

WINTER 2008

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Tideline



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

Climate Change

By Patricia Hartinger

The theory of climate change was once only familiar to environmental scientists and other small circles but the term has now become mainstream. Former Vice President Al Gore, in his documentary *An Inconvenient Truth*, brought the issue to the national forefront. One is hard-pressed to find anyone who has not heard of the term “climate change” or “global warming” as it has become prevalent in the news and in politicians’ speeches. What exactly is climate change and what does it mean for us and wildlife?

The over all climate of the planet Earth is changing. This change, characterized by an increase in temperature, is described as “global warming.” The year 2006 was ascertained to be the warmest year in the

If this warming trend continues, we can expect increased signs of extreme weather, less snow resulting in a decrease in drinking water, and changes in all aspects of the various ecosystems.

continental United States since the U.S. government began collecting such data in 1895. The average temperatures for 2006, were 1.2° C (2.2° F) higher than the mean average temperatures for all of the 20th century. Each of the 48 contiguous states showed an increase above what had been average for that area.¹ If this warming trend continues, we can expect increased signs of extreme weather, less snow resulting in a decrease in drinking water, and changes in all aspects of the various ecosystems.²

The layer of gases that form the Earth’s atmosphere keeps some of the sun’s energy from being radiated back into space. This “greenhouse effect” makes use of carbon dioxide, methane, and water vapor which helps our planet maintain a temperature that is warm enough for life. As these gases increase, less of the sun’s energy escapes from the earth, warming the planet.

Due to the burning of fossil fuels since the Industrial Revolution, humans have caused the average surface temperature of the earth to rise, and therefore change our climate. “The average American generates about 15,000 pounds of carbon dioxide every year from personal transportation, home energy use, and from the energy used to produce all of the products and services we consume.”³

Without change, we will continue to see increasingly severe weather (from storms, to drought), melting polar ice resulting in higher sea levels, increased flooding, and



**Each of us must
“Think globally;
act locally.”**

Photo: NASA

erosion. In addition to the changes in each citizen’s way of life, there can be radical changes in the areas we consider the nation’s wildlife and recreation areas.

Migration patterns, destination, and food sources for birds, mammals, and insects have all been affected by the increased warmer weather. This was graphically illustrated in the article *Seabird Signals* in the August/September 2008, issue of the *National Wildlife Magazine*. This article

continued next page

described, in depth, the changes to the nesting habits of Pacific seabirds on the nearby Farallon Islands. Julia Parrish, Executive Director of the Coastal Observation and Seabird Survey Team, stated, “when these ‘canaries’ start dying, it’s time to pay attention to what’s happening in the coal mine. They’re shouting at us,” she says. “We tend to have trouble listening.”⁴ The Don Edwards San Francisco Bay National Wildlife Refuge is an important part of the Pacific Flyway, which stretches from South America to Alaska, and across to Siberia. Among the wild birds using the local Refuge as either a rest stop or winter home site are raptors, geese, ducks, and shorebirds. We may see changes in the diversity of the birds that visit our area. As ranges, nesting, feeding and migratory stopovers change the timing, available food, location, and behavior of the birds, we need to plan and prepare for the coming changes locally, as well as nationally.

All over America, the U.S. Fish and Wildlife Service is holding conferences, meetings and symposiums to discuss the effects of climate change. A Task Force on Climate Change has been created which will encourage all National Wildlife Refuges, including the 177 coastal wildlife refuges, to evaluate their local situation. The Department of Interior’s National Wildlife Refuge System, the Migratory

Bird Program, the Fisheries Program, the Endangered Species Program, the Habitat Conservation program, as well as the Environmental Contaminants scientists, are all addressing climate change through various programs.

The University of Arizona has leased the Biosphere II to the federal government for research on how plants and other organisms react to climate change in its artificial, enclosed ecosystem.⁵ Based on studies such as this, the U.S. Fish and Wildlife Service must decide how it will respond to the many changes we face. It will need to decide between intervening and helping to provide corridors, and/or paths, as plants and animals move north, or continuing a traditional “hands-off” policy.⁶

A recent, local source of high-tech information about our local environment will be at the Blue Oak Ranch Reserve in the eastern foothills of Santa Clara County. This wild area is part of the University of California’s Natural Reserve System, a collection of 36 protected natural landscapes. Information regarding all the physical aspects of the 3,260 acres will be monitored by high-tech sensors and made available to scientists, teachers and the general public (www.blueranchreserve.org).⁷

One of the brighter spots in this picture is the South Bay Salt Pond Restoration Project, the largest tidal wetland restoration effort on the West Coast. Tidal wetlands

are a natural buffer against flooding, and absorb much of the extra water, releasing it back into the Bay at a slower rate. Phase I of this project should restore approximately 1,500 acres of habitat by 2010, followed by work to convert 50 to 90 percent of the salt ponds into tidal wetlands. Some of the area will remain “managed” to provide for certain bird species and to prevent flooding.⁸

Tidal marshes may be more efficient per unit area than trees when it comes to removing carbon from the atmosphere.

As “biologically productive habitats,” tidal marshes “capture significant amounts of carbon from the atmosphere. Unlike many freshwater marshes, tidal saltwater marshes release only negligible amounts of methane. Tidal marshes may be more efficient per unit area than trees when it comes to removing carbon from the atmosphere.”⁹

Scientists are predicting that even with a three degree rise in temperature (the low side of the prediction for the next century), 20 to 30 percent of the world’s plants and animals may be at risk.¹⁰ Global warming



White pelicans

Courtesy of Pelican Media

will affect every one of us. State or national boundaries will not limit the problem. Each of us must "Think globally; act locally."

To begin your personal effort to reduce greenhouse gas emissions, calculate your personal carbon impact (www.safecclimate.net). This will include an energy use audit, as well as suggestions to help you begin your effort. Replacing light bulbs with compact fluorescents, unplugging unused electronics, and caulking and weather-stripping doors and windows can be initial steps.

In addition, you can support conservation science and habitat management organizations, and make every effort to stay informed and involved. As a parent or teacher, one of the available resources for working with children is the book *Journey for the Planet: a Kid's Five-Week Adventure to Create an Earth-Friendly Life* from the Empowerment Institute.

More information may be found on the website: www.empowermentinstitute.net

Get involved!

Environmental Education - More than Just Kid Stuff

My 4-year-old daughter and I recently spent a great evening together at the Don Edwards San Francisco Bay National Wildlife Refuge's Environmental Education Center. We attended *Night of the Living Marsh*, a special event hosted by the U.S. Fish & Wildlife Service and co-sponsored by Santa Clara Valley Urban Runoff Pollution Prevention Watershed Watchers Program, the City of San Jose Slow the Flow Program, and the San Francisco Bay Wildlife Society. *The Night of the Living Marsh* event was a tremendous success! My daughter and I, and more than 400 other participants, enjoyed a variety of innovative, fun activities designed to educate children about the natural world and to instill in them an appreciation for wild creatures and their habitats.

