay National Wildlife Refuge

1 Marshlands Road, Fremont – (510) 792-0222 • 1751 Grand Blvd, Alviso – (408) 262-5513 • <http://desfbay.fws.gov>

Autumn Activity Schedule

Sunday, September 25

Salt Pond Tour

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

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

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



Continued next page

National Wildlife Refuge Week

Friday, October 7

Campfire Sing-Along with Mary Miché

**Newark Slough Learning Center,
Fremont (Down the hill from the Visitor
Center) 7:30 p.m. - 8:30 p.m.**

Join us for a foot-stomping, hand-clapping great time as you sing along by a campfire and in the pavilion. Warm your hands on cups of hot chocolate while listening to earthy tunes. A good time to be had by all!

Saturday, October 8

Shark Day!

**Environmental Education Center, Alviso
11:00 a.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 in honor of National Wildlife Refuge week. Join us for a day filled with festival fun. We'll have guided walks, shark petting, shark lectures, mud creature lab, games and crafts. All activities and crafts are FREE! No reservations necessary. Call Laurie McEwen at 408-262-5513 ext.102 if you have any questions. Check the festival web site for more details, a map and directions: <http://www.fws.gov/pacific/desfbay.fws.gov/sharkday.htm>

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, October 9

Salt Pond Tour

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

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

Saturday, October 15

Connections to Pier Fishing

**Dumbarton Fishing Pier, Fremont
8:00 a.m. - 12:00 p.m.**

Have you ever wondered what the hoopla was all about? Learn the fundamental basics of catch and release fishing at the 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. Partnered with the California Department of Fish and Game. Space is limited to the first 50 people! RESERVATIONS REQUIRED. Call Carmen at 510-792-0222 for more information.

Native Plant Nursery Sale

**Native Plant Nursery in Fremont
10:00 a.m. - 3:00 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 nursery.

National Wildlife Refuge System Slide Show

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

Learn about the National Wildlife System and how it came into being. Also learn about the many refuges around San Francisco Bay. Presented by Ed Kantack. Program intended for adults. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102 to make a reservation.

Twilight Marsh Walk

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

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

Don Edwards San Francisco Bay National Wildlife Refuge

1 Marshlands Road, Fremont - (510) 792-0222 • 1751 Grand Blvd, Alviso - (408) 262-5513 • <http://desfbay.fws.gov>

Autumn Activity Schedule

October

Saturday, October 1

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 native plant specialist June Smith to discover which natives are best suited for your yard. Then take a walk with June through our demonstration gardens. Program intended for adults. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102.

Drawbridge

Environmental Education Center, Alviso
1:30 p.m. – 4:00 p.m.

A ghost town in San Francisco Bay? That's right! Nestled on an island in the salt marshes of south San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful town full of nature lovers, or a rip-roaring town full of two fisted rowdies? Find out at this program, led by Pat Anthony. Start with a slide show then take a short mini-van excursion to view Drawbridge across Coyote Creek. Program intended for adults. Space is very limited. RESERVATIONS ARE ESSENTIAL. Please call Laurie McEwen at 408-262-5513 ext. 102.

Sunday, October 16

Where Does All the Water Go? Environmental Education Center, Alviso 1:00 p.m. - 2:30 p.m.

Where does all the water go after it swirls down the drain? Come see a slide show about how the San Jose/Santa Clara Water Pollution Control Plant cleans our wastewater. Then take a hike to see the refuge habitats and how this cleaned wastewater affects them. Appropriate for ages 10 and up. Reservations required. Call Tina at 408-262-5513 ext 104.

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, and then take a walk with Ceal to try your new skills. Program intended for adults. RESERVA-

TIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102 to make a reservation.

Saturday, October 22

New! 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.

Saturday, October 29

Salt Pond Tour Meet at Bayfront Park, Menlo Park 1:00 p.m. – 3:00 p.m.

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

Bats In Our Watershed Environmental Education Center, Alviso 3:00 p.m. – 4:30 p.m.

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

NEW! Spooky Slough Environmental Education Center, Alviso 7:00 p.m. – 8:30 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 recycled grocery bag to collect treats during your adven-

ture. Bone-chilling weather is predicted, so dress warmly, and bring a flashlight just in case. Fun for all ages. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102.

Sunday, October 30

New! Wicked Weeds – Noxious Plants on the Refuge

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

This Halloween, discover which silent invaders are skulking in the marsh and in the upland habitats, wreaking havoc and destruction to all those that live near them. During this walk, see which plants are the culprits, and hear how these invasive non-native weeds can alter the environment. Led by Carmen Minch.

Halloween Slough Who? Environmental Education Center, Alviso 2:00 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 watch a slide show about 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 x104.

