

BAY BIRD REVIEW

A QUARTERLY PUBLICATION ON THE SCIENCE AND CONSERVATION OF BIRDS AND THEIR HABITATS



SAN FRANCISCO BAY
BIRD OBSERVATORY

.....
Director's Message



I first came to the San Francisco Bay Area in winter of 2003 to study the salt ponds, sloughs, and tidal marshes that ring this amazing estuary that we, and millions of waterbirds, call home. Six years later, I am pleased to still call the Bay Area, and now the San Francisco Bay Bird Observatory, home. I was drawn to the Bay Area because of the abundance of scientific research focusing on the birds I love and the habitats they use. It was this passion that first brought me to San Francisco Bay Bird Observatory, and continues to excite me as SFBBO continues to lead bird conservation research in the South Bay.

This issue's *Waterbird Science Report* and *Science Feature* highlight two of our many programs that directly link bird science and monitoring to land management decisions happening in our own backyard. As many of you know, the South Bay Salt Pond Restoration Project, the largest restoration project on the west coast has begun,

DIRECTOR'S MESSAGE *continued on page 2*



BLACK NECKED STILTS foraging in a salt pond.

PHOTO BY KEN PHENICIE

Waterbird Science Report

Waterbird Use of South Bay Salt Ponds

Salt ponds have been present in the San Francisco Bay Area for 150 years and have significant wildlife value as ponds. As a major migratory and wintering location along the Pacific Flyway, the San Francisco Bay supports more than a million birds throughout the year and provides important foraging and roosting sites. In 2002, the U.S. Fish and Wildlife Service and California's Department of Fish and Game entered a historic agreement with Cargill Salt to purchase 15,100 acres of salt evaporator ponds in the South San Francisco Bay. The South Bay Salt Pond Restoration Project (the Restoration Project) has begun to restore the area to

a mix of tidal and pond habitats and provide flood protection and public access to the Bay. The Restoration Project has committed to retain some salt pond habitat to maintain existing ecological value for waterbirds, but information is needed to ensure that habitat requirements of large numbers of waterbirds can be met with reduced salt pond acreage.

In 2005, SFBBO began monthly waterbird surveys and sampled water quality parameters (salinity, dissolved oxygen, turbidity) in 22 ponds in three South Bay salt pond complexes: Coyote Hills (north of the Dumbarton Bridge), Dumbarton (south of the Dumbarton Bridge), and Mowry (Newark). The Don Edwards San Francisco Bay National Wildlife Refuge (Refuge) owns these ponds; however, Cargill Inc. retains the mineral rights to the ponds and continues to manage them for salt production. These ponds will not be restored as part of the Restoration Project, therefore it is important to understand how they currently support waterbirds and their potential to support waterbirds as other salt ponds are



PHOTO BY CAITLIN ROBINSON

NORTHERN SHOVELERS

WATERBIRD REPORT *continued on page 2*

and with it starts the historic process of restoring up to 15,000 acres of salt ponds. Here at SFBBO, our research and monitoring initiatives will provide those that manage bird habitats comprehensive, scientific data to aid in the adaptive management process inherent in the Restoration Project. For example, SFBBO's Cargill Salt Pond Surveys are important to assess the Restoration's goal of maintaining current numbers of waterbirds using the South Bay. As the salt ponds included in the Restoration Project area are restored, the salt ponds still operated by Cargill for salt production may become even more important for waterbirds that depend on salt pond habitats. Additionally, our Western Snowy Plover research and monitoring program is working to conserve and manage this species in the changing landscape. Together with our new research partners, we have begun an exciting and innovative chapter in plover conservation research. A novel and cryptic camera system placed near plover nests allows our biologists to monitor plover nesting behavior 24 hours a day, and most importantly allows us to determine the major predators of plover nests.

I am proud of SFBBO's contribution of bird science research and the difference we make for bird populations in the South Bay. Please join me in celebrating SFBBO's contributions to Bay Area Science, and give yourself a pat on the back! We couldn't do it without the generous support of our members and funders!

By Jill Demers, Acting Executive Director and Science Programs Director

Staff Migrations and Arrivals

Welcome Kathi Kendrick



KATHI IS THE NEW *Administrative Assistant*.

"I joined the San Francisco Bay Bird Observatory staff as the Administrative Assistant on March 3rd. There was no administrative staff before I joined, so I have had fun assisting the staff, organizing, and helping wherever needed. Originally from Nevada, I later traded the sagebrush for palm trees and moved to California where I became keenly interested in nature and conservation. For the past nine years I was the Administrative Assistant at H. T. Harvey & Associates, an ecological consulting firm in Los Gatos, where I learned much

about endangered species of plants and animals in the Bay Area and the problems facing them. I am very excited to be a part of the SFBBO team and am looking forward to learning more about the wonderful birds of our Baylands."