Alarming, current research shows that children seem to be losing touch with the natural world. Kids are spending hours indoors staring at computer or television

Footnotes 1. www.nps.gov/pore/naturescience/climatechange_ishappening.htm, 2. Ibid., 3. Cohen, Ellie M. "Global Warming-What You Can Do." April, 2007. www.climaticrisis.net.p.1, 4. Cubrie, Doreen. "Seabird Signals," in National Wildlife Magazine, Aug/Sept, 2008:24-32., 5. Smith, M Martin and Gow, Fiona. "Unnatural Preservation," in High Country News, Feb. 4, 2008:17., 6. Ibid.: 13., 7. Kreiger, Lisa M. "Taking Nature's Pulse," in San Jose Mercury News, Sept. 9, 2008: 1 and 6A., 8. Weeks, Jennifer. "Hold the Salt," in High Country News, Feb. 4, 2008: 4-5., 9. www.southbayrestoration.org. "Absorbing the Effects of Sea Level Rise in the Bay Area." May, 2008., 10. Hamilton, Joan. "The Tortoise and the Hare," in Sierra Magazine. May/ June, 2008: 52-56, 71-74., 11. Keyes, Ralph. *The Quote Verifier*. New York, Simon and Schuster.

Patricia Hartinger is a retired teacher and librarian who has been volunteering at the Don Edwards San Francisco Bay National Wildlife Refuge since 2003. She is active in the Refuge environmental education program and had written this article for the "Salt Marsh Manual", an education guide for elementary schools.

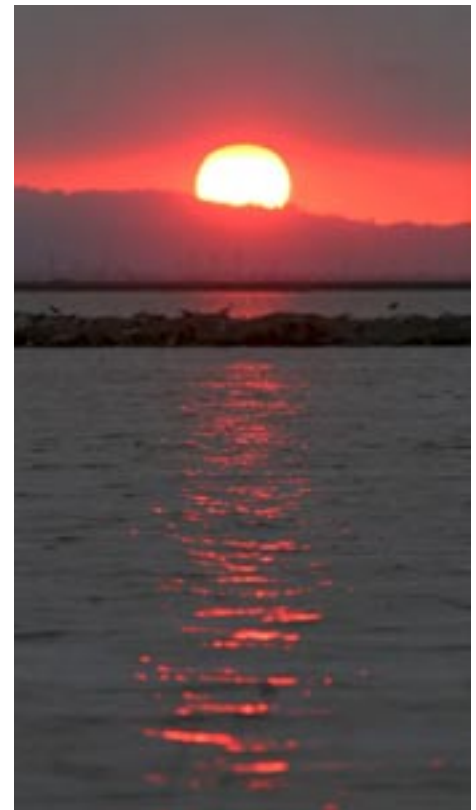


Photo: Paul Bridges



Refuge Reflections

by Mendel Stewart

screens. A whole generation of kids are said to be growing up never experiencing and exploring the countryside, the open field down the road or even the vacant lot next door. This observation has become widely accepted. So much so that today, many organizations are focused on providing environmental education and outdoor recreation for children in an attempt to reconnect them with nature

I believe this effort is essential and should receive even more emphasis in the future. However, I sometimes fear we are too late. I am afraid we have already missed one or two generations. Many young adults have entered society with little appreciation for nature and little understanding of it. That is why it is so important to not only reach out to the children but also to their parents and other adults. We must develop messages that appeal to all age groups.

Protecting and conserving wildlife and their habitats are important but our messages should also include how human activity has altered the processes and functions of the natural world. Without this understanding, true appreciation will be diminished.

Night of the Living Marsh is just one example of many public events and activities developed and presented by our staff and volunteers to help children connect to nature. Although our environmental education staff will continue to focus on children so not to miss future generations, I would like to emphasize that learning about the natural world is for everyone. Helping people of all ages connect to nature is one of the most important things we do. Although I encourage you to spend time with kids to help them appreciate the natural world, I also challenge you to attempt to instill a deeper understanding in the adults around you.

Refuge Dispatches

by Elana Garfinkle, Visitor Services Intern

The year 2008 has yet again been a busy one for the San Francisco Bay National Wildlife Refuge Complex. Here are just a few highlights of each refuge's accomplishments.

Antioch Dunes NWR

The Antioch Dunes National Wildlife Refuge is re-building sand dunes. Antioch Dunes Refuge was created to protect the endangered Lange's metalmark butterfly, Contra Costa wallflower, and Antioch Dunes evening primrose. Over the years, the once dynamic sand dunes have become static due to the surrounding development and overcome by weeds. To provide better habitat for the endangered species, the Refuge purchased sand to reconstruct the historic dunes. These dunes will hopefully mimic the ones from the past, and smother the non-native plants thus allowing the native plants to thrive once again.

Furthermore, butterfly propagation along with an experiment with cattle grazing at Antioch Dunes has created a new sense of hope for the Lange's metalmark butterfly, wallflower and evening primrose. See the article on the release of Lange's metalmark

butterflies on page 6. Volunteers will be needed to help plant naked-stemmed buckwheat on the Refuge in the near future. Naked-stemmed buckwheat is the host plant for the Lange's metalmark butterfly and is the only plant where the butterfly will lay its eggs on. The Fish and Wildlife Service is also working with neighboring landowner PG&E to increase habitat for the endangered species.

Don Edwards San Francisco Bay NWR

The salt pond restoration project continues at the Don Edwards San Francisco Bay National Wildlife Refuge. Plans are underway to construct up to 30 small islands in Pond SF2, located on the south side of Hwy 84 just west of the Dumbarton Bridge in Menlo Park. Construction will start once all permits have been issued. Biologists believe these islands will increase the amount of nesting birds in the pond.

In 2008 the Refuge, San Francisco Bay Bird Observatory, San Jose State University and California Department of Fish and Game monitored the nesting success of threatened western snowy plovers in South San Francisco Bay. Nineteen salt ponds were surveyed weekly for snowy plovers and for avian predators. Seventeen other ponds were surveyed once a month. Biologists found and monitored 118 nests. Of these 118 nests, 64 nests hatched, 44 were depredated, three

nests were flooded, one nest was abandoned, one had an unknown fate, and five were lost at the time of hatching. From the 64 successful nests, 177 chicks hatched. Eighty-three of those chicks were banded by biologists as they hatched. So far, biologists have re-sighted 20 of the fledged banded chicks. This number is low because of the high rate of avian predators that exist on the Refuge. Avian predators include the northern harrier, common raven, and the California gull.



Endangered frog

FWS photo

Ellicott Slough NWR

Ellicott Slough NWR conducted three surveys at Calabasas Pond with the help of volunteers, Refuge staff and U.S. Fish and Wildlife Service personnel from the Ventura field office as part of a nationwide effort to locate abnormal frogs. Fortunately, the results did not yield any cause for concerns. Currently, there are 23 amphibian species that are listed as endangered. The populations of frogs and salamander species are declining rapidly and biologists are not sure of the exact reason why. Possible explanations for the rapid decline in amphibian populations are climate change, wetland loss, invasive predators, disease, or pollution such as pesticides, fertilizers, or heavy metals. Visit http://www.fws.gov/contaminants/Documents/Homeowners_Guide_Frogs.pdf to learn more about what you can do to help the amphibians.



Snowy plover nests are monitored at Don Edwards.

Photo: Michael D. Kern

Volunteer Tim Kask spent many hours identifying and compiling a plant species list for the Harkins Slough Unit. So far, 150 plant species have been identified and the list continues to grow. In the process, he discovered a plant named *Centromadia parryi subsp. congdonii* that the California Native Plant Society considers rare.

Farallon NWR

Farallon National Wildlife Refuge was chosen out of 548 National Wildlife Refuges to receive the “Refuge of the Year” award. This prestigious award recognized Farallon National Wildlife Refuge for its outstanding environmental management during 2008.