November

Saturday, November 5

A Ghost Town in San Francisco Bay? Visitor Center, Fremont 3:00 p.m. - 4:00 p.m.

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

Sunday, November 6

Salt Pond Tour Meet at Bayfront Park, Menlo Park 1:00 p.m. – 3:00 p.m.

Did you know that the largest tidal wetland restoration project on the West Coast is happening right here in San Francisco Bay? Hear more about this project and view some of the salt ponds recently acquired by the Don Edwards San Francisco Bay

Don Edwards San Francisco Bay National Wildlife Refuge

1 Marshlands Road, Fremont – (510) 792-0222 • 1751 Grand Blvd, Alviso – (408) 262-5513 • <http://desfbay.fws.gov>

Autumn Activity Schedule

National Wildlife Refuge. Geared toward adults. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43 for reservations and directions.

Habitat Hike

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

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

Saturday, November 12

Hawk Walk

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

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

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.

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. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222. Led by Mary and Gene Bobik.

Sunday, November 13

Salinity Sleuths

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

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

Adult Beginning Birdwatching

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

Can you tell an avocet from a black-necked stilt? If not, join birthing 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 take a walk with Ceal to try your new skills. Program intended for adults. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102 to make a reservation.

Saturday, November 19

Salt Pond Tour

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

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

Family Bird Walk

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

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal birdwatching field guides. Then head out onto the trails to find those birds. Learn about the salt marsh habitat along the way. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Call 510-792-0222. Led by Katie Fotta.

New! 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.

Look for New Arrivals

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

Join naturalist Ed Kantack for a leisurely 2-mile walk along the levee between New Chicago Marsh and Salt Pond A16. Bring binoculars or borrow ours. There should be a good number of birds to see. Recommended for ages 8 and up. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102.

Connecting with Corvids

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

Meet some of our most intelligent feathered friends when Corvid Connection swoops by the refuge today. What's a corvid? Don't know? Come find out. With Thanksgiving nearly upon us, make some leafy decorations to take home. All ages welcome. RESERVATIONS REQUIRED. Please call Laurie McEwen at 408-262-5513 ext. 102. Space is limited.

Friday, November 25

Community Service Day

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

Do you need to fulfill community service requirements? Thanksgiving weekend is a great time to pitch in and help restore native habitat. Come help remove invasive non-native plants from our chemical-free demonstration gardens. Bring your own gloves or borrow a pair of ours. Tools and drinking water provided. Dress in layers, long pants and long sleeved shirts over T-shirts. Be prepared to get dirty and wet. Recommended for ages 9 and up. RESERVATIONS REQUIRED, please call Laurie McEwen at 408-262-5513 ext. 102 to make a reservation.

Don Edwards San Francisco Bay National Wildlife Refuge

1 Marshlands Road, Fremont – (510) 792-0222 • 1751 Grand Blvd, Alviso – (408) 262-5513 • <http://desfbay.fws.gov>

Field Trips to the Refuge

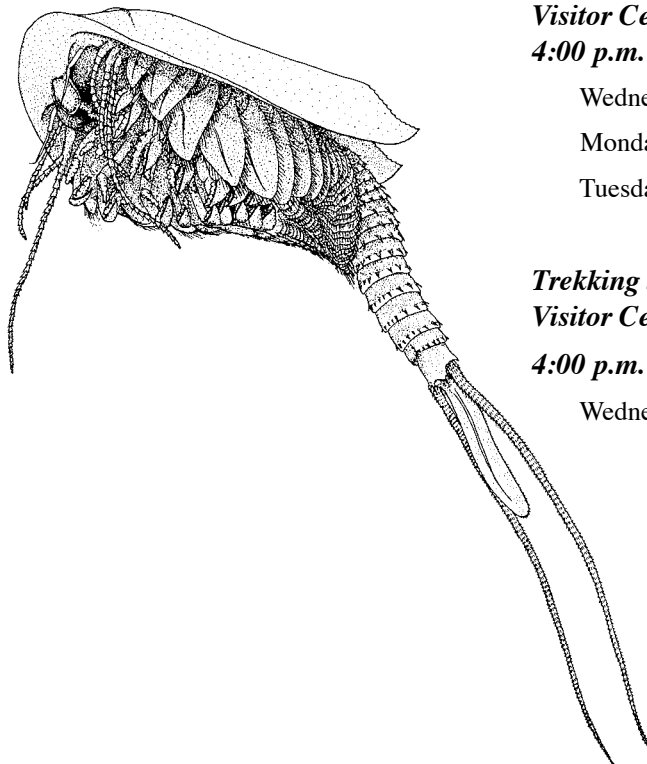
Don Edwards San Francisco Bay National Wildlife Refuge

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

General Field Trip Program Information

FREE field trip programs are offered at two sites at the Don Edwards San Francisco Bay National Wildlife Refuge. 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 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.