Kathi Kendrick

WATERBIRD REPORT *continued from cover*

| | Species Richness | Total Abundance | Total Number of Birds Recorded | Number of Birds Foraging | Total Number of Foraging Birds |
|--------------|------------------|-----------------|--------------------------------|--------------------------|--------------------------------|
| Coyote Hills | 85 | 445,065 | 33.21% | 139,222 | 41.20% |
| Dumbarton | 62 | 504,557 | 37.65% | 168,022 | 49.70% |
| Mowry | 64 | 390,564 | 29.14% | 30,944 | 9.10% |

TABLE 1. *Species richness, total abundance, percent of the total number of birds recorded, number of birds foraging and percent of total number of foraging birds in the Coyote Hills, Dumbarton and Mowry salt pond complexes. Figure depicts data collected from September 2005 through September 2008.*

restored to tidal action.

During the first three years of the study, we observed a total of 1,340,186 birds during our monthly surveys. The number of species recorded (species richness) was greatest in Coyote Hills and Dumbarton complexes and lowest in the Mowry complex. The total number of birds recorded (total abundance) was highest in the Dumbarton complex, followed by Coyote Hills, then Mowry. The proportion of bird foraging was greatest in the Coyote Hills and Dumbarton complexes, whereas birds mostly roosted in the Mowry complex.

We analyzed data by grouping birds into guilds, which are groups of species in a community that exploit the same set of resources in a similar manner. We found that water quality parameters often dictated where specific guilds of birds were found. This is due to the important role water quality plays in determining the distribution of prey items. For example, we rarely found fish eaters in ponds with salinities greater than 80 - 100 ppt because fish species cannot tolerate those salinities. Likewise, we often observed Eared Grebes, phalaropes, and shorebirds in high salinity ponds (> 100 ppt) where brine shrimp and flies are likely abundant. Pond-specific features can also drive guild distributions. For example, shorebirds use of a pond is also dependent upon the appropriate water depth for foraging or the presence of islands for roosting.

WATERBIRD REPORT *continued next page*

Diving Ducks

Diving ducks were associated with low to moderate salinity and high dissolved oxygen levels. Also, our analysis indicated that pond size may play an important role in the suitability of specific salt ponds for these birds. Because most diving ducks forage on macroinvertebrates and plant matter, these low and medium salinity ponds likely provide the variety of invertebrates and plants these species eat. Species like Greater and Lesser Scaup and Ruddy Ducks feed in open water, often on large lakes and ponds which may account for divers preferring larger salt ponds. However, other divers, such as Bufflehead, generally do not have large area requirements.



PHOTO BY KEN PHENICIE

A LEAST SANDPIPER landing on a salt pond island.

Fish Eaters

We observed fish eaters, such as terns and cormorants, in low to moderate salinity salt ponds with a range of dissolved oxygen conditions. Fish in the South Bay salt ponds cannot survive in salinities > 80 ppt., which limits the salinity range where we would expect to observe fish-eating birds foraging. Fish also need moderate amounts of dissolved oxygen in the water column to survive, and sharp drops in dissolved oxygen in the salt ponds, leading to anaerobic conditions, often causes fish to rise to the water surface to obtain oxygen, making them more available for fish-eating birds.

Eared Grebes and Phalaropes

Land managers are concerned that the loss of salt pond habitat due to the South Bay Salt Pond Restoration Project might impact bird species that thrive in saline environments, such as Eared Grebes