A draft Comprehensive Conservation Plan (CCP) for the Refuge will soon be released for public review. This CCP will outline the goals and management plan for the Refuge for the next 15 years. Contact Refuge Planner Winnie Chan at 510-792-0222 or winnie_chan@fws.gov for further updates.

Northern fur seals bred on the island for the 13th consecutive year with 63 pups counted. These seals are part of the sea lion family and were the most abundant breeding pinnipeds on the island before being wiped out by hunters in the 1800s. Their return is a major milestone for the Refuge. Monitoring the seals and their young has been challenging because of their isolated breeding location. Most of the island’s sea-bird species showed good reproductive rates this year. The struggling Cassin’s auklets’ reproductive rate was much improved.



Adult male northern fur seal FWS photo



Salinas River kiosk invites visitors to the Refuge.

FWS photo

The waters surrounding the Farallon Islands have been proposed to be designated as a Marine Protected Area (MPA) by the State of California. These MPAs would protect the islands’ sensitive wildlife from fishing and boating disturbances. For more information, visit www.dfg.ca.gov/mlpa.

Marin Islands NWR

Audubon Canyon Ranch continues to assist the Refuge in monitoring the heron and egret breeding colonies on Marin Islands National Wildlife Refuge. It appears 2008 has been another successful year for these wading birds.

The Refuge also removed large stands of non-native, invasive French broom from the island with the help of Friends of San Pablo Bay National Wildlife Refuge, Cooper Crane, and the U.S. Coast Guard.

Volunteer Brad Kelly has been assisting the Refuge in surveying, identifying, and tracking rare plants on the island – something that has never been done before. One of the plants being monitored is a rare orchid species, *Piperia michaelii*. This project will continue into 2009.

The Refuge continues to collect native seed from Marin Islands for future restoration. Seeds are propagated at the San Pablo Bay NWR native plant nursery and planted during fall.

Salinas River NWR

Salinas River National Wildlife Refuge focused on education and outreach in 2008. Two new information kiosks were installed on the Refuge and a new, updated web site was launched. Check out the web site at www.fws.gov/sfbayrefuges and click on the link to Salinas River Refuge. Several brochures were also produced to inform the public about management activities, outdoor recreation, and the threatened western snowy plover, one of the Refuge’s more sensitive species. These brochures can be downloaded from the website.

Snowy plover surveys continued to be conducted on the Refuge. Fifteen plover chicks were fledged in 2008.

San Pablo Bay NWR

San Pablo Bay National Wildlife Refuge is working toward enhancing tidal marsh for endangered species. The Refuge has forged partnerships with Audubon, Conoco Phillips and Marin-Sonoma Mosquito Abatement District to improve the movement, distribution, and quality of the water on the pickleweed tidal marshes found around Lower Tubbs Island and Toly and Sonoma Creeks. This large-scale project along with efforts to control nonnative, invasive *Lepidium* (commonly known as peppergrass or pepperwort) will greatly improve the habitat for wildlife.

Lange's Metalmark Butterflies Released on Antioch Dunes NWR

by Al Donner

A daring attempt to help a nearly-extinct butterfly that began last August has been successful beyond the most optimistic hopes, and now biologists are about to re-populate one of the species' few remaining habitats.

On August 29 of 2008, U.S. Fish and Wildlife Service Biologists were joined by Moorpark College and the Urban Wildlands Group from Southern California to release 30 endangered Lange's metalmark butterflies in the Antioch Dunes National Wildlife Refuge. Thirty larvae were also released in hopes that they would survive to metamorphosis in their natural environment and mate on the Refuge.

Unlike some butterflies that can travel hundreds of miles, the Lange's metalmark is a homebody that never ventures beyond

the sand dunes along the southern bank of river at the western edge of the Sacramento-San Joaquin Delta. Now, with most of those dunes destroyed, the butterfly's only remaining habitat is on and near the 55-acre Antioch Dunes National Wildlife Refuge.

A few remnant sand dunes along the San Joaquin River in Antioch is the only home left to the Lange's metalmark butterfly. After a one-day peak count of 2,342 butterflies in 1999, the number of butterflies plummeted to just 45 in another one-day count in 2006. In a desperate attempt to save the species, biologists carefully collected nine female metalmark butterflies in 2007 and placed them in two experienced breeding facilities. Moorpark College, operated in conjunction with Urban Wildlands Group, produced 129 adults from that initial stock. Butterflies that



Captured butterfly for breeding program
Photo: Louis Terrazas, FWS

were not released back onto the Refuge in 2008 will be bred to increase the breeding population for release next year.

The captive breeding program is just one component of the restoration efforts. The other key component is the rejuvenation of naked-stemmed buckwheat, a wispy plant that is the butterfly's host plant. The task facing the Refuge is how to save dune-dependent naked-stemmed buckwheat when the dynamic movement of sand dunes had dramatically diminished. The native plants need the shifting sand, steep banks and clear ground of naturally functioning dunes.

Refuge managers are currently using different techniques to control the weeds that crowd out the buckwheat. Using controlled cattle grazing to eat the weeds last spring, Refuge biologists cleared major areas of exotic plants, allowing a good growth of buckwheat in some areas. Sand had been recently purchased and trucked into the Refuge to re-create the dunes that used to exist prior to the 1906 earthquake in San Francisco. The sand was used to make bricks for the buildings in San Francisco. The new sand will smother the non-native vegetation for a few years, giving the native plants a chance to survive.

If you would like to help with the restoration effort, Antioch Dunes National Wildlife Refuge is looking for volunteers to help plant 7000 naked-stemmed buckwheat plants this winter. Planting dates are scheduled for Saturdays on December 13, January 10 and February 7. See opposite page for more information.



Biologists releasing the Lange's Metalmark Butterflies

Photo: Louis Terrazas, FWS

Endangered Lange's Metalmark Butterflies Need Your Help!

Antioch Dunes National Wildlife Refuge is looking for a few dedicated volunteers to plant 7,000 naked-stemmed buckwheat plants over the course of three months to help the butterfly survive. The naked-stemmed buckwheat is the only plant where the Lange's metalmark butterfly will lay its eggs.

Planting parties are scheduled on Saturdays from 10 a.m. - 4 p.m. for
December 13 • January 10 • February 7

Bring a lunch, rain gear, sturdy pants and shoes, a hat, and gloves if you have them.
Gloves and tools will be provided. Arrive at 10 a.m. for necessary training.
You do not need to stay for the entire day.

Call Louis Terrazas at 510-377-1233 for more information or driving directions.
Antioch Dunes National Wildlife Refuge is located at 501 Fulton Shipyard Rd. in Antioch.

San Pablo Bay National Wildlife Refuge

Hwy 37 after Lakeville Hwy (707) 649-9464



13th Annual

San Francisco Bay Flyway Festival

Friday, February 6, 5 p.m. - 9 p.m.

Saturday, February 7, 9 a.m. - 4 p.m. • Sunday, February 8, 9 a.m. - 3 p.m.



Visit the San Pablo Bay National Wildlife Refuge booth at Festival Headquarters in Building 897 on Mare Island



Go on Guided Nature Walks



Meet the National Wildlife Refuge System's famous Blue Goose!



Log on to www.fws.gov/sfbayrefuges for a complete schedule of refuge events in January. For a Flyway Festival brochure, call (707) 649-9464 or www.SFbayFlywayFestival.com

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 July 11, 2008 and October, 2008. These gifts will be used for capital, environmental education, habitat restoration, and interpretive programs at the Don Edwards San Francisco Bay National Wildlife Refuge.