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.

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.

Reservations begin on Tuesday, September 13, 4:00 p.m. - 5:00 p.m. Call 510-792-0222.

Field Trip Orientation Dates at the Visitor Center in Fremont

It is our policy that you must attend every two years. Call Ken Clarkson at 510-792-0222.

Wetland Round-Up Field Trip Orientations Visitor Center in Fremont

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

Wednesday, September 28, 2005

Monday, October 17, 2005

Tuesday, November 8, 2005

Trekking the Refuge Field Trip Orientations Visitor Center in Fremont

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

Wednesday, October 12, 2005

Field Trips to the Refuge

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.

Field trip reservations begin on Monday, September 12, 4:00 p.m. - 5:00 p.m. For more information call Genie at 408-262-5513.

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

It is our policy that you must attend every two years. Call the education staff at 408-262-5513.

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

Tuesday, September 27, 2005

Tuesday, October 18, 2005

Wednesday, November 9, 2005

The Slow the Flow Program - Slow the Flow provides an experiential learning environment for students and educators to explore the topics of water use, wastewater treatment, and habitat preservation. Activities and presentations focus on the relationship between personal habits and their effects on local habitats. Slow the Flow is an environmental education program offered at no cost through the cooperating efforts of the City of San Jose, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society. 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, the Slow the Flow Program Coordinator at 408-262-5513 ext. 104 for more information, or to schedule a field trip or presentation.

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!

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

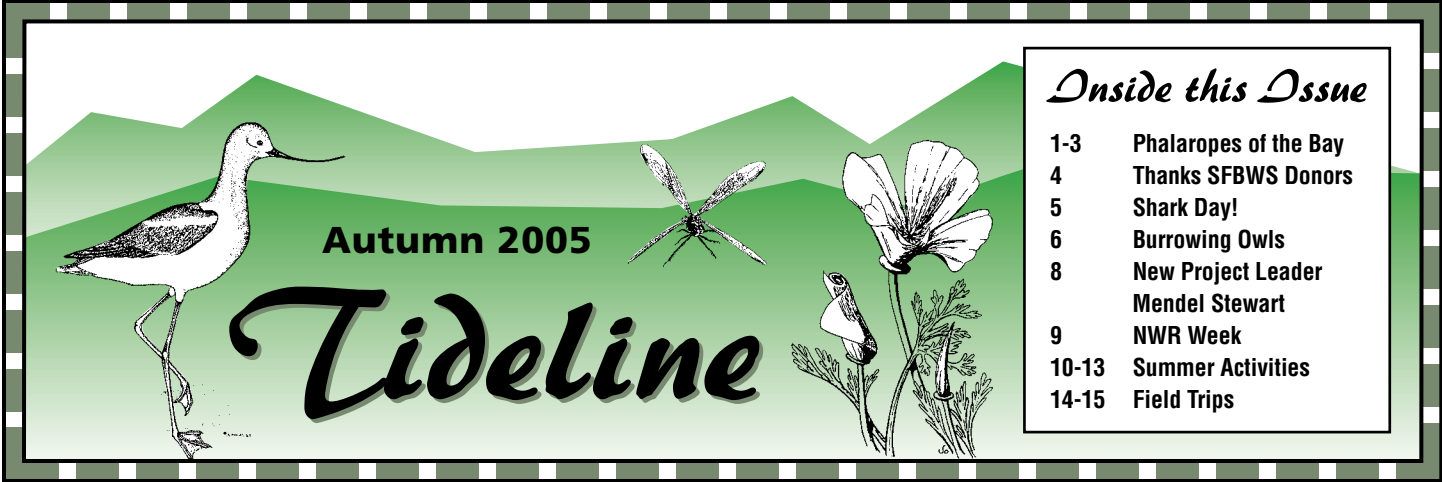
Explore the salt marshes, salt ponds, and the birds of the refuge with your family or small youth group! The Discovery Pack includes an activity booklet, and equipment such as dip nets, magnifying lenses and bug boxes that you will need to take a close look at the salt marsh plants, the brine shrimp, and the birds. The back pack is suitable for up to six people, ages kindergarten - adults. There are also group packs available for 12-24 people (only at the Visitor Center). Please call in advance if you would like a group pack. You can check out the Discovery Packs free of charge at the Visitor Center in Fremont or at the Environmental Education Center in Alviso. The Visitor Center is open Tuesday-Sunday from 10:00 a.m. - 5:00 p.m. For questions or to reserve a group pack in Fremont, please call 510-792-0222. The Environmental Education Center is open Saturday and Sunday from 10:00 a.m. - 5:00 p.m. For questions, please call 408-262-5513.