Employer Matching Gift Program

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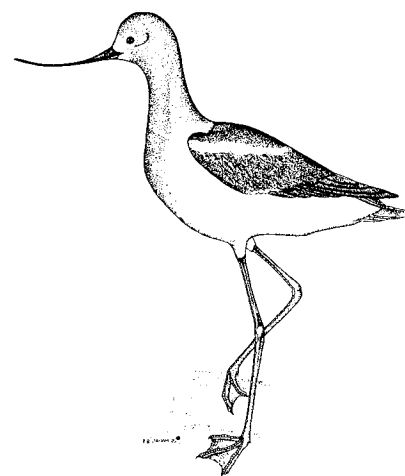
Alan & Cheryl Abel, Susan Jane Boddy, Charles D Carroll, Ann Dee Clemenza, Loring G Dales, Donald R Emery, P L & Helen Fan, Patricia Hartinger, Melanie Ito & Charles Wilkinson, David Loeb, Karen McCreddin, Charles T Moore, Sally & Ken Smyth, Katie Tague, and Mark A & Kathleen Soulard

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Saul Chaikin, Marie Channa, Eleanor S Hansen, Marianne Schonfisch, Shirley Mae Skaredoff, Sheila Sousa, Haven Thompson, Tri-City Ecology Center, William Warburton, and Marge E Wood

Senior/Student

Nancy I Andersen, Stanley G. Brown, Willard S Fine, Roberta L Maloney, James G Miguelgorry, Eleanor Perry, Todd C Smith, Mary Elizabeth Stone, Claudia Whitnah, Eric d Winch, Rose Wright, and Stella Yang



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:

- | | | | | |
|--|---|--|--|---|
| <input type="checkbox"/> \$20 Student/Senior | <input type="checkbox"/> \$50 Family | <input type="checkbox"/> \$100 Participant | <input type="checkbox"/> \$250 Sponsor | <input type="checkbox"/> \$1,000 Leader |
| <input type="checkbox"/> \$35 Individual | <input type="checkbox"/> \$75 Supporter | <input type="checkbox"/> \$200 Corporation | <input type="checkbox"/> \$500 Sustainer | |

Check Visa or MasterCard # _____ Exp. Date _____

Signature _____

Name _____

Address _____ City _____ State _____ Zip _____

Phone _____ *Thank you for your support!*

San Francisco Bay Wildlife Society on the move!

Just take a look inside a year's worth of *Tideline*, we publish it four times per year as educational outreach for the Refuge Complex, you'll see Wildlife Society support everywhere. Here are a few highlights from 2008:

Slow the Flow and Watershed Watchers Programs

The tradition continues! Using grant funding from the City of San Jose and the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), the Wildlife Society employs two creative, energetic individuals to lead the City's *Slow the Flow Program* and SCVURPPP's *Watershed Watchers Program* at the Environmental Education Center in Alviso. Activities range from sponsoring major events such as *Night of the Living Marsh* in October and *South Bay Bird Fest* in May, to providing on-going weekend activities and service opportunities for the public, field trips for school groups, and a variety of programs designed specifically to help Scouts earn badges or patches.

Endangered Species Poster Contest

2008 marked the 26th year for this annual contest. The Wildlife Society was pleased to help judge submissions, provide awards for winning artists in each grade K-6 and for the grand prize winner, and provide an artists' reception to coincide with our

national Endangered Species Day. Young artists proudly showed off their posters while the artwork decorated the walls of the visitor center auditorium during May. We are pleased to provide an avenue for children to connect to nature through art and to facilitate this annual spring event.

Environmental Education Center Trail Map

Funding received from New United Motors Manufacturing, Inc. (NUMMI) allowed us to print a new trail map for the Refuge this year. The map not only showcases the trails that surround the Environmental Education Center (EEC) but also exhibits our commitment to the environment as the map was printed on recycled paper using soy-based inks.

Upland Restoration Work

Grants administered by the Wildlife Society continue to fund upland restoration work adjacent to the EEC where a very energetic army of volunteers are maximizing the money available for the project. In recognition of this on-going project, we are working with others to seek additional grant

funding to continue this project.

Moffett Trail

Thanks to our administration of grant funding, a segment of the Bay Trail between Carl Road in Sunnyvale and Crittenden Lane in Mountain View was graveled, signed, fenced, and otherwise upgraded dur-



New benches installed on the Moffett Trail

ing 2008. It will soon be open for walking and bicycling - perfect timing for people to enjoy the millions of waterfowl who frequent the area during winter and spring. (Mondays, Tuesdays, Thursdays and Fridays are non-hunt days and offer the best winter waterfowl viewing opportunities.)

Youth Conservation Corps

Elsewhere around the Refuge Complex this year, Wildlife Society assistance made it possible for San Pablo Bay National Wildlife Refuge to fund a Youth Conservation Corps team to build a native plant nursery office, work area, and compost bins, and to continue invasive plant removal.

What's on the books for the coming year? In addition to our on-going commitments, a major new project is to fund a variety of interactive interpretive exhibits for the new temporary visitor contact station at Refuge Complex headquarters in Fremont. If all goes according to plan, we expect the contact station to be open in Spring 2009.

Do you like what you've read? These accomplishments are a direct result of efforts and funding from the Wildlife Society and from YOU if you are already a member. If you are already a member you deserve a big THANK YOU from the Wildlife Society and from Refuge staff! Not yet a member? We would love to welcome you.



San Francisco Bay Wildlife Society Program Administrator Sue Ten Eyck, Visitor Services Intern Patricia Gerrity, and Artist and Refuge Volunteer Linda Patterson review the poster entries.

Winter Activity Schedule

December

Saturday, December 6

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 in front of the Visitor Center. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Mary and Gene Bobik.

Sunday, December 7

*Habitat Hike

Environmental Education Center, Alviso

10:00 a.m. – 11:30 a.m.

Do you enjoy exploring nature? Do you find yourself curious about where mice sleep or how birds stay dry in the rain? If so, then come take a walk and explore the habitats at the refuge. Along the way we will learn about wetland habitats and upland habitats that are human-altered. We will observe and identify plants, birds, and any other animals we see on this short and easy trek. This program is wheelchair and stroller accessible. Recommended for all ages. Reservations required. Call 408-262-5513 ext.104.

Saturday, December 13

*Marshland of Dreams

LaRiviere Marsh Parking Lot, Fremont

9:30 a.m. – 10:30 a.m.

Join a refuge ranger on a 1-mile walk of the LaRiviere Marsh Trail to find traces of the past. Prior to marsh restoration, learn how Californians utilized the area for farming, quarrying, salt production, and transportation. There are opportunities for bird watching as well. Meet at the LaRiviere Marsh trailhead by the sign, located in the first parking lot to the right on Marshlands Road. Led by Paul Mueller.

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.

Planting Party at Antioch Dunes NWR

Antioch Dunes NWR, Antioch

10:00 a.m. – 4:00 p.m.

Antioch Dunes National Wildlife Refuge is looking for a few dedicated volunteers to plant 7,000 naked-stemmed buckwheat plants over the course of three months to help the endangered Lange's metalmark butterfly survive. The naked-stemmed buckwheat is the only plant this butterfly will lay its eggs on. Bring a lunch, rain gear, sturdy pants and shoes, a hat, and gloves if you have them. Gloves and tools will be provided. Arrive at 10 a.m. for necessary training. You do not need to stay for the entire day. Call Louis Terrazas at 510-377-1233 for more information or driving directions. Antioch Dunes National Wildlife Refuge is located at 501 Fulton Shipyard Rd. in Antioch.

*Shorebirds!!

Environmental Education Center, Alviso

10:00 a.m. – 11:30 a.m.

Can you tell a shorebird from other birds seen at the refuge? Learn what makes them different and how each one makes use of the marsh and slough habitats. We have a surprise activity for children of all ages. This program is geared towards children. Led by Ed Kantack. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Medicinal Plant Walk

Visitor Center, Fremont

1:00 p.m. – 2:30 p.m.

Join a naturalist and learn the medicinal properties of plants commonly found on the Don Edwards San Francisco Bay National Wildlife Refuge. Find out how these plants can be used to make home remedies for colds, coughs, indigestion and much more. Led by Elana Garfinkle.

*Beginning Bird Photography Workshop

Environmental Education Center, Alviso

2:30 p.m. – 4:30 p.m.

Come learn the basics in bird photography! Join us for tips on photography or for viewing commonly seen birds at the refuge. This beginning bird photography workshop will help you get the most out of your point-and-shoot camera. We will discuss ideal sighting and photo taking conditions, lighting, composition and equipment. We will also have a slide show to familiarize you with some common birds at the refuge. Our

discussion will be followed by an easy walk to different locations where we will take photos. Please bring your binoculars and/or digital or film camera. Warm clothing and comfortable walking shoes recommended. Led by Jennifer Woo. Recommended for ages 14 and up. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Sunday, December 14

Hidden Stories Walk

Visitor Center, Fremont

10:30 a.m. – 12:00 p.m.

Both humans and nature have shaped the lands of the refuge. Clues to this history abound on our Tidelands Trail. Join me on this easy 1.2-mile walk as we discover the hidden stories that make this place what it is today. Led by Jennifer Heroux.

Saturday, December 20

Beginning Birding Clinic

Environmental Education Center, Alviso

8:30 a.m. – 10:30 a.m.

Come one and come all to enjoy the bounty of winter wildlife at the refuge! It's a great time of year to look for migrating and resident birds at our Alviso site. Don't worry if you can't tell your egrets from your cormorants. Just bring your binoculars (or borrow ours) and your curiosity, and we'll see what we can discover together. Advanced birders welcomed to join and encouraged to share. Led by Jennifer Heroux.

Webelos Naturalist Program

Visitor Center, Fremont

10:00 a.m. – 12:00 p.m.

Attention Webelos! Earn your naturalist badge in just two hours. During this hike, learn about birds, flyways, food chains, and the importance of wetlands. Bring your binoculars, or borrow one of ours. Space is limited to 15 Webelos. Call 510-792-0222 ext. 43. Led by June Smith.

*Salt Pond Restoration 101: An Introduction to the Project

Environmental Education Center, Alviso

1:00 p.m. – 2:00 p.m.

Restoration of 15,100 acres of South San Francisco Bay salt ponds to wetland habitats has begun. Please join us for an overview of this incredible project happening in our backyard. Program will be held indoors in the auditorium. All are welcome! Led by Jennifer Heroux.



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

Visitor Center, 1 Marshlands Road, Fremont – (510) 792-0222 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Sunday, December 21

*Edible Watershed Diorama Rama!

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

Imagine what your city would look like if you were a giant. What might you see? Come explore what a watershed is with a hands-on demonstration of an amazingly detailed South Bay watershed diorama. Learn the simple things you can do to keep waterways and natural habitats in the South Bay healthy and functioning. You'll also get to create AND EAT your own 3-D watershed model made out of yummy goodies! Ages 8 and up. Reservations required. Call 408-262-5513 ext. 104.

Sunday, December 28

Feathered Friends

Visitor Center, Fremont
3:30 p.m. - 4:30 p.m.

Take a stroll with naturalist Mansur Nur on the refuge trails to find common birds on the refuge. A limited number of binoculars are available to borrow. Meet at the observation deck with the scope near the top of the hill. This program is geared toward families. Reservations are required. Call the Visitor Center desk at 510-792-0222 ext. 43.

January

Saturday, January 10

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.

Planting Party at Antioch Dunes NWR

Antioch Dunes NWR, Antioch
10:00 a.m. – 4:00 p.m.

Antioch Dunes National Wildlife Refuge is looking for a few dedicated volunteers to plant 7,000 naked-stemmed buckwheat plants over the course of three months to help the endangered Lange's metalmark butterfly survive. The naked-stemmed buckwheat is the only plant this butterfly will lay its eggs on. Bring a lunch, rain gear, sturdy pants and shoes, a hat, and gloves if you have them. Gloves and tools will be provided. Arrive at 10 a.m. for necessary training. You do

not need to stay for the entire day. Call Louis Terrazas at 510-377-1233 for more information or driving directions. Antioch Dunes National Wildlife Refuge is located at 501 Fulton Shipyard Rd. in Antioch.

*Beginning Bird Photography Workshop

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

Come learn the basics in bird photography! Join us for tips on photography or for viewing commonly seen birds at the refuge. This beginning bird photography workshop will help you get the most out of your point-and-shoot camera. We will discuss ideal sighting and photo taking conditions, lighting, composition and equipment. We will also have a slide show to familiarize you with some common birds at the refuge. Our discussion will be followed by an easy walk to different locations where we will take photos. Please bring your binoculars and/or digital or film camera. Warm clothing and comfortable walking shoes recommended. Led by Jennifer Woo. Recommended for ages 14 and up. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

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 in front of the Visitor Center. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Mary and Gene Bobik.

Sunday, January 11

Hidden Stories Walk

Visitor Center, Fremont
10:30 a.m. – 12:00 p.m.

Both humans and nature have shaped the lands of the refuge. Clues to this history abound on our Tidelands Trail. Join me on this easy 1.2-mile walk as we discover the hidden stories that make this place what it is today. Led by Jennifer Heroux.

*Native Species Scavenger Hunt

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

The refuge is a mosaic of different habitats, each of which supports an array of California native wildlife. Come enjoy the outdoors as we embark on a scavenger hunt, exploring the refuge habitats and the creatures that call them home! 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 look at and try to identify native plants and animals. We will also learn how these wetland habitats are impacted by humans. All ages welcome. Reservations required. Call 408-262-5513 ext.104.

Winter Activity Schedule

Saturday, January 17

*Beginning Birding Clinic

Environmental Education Center, Alviso
8:30 a.m. – 10:30 a.m.

Come one and come all to enjoy the bounty of winter wildlife at the refuge! It's a great time of year to look for migrating and resident birds at our Alviso site. Don't worry if you can't tell your egrets from your cormorants. Just bring your binoculars (or borrow ours) and your curiosity, and we'll see what we can discover together. Advanced birders welcomed to join and encouraged to share. Led by Jennifer Heroux.

*The Living Marsh

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

Just exactly what is a salt marsh and why is it important? How does it affect our general well being? The answers to these and other questions can be found in a slideshow and in a discussion about the life and death struggles of our marsh inhabitants. Recommended for all ages. Led by Ed Kantack. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext 102.