UNITED STATES
DEPARTMENT OF THE INTERIOR

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

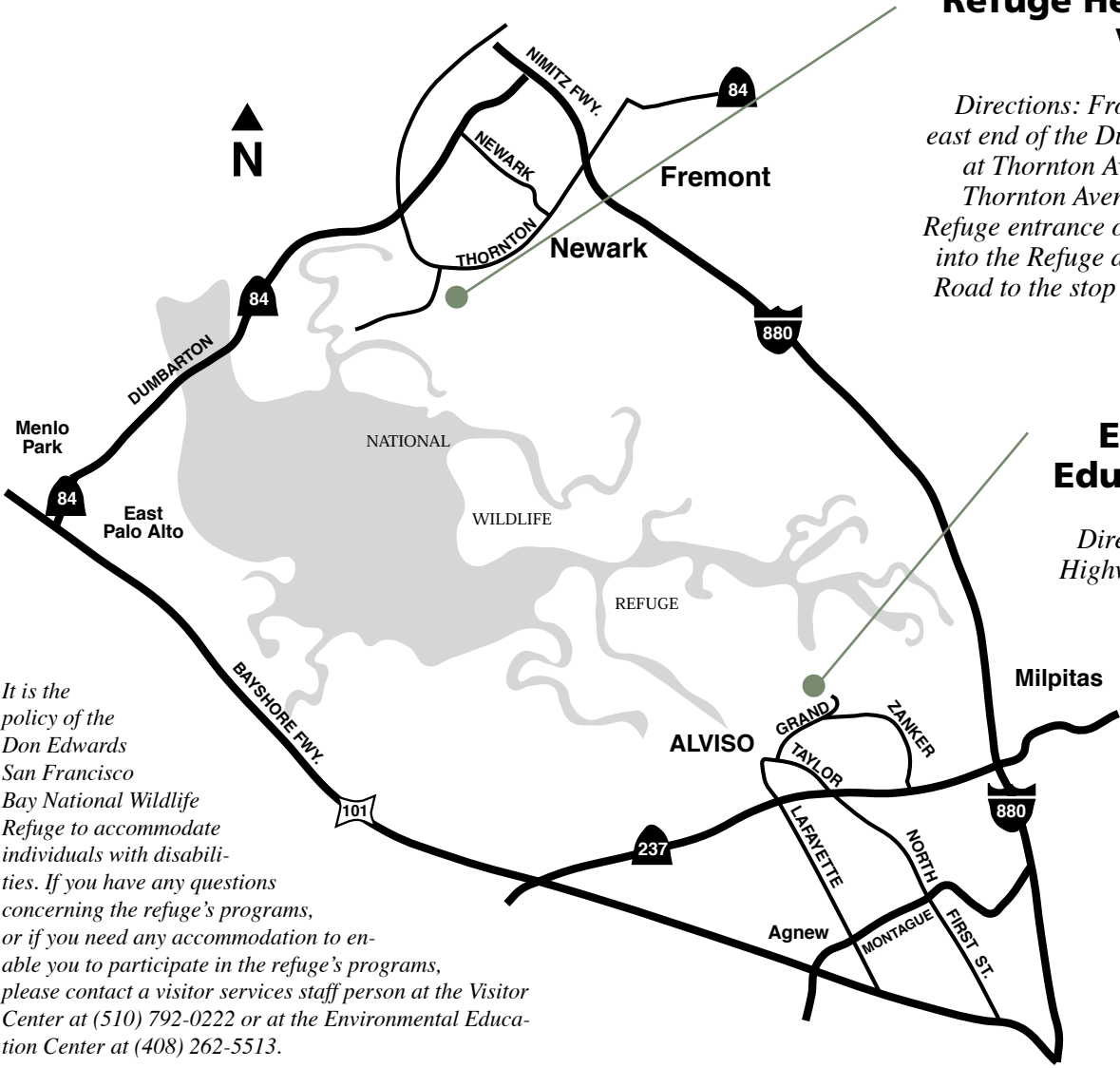
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Mendel Stewart
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Refuge Headquarters & Visitor Center

(510) 792-0222
Directions: From Highway 84 (at the east end of the Dumbarton Bridge), exit at Thornton Avenue. Travel south on Thornton Avenue for 0.8 miles to the Refuge entrance on the right. Turn right into the Refuge and follow Marshlands Road to the stop sign. Turn left into the parking lot.

Refuge Environmental Education Center

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

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