Saturday, January 24

Community Service

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

Do you need to fulfill community service requirements? Or would you just like to come lend a hand? Come help in our native plant garden by pruning, mulching, removing non-native plants, or various other jobs that help protect wildlife. Bring gloves or borrow a pair of ours. Tools provided. Dress in layers and bring water. Be prepared to get dirty and wet. Ages 9 and up. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

*Salt Pond Restoration 101: An Introduction to the Project

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

Restoration of 15,100 acres of South San Francisco Bay salt ponds to wetland habitats has begun. Please join us for an overview of this incredible project happening in our backyard. Program will be held indoors in the auditorium. All are welcome!

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

Visitor Center, 1 Marshlands Road, Fremont – (510) 792-0222 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Winter Activity Schedule

*Just for Tots: January Discoveries

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

Come explore the refuge and learn all about the creatures that live in it! Introduce your wee folk, ages 3-6, to the unique marsh habitat through interactive, hands-on activities. They will experience the marsh firsthand with a craft and a short walk. Children must be accompanied by an adult. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Sunday, January 25

Tidelands Trail Walk

Visitor Center, Fremont
3:00 p.m. - 4:30 p.m.

Explore the Tidelands Trail with a naturalist and learn about the plants and animals that thrive in the salt marshes and uplands. Reservations are required. Call 510-792-0222 ext. 43. Meet at the observation deck with the scope near the top of the hill. Led by Mansur Nur.

Saturday, January 31

*Adult Beginning Birdwatching

Environmental Education Center, Alviso
9:00 a.m. - 10:30 a.m.

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

*Marshland of Dreams

LaRiviere Marsh Parking Lot, Fremont
9:30 a.m. - 10:30 a.m.

Join a refuge ranger on a 1-mile walk of the LaRiviere Marsh Trail to find traces of the past. Prior to marsh restoration, learn how Californians utilized the area for farming, quarrying, salt production, and transportation. There are opportunities for bird watching as well. Meet at the LaRiviere Marsh trailhead by the sign, located in the first parking lot to the right on Marshlands Road. Led by Paul Mueller.

*Drawbridge

Environmental Education Center, Alviso
12:00 p.m. - 1:00 p.m.

There's a ghost town in San Francisco Bay? That's right! Nestled on an island in the salt marshes of South San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful town full of nature lovers, or a rip-roaring town full of two-fisted rowdies? Enjoy a slide show program presented by Ceal Craig. Note: This is a slide show program. There is no driving tour in this program. RESERVATIONS ARE REQUIRED. Call Lindy at 408-262-5513 ext. 102.

February

Sunday, February 1

Hidden Stories Walk

Visitor Center, Fremont
10:30 a.m. - 12:00 p.m.

Both humans and nature have shaped the lands of the refuge. Clues to this history abound on our Tidelands Trail. Join me on this easy 1.2-mile walk as we discover the hidden stories that make this place what it is today. Led by Jennifer Heroux.

Saturday, February 7

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.

Planting Party at Antioch Dunes NWR

Antioch Dunes NWR, Antioch
10:00 a.m. - 4:00 p.m.

Antioch Dunes National Wildlife Refuge is looking for a few dedicated volunteers to plant 7,000 naked-stemmed buckwheat plants over the course of three months to help the endangered Lange's metalmark butterfly survive. The naked-stemmed buckwheat is the only plant this butterfly will lay its eggs on. Bring a lunch, rain gear, sturdy pants and shoes, a hat, and gloves if you have them. Gloves and tools will be provided. Arrive at 10 a.m. for necessary training. You do not need to stay for the entire day. Call Louis Terrazas at 510-377-1233 for more information or driving directions. Antioch Dunes National Wildlife Refuge is located at 501 Fulton Shipyard Rd. in Antioch.

*Bird Migration

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

Why do they migrate? How far do they fly? Who flies the farthest? Come and learn about bird migration and some of the hazards birds encounter on their seasonal travels. Then enjoy playing a migration game. Ages 5 and up. Led by Ed Kantack. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext 102.

Sunday, February 8

*Tracking Through the Slough

Environmental Education Center, Alviso
10:00 a.m. - 12:00 p.m.

Who's been walking in the wetland and sloshing through the slough? Find out at this hands-on program where we'll learn all about tracks, the refuge animals that make them, and what these critters tell us about the health of our watershed. After a brief slide show introduction, we'll head out on the trail to search for tracks and use field guides to identify what we see. Then we'll make our own tracks to decorate and take home! All ages welcome. Reservations required. Call 408-262-5513 ext. 104.

Webelos Naturalist Program

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

Attention Webelos! Earn your naturalist badge in just two hours. During this hike, learn about birds, flyways, food chains, and the importance of wetlands. Bring your binoculars, or borrow one of ours. Space is limited to 15 Webelos. Call 510-792-0222 ext. 43. Led by June Smith.

Sunday, February 15

*Adult Beginning Birdwatching

Environmental Education Center, Alviso
9:30 a.m. - 11:00 a.m.

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

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.

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Visitor Center, 1 Marshlands Road, Fremont - (510) 792-0222 • Environmental Education Center, 1751 Grand Blvd, Alviso - (408) 262-5513

Drawbridge

Environmental Education Center, Alviso

12:30 p.m. – 1:30 p.m.

There's a ghost town in San Francisco Bay? That's right! Nestled on an island in the salt marshes of South San Francisco Bay, the town of Drawbridge once boomed. Was it a quiet, peaceful town full of nature lovers, or a rip-roaring town full of two fisted rowdies? Enjoy a slide show program presented by Ceal Craig. Note: There is no driving tour in this program. RESERVATIONS ARE REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Saturday, February 21

*Marshland of Dreams

LaRiviere Marsh Parking Lot, Fremont

9:30 a.m. – 10:30 a.m.

Join a refuge ranger on a 1- mile walk of the LaRiviere Marsh Trail to find traces of the past. Prior to marsh restoration, learn how Californians utilized the area for farms, railroads, salt production, and quarries. There are opportunities for bird watching as well. Meet at the LaRiviere Marsh trailhead by the sign, located in the first parking lot to the right after on Marshlands Road.

Salt Pond Restoration 101: An Introduction to the Project

Environmental Education Center, Alviso

11:00 a.m. – 12:00 p.m.

Restoration of 15,100 acres of South San Francisco Bay salt ponds to wetland habitats has begun. Please join us for overview of this incredible project happening in our backyard. Program will be held indoors in the auditorium. All are welcome!

*Quackers and Honkers

Environmental Education Center, Alviso

1:30 p.m. – 3:00 p.m.

Enjoy a brief slideshow about our migratory ducks and geese. Then join us in a leisurely walk to see which migrants made it to the refuge so far. Open to all ages. Led by Ed Kantack. RESERVATIONS REQUIRED, please call Lindy at 408-262-5513 ext 102 to make a reservation.

*Beginning Bird Photography Workshop

Environmental Education Center, Alviso

2:30 p.m. – 4:30 p.m.

Come learn the basics in bird photography! Join us for tips on photography or for viewing commonly seen birds at the refuge. This beginning bird photography workshop will help you get the most out of your point-and-shoot camera. We will discuss ideal sighting and photo taking conditions, lighting, composition and equipment. We will also have a slide show to familiarize you with some common birds at the refuge. Our discussion will be followed by an easy walk to different locations where we will take photos. Please bring your binoculars and/or digital or film camera. Warm clothing and comfortable walking shoes recommended. Led by Jennifer Woo. Recommended for ages 14 and up. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Twilight Marsh Walk

Visitor Center, Fremont

4:30 p.m. – 6:00 p.m.

Experience the salt marsh at twilight on an easy stroll along Tidelands (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 in front of the Visitor Center. Not suitable for young children. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43. Led by Mary and Gene Bobik.

Sunday, February 22

Marsh Mud Mania

Environmental Education Center, Alviso

1:00 p.m. – 3:00 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, goeey mud, and discover which critters the birds find during a low-tide feast. We will compare mud creatures from two different mud flat habitats. Through this comparison, we will discover how these creatures are species indicators of slough habitat. All ages welcome. Reservations required. Call 408-262-5513 ext.104.

Geokids

Visitor Center, Fremont

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

A rock in the hand is worth... This hands-on activity is great for kids who want to know more about why some rocks are different from others. Come along on a short hike and discover the official state rock! Reservations are required. Call 510-792-0222 ext. 43. Meet at the observation deck with the scope near the top of the hill. Led by Mansur Nur.

Saturday, February 28

Beginning Birding Clinic

Environmental Education Center, Alviso

8:30 a.m. – 10:30 a.m.

Come one and come all to enjoy the bounty of winter wildlife at the refuge! It's a great time of year to look for migrating and resident birds at our Alviso site. Don't worry if you can't tell your egrets from your cormorants. Just bring your binoculars (or borrow ours) and your curiosity, and we'll see what we can discover together. Attending the 10:00 a.m. photography workshop? Come early and join us for more birding opportunities. Led by Jennifer Heroux.

*Intermediate Bird Photography Workshop

Environmental Education Center, Alviso

10:00 a.m. - 2:00 p.m.

Continuing where "Beginning Bird Photography" left off, this 4-hour workshop will first address aesthetics (e.g., advanced composition) and nature (animal behavior, field techniques). We then break for lunch and a discussion. Participants will need to bring their own lunch. After lunch, we will focus on technical is-

Winter Activity Schedule

sues such as exposure, depth of field, teleconverters, flash, etc. Material is geared for SLR cameras but can be applicable to any camera type. Lastly, we'll take a short stroll in the refuge to practice what we learned, so bring your camera if you have one. Not suitable for children. Program led by volunteer Paul Bridges. Please be sure to wear comfortable walking shoes. Space is very limited. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Community Service

Environmental Education Center, Alviso

10:30 a.m. – 12:30 p.m.

Do you need to fulfill community service requirements? Or would you just like to come lend a hand? Come help in our native plant garden by pruning, mulching, removing non-native plants, or various other jobs that help protect wildlife. Bring gloves or borrow a pair of ours. Tools provided. Dress in layers and bring water. Be prepared to get dirty and wet. Ages 9 and up. RESERVATIONS REQUIRED. Call Lindy at 408-262-5513 ext. 102.

Family Bird Walk

Visitor Center, Fremont

2:00 – 4:00 p.m.

Let family walks become a shared time of nature learning. We'll begin by helping kids create their personal bird watching field guides, and then head out onto the trails to find those birds. Learn about the salt marsh habitat along the way. A limited number of binoculars are available to borrow. Recommended for children ages 5-10. RESERVATIONS REQUIRED. Call 510-792-0222 ext. 43.

Kite Photography Demonstration

Environmental Education center, Alviso

2:30 p.m. – 4:30 p.m.

Using aerial kite photography, photographer Cris Benton has been keeping an incredible visual record of the South Bay salt ponds and wetlands. Please join us for this wonderful opportunity to see his fascinating images and to learn more about how they are made. In the first hour, Cris will introduce us to a history of aerial photography, his current work and what it reveals to us about the landscape we live in. In the second, we'll move outdoors for a kite photography demonstration. Weather depending, Cris will launch the kites and record a bird's eye view of the world! For more information, please call Jennifer at 408-262-5513 ext. 106.

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

Visitor Center, 1 Marshlands Road, Fremont – (510) 792-0222 • Environmental Education Center, 1751 Grand Blvd, Alviso – (408) 262-5513

Field Trips to the Refuge

General Field Trip Program Information

FREE field trip programs are offered at two sites at the Don Edwards San Francisco Bay National Wildlife Refuge. The Wetland Round-Up field trip program is offered at the Newark Slough Learning Center in Fremont. Wetland Round-Up and Slow the Flow programs are offered at the Environmental Education Center in Alviso. These programs actively involve teachers, adult volunteers, and students in investigating the diverse habitats and wildlife at the refuge. The hands-on, small-group activities are designed to teach basic ecological concepts and to introduce endangered species, migratory birds, and wetland habitats to students. All programs have

been correlated to the appropriate State of California Education Standards.

Educators and adult leaders design and conduct their own field trips after attending a Field Trip Orientation Workshop. Adult volunteers must be recruited to lead the activities at the different learning stations and to chaperone the rotation of student groups. We provide easy to follow "scripts" for each station, but both "leaders" and "chaperones" are strongly encouraged to attend a workshop. It is our policy that lead educators must attend a workshop every two years. **Location of activities and trail conditions may vary. Please call for accessibility information.**

Field Trips at the Learning Center in Fremont

Wetland Round-Up

Explore the habitats of the refuge! Investigate the creatures of the mud flats, collect plankton from the slough, and taste the pickleweed from the salt marsh. This program is designed for grades K-6, for up to 65 students. Wetland Round-Up in Fremont is offered Tuesday - Friday from March 3 - June 12, 2009.

Reservations for Spring 2009 field trips begin on Tuesday, December 2, from 4:00 p.m. to 5:00 p.m. Call 510-792-0222 ext. 0 on this date to reserve a Spring 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 Workshop Dates at the Learning Center in Fremont

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

Thursday, February 12

Wednesday, March 11

Thursday, April 9

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

Field Trips at the Environmental Education Center in Alviso

Wetland Round-Up

Investigate the butterflies in the butterfly garden, taste pickleweed in the salt marsh, or discover the creatures that live in the slough water on a Wetland Round-Up Field Trip. This program is designed for up to 65 students in grades K-6. Wetland Round-Up in Alviso is offered Monday - Thursday from February 23 - June 12, 2009.

Reservations for Spring field trips begin on Tuesday, December 2, from 4:00 p.m. to 5:00 p.m. Call 408-262-5513 on this date to

reserve a Spring field trip. For more information or to schedule a field trip after December 2, call the Environmental Education Intern at 408-262-5513 ext. 103.

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

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

Thursday, February 5

Monday, March 2

Wednesday, March 25

Wednesday, April 8

Thursday, April 23

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

The Slow the Flow Program

Slow the Flow provides an experiential learning environment for students and educators to explore the topics of water use, wastewater treatment, and habitat preservation. Activities and presentations focus on the relationship between personal habits and their effects on local habitats. Slow the Flow is an environmental education program offered at no cost through the cooperating efforts of the City of San Jose, U.S. Fish and Wildlife Service, and the San Francisco Bay Wildlife Society. Slow the Flow programs are available to educators and groups located in San Jose, Alviso, Milpitas, Santa Clara, Saratoga, Monte Sereno, Los Gatos, Campbell, and Cupertino.

Programs are offered to 5th - 12th grades, although a modified field trip is available for college groups. Educators are encouraged to contact us to discuss options for customizing field trips and presentation activities and schedules. Slow the Flow Programs are available throughout the year in Alviso. **Reservations for the Slow the Flow program are on a first-come basis.** For more information or to make a reservation for February - June, 2009, call the Slow the Flow Program Coordinator at 408-262-5513, ext. 104.

Scout Programs

Offered by the Watershed Watchers Program

The Environmental Education Center currently offers free hands-on, small group programs for Scouts. In these programs Scouts learn about endangered species, migratory birds, wetland habitats, and the



relationship between personal habits and their effects on the Bay. The programs are sponsored by the Santa Clara Valley Urban Runoff Pollution Prevention Program and the San Francisco Bay Wildlife Society and are hosted by the Don Edwards San Francisco Bay National Wildlife Refuge.

We offer three specific Scout Programs that meet the badge/patch requirements. The Scout programs offered are:

Webelos Naturalist Badge

Saturday, January 10, 2009
10:30 a.m. - 12:30 p.m.

Saturday, February 7, 2009
10:30 a.m. - 12:30 p.m.

Brownie Eco-Explorer Patch

Saturday, February 21, 2009
10:30 a.m. - 12:30 p.m.

Junior Girl Scout Wildlife Badge

Saturday, January 31, 2009
2:00 p.m. - 4:00 p.m.

RESERVATIONS ARE REQUIRED. Programs fill up quickly. Reservations for fall Scout programs begin on **Thursday, December 17th between 3 p.m. – 4 p.m.** To make a reservation or for more information please call Lindy at 408-262-5513 ext 102.

Note: Ratio of 1 adult per 5 children required. Space is limited to 20 people, including siblings (no siblings under 5-years old). Once the program is full there will be a waiting list. Most programs are scheduled on Saturdays, approximately two hours in length, and cover almost all of the badge/patch requirements. Weekday programs are offered in the summer and during school holidays.

Scouts are also invited to make reservations for other weekend programs that may be suitable for their badge/patch needs. Please see the individual program description for more information and who to contact for a reservation. Please note that some programs may have a limit on group size. Programs that may meet badge requirements include Community Service, Habitat Hike, Owl Programs, Mud and Critter Programs, and Cleanups.

TIDELINE

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Editor: Carmen Minch

To receive *Tideline*, email carmen_leong-minch@fws.gov, or write to: **Tideline**, Don Edwards San Francisco Bay National Wildlife Refuge, 9500 Thornton Ave, Newark, CA 94560.

San Francisco Bay National Wildlife Refuge Complex

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

Project Leader: Mendel Stewart

Deputy Project Leader: John Bradley

Don Edwards Refuge Wildlife Specialist: Eric Mruz

Don Edwards Warm Springs Unit Manager: Ivette Loredó

Farallon Refuge Wildlife Specialist: Zach Coffman

North Bay Refuges Manager: Christy Smith

North Bay Wildlife Specialist: Louis Terrazas

South Bay Refuges Manager: Diane Kodama

Refuge Planner: Winnie Chan

Chief of Visitor Services: Karla Tanner

Outdoor Recreation Planners: Carmen Minch, Jennifer Heroux

Environmental Education Specialists: Genie Moore, Tia Glagolev

Volunteer Coordinator: Paul Mueller

Law Enforcement Officers: Walter Duran, Kevin Watts

Biologists: Joy Albertson, Giselle Downard, Rachel Hurt, Gerry McChesney, Susan Euing, Peter Kappes, Cheryl Strong

Administrative Staff: Lucinda Ballard, Ellen Tong, Patricia Compton, Lauren Hupp

Maintenance Staff: Juan Flores, James Griffin, Calvin Sahara, Michael Springman, Jeff White, and Norman Winkler

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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 DEPARTMENT OF THE INTERIOR
 FISH AND WILDLIFE SERVICE
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SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE COMPLEX

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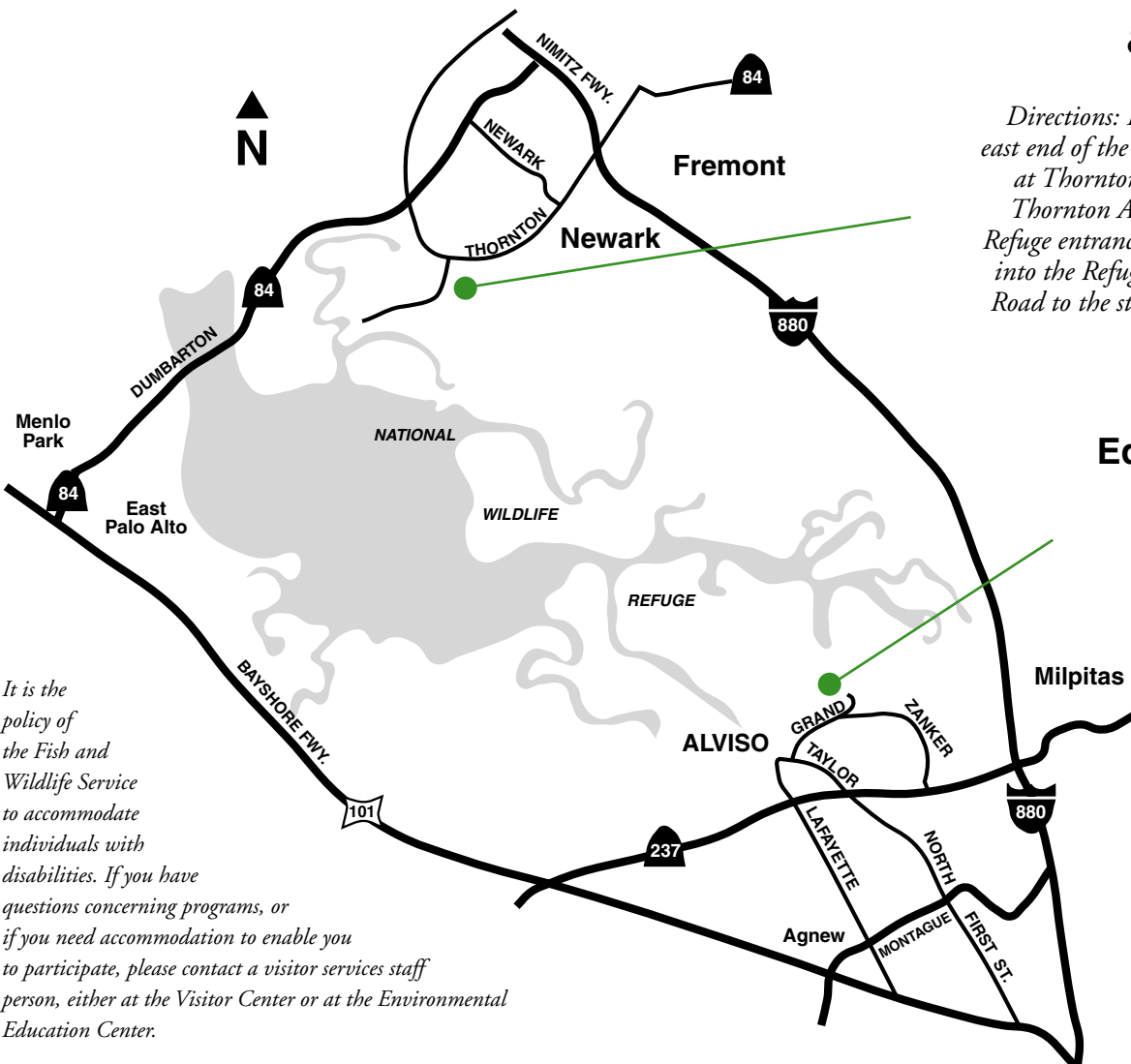
Headquarters

& 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.