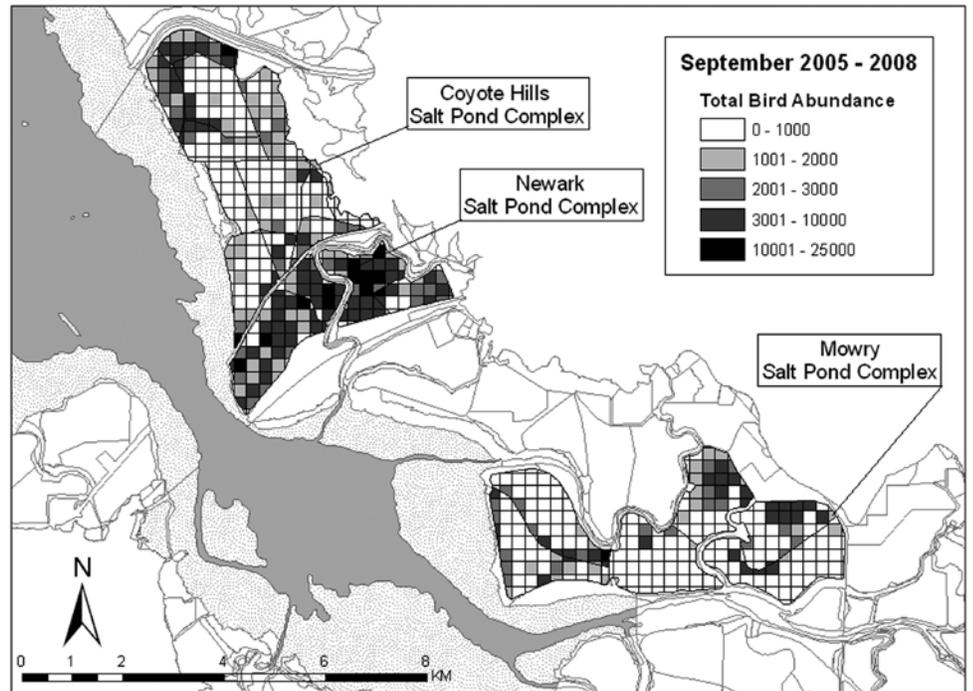


FIGURE 1. Total bird abundance by 250 m² grid blocks in the Coyote Hills, Dumbarton and Mowry salt pond complexes. Figure depicts data collected from September 2005 through September 2008.

and phalaropes. As the South Bay salt ponds are restored to tidal action, the amount of saline ponded habitat will be reduced. These ponds provide habitat for Eared Grebes which prefer shallow, saline bodies of water and feed on aquatic invertebrates such as brine shrimp.

Likewise, we rarely observed Eared Grebes in salt ponds with salinity below 65 ppt or above 200 ppt. Phalaropes exhibited similar pond preferences and were found most often in ponds with salinity ranging from 65 ppt to 200 ppt. These hypersaline salt ponds provide important migration staging habitat for Wilson’s Phalarope and Red-necked Phalaropes, and the abundant brine flies in these saline ponds provide an important food source for both Eared Grebe and phalarope species.

Medium and small shorebirds

Medium and small shorebirds were most abundant in areas with moderate to high salinity, and the ponds where we observed the most shorebirds had islands or levees that were suitable for roosting or water depth suitable for foraging. Again, brine shrimp and brine flies are both important food sources for these species, but the ability of shorebirds (other than phalaropes) to

forage on these prey items is limited by their leg length, and therefore, water depth. Furthermore, shorebird use of salt ponds is highly tide-dependant, and most shorebird species in the San Francisco Bay use salt ponds as high-tide refugia for roosting or foraging. Therefore, the presence of roosting islands is integral for shorebirds in salt ponds.



PHOTO BY GARRET LAU

A LONG BILLED DOWITCHER roosting at a salt pond island.

Gulls

Every May, SFBBO biologists and volunteers walk through California Gull colonies to estimate the number of gulls nesting in the South Bay. In addition to the gull colony work, we learn about gulls through these salt pond surveys - two of these colonies are within the survey area. We found little evidence

And a Cast of Tens of Thousands...



PHOTO BY ART CAREY

VOLUNTEER ART CAREY counted California Gull eggs as part of SFBBO's annual California Gull Colony Walkthroughs.

"Gaal...gaal...gaal..."

With a shriek, a blur of gray and white fills my vision. I flinch, awaiting the collision of feathers and face. Instead, a yellow splatter drips down my arm. *Uh-oh... slimed.*

Why am I standing on a muddy salt pond in May among thousands of screaming birds? *Oh... right...* I volunteered to help the San Francisco Bay Bird Observatory survey nesting California gulls (*Larus californicus*). We're counting bird nests and eggs in pond A6, part of the Don Edwards San Francisco Bay National Wildlife Refuge. A6 is a semi-dry looking swatch of former salt pond that can conceal a semi-liquid morass. That's why I'm wearing old clothes, rubber boots, sun block, and a borrowed bicycle helmet. The helmet is for protection against dive-bombing gulls with no appreciation of scientific research. This is a little like going on an Easter egg hunt except there are lots more eggs. The squawking, defecating gulls remind me of Alfred Hitchcock's film "The Birds."

Today, SFBBO field biologists and volunteers and biologists from the U.S. Geological Survey are counting gull nests and eggs and looking for signs of

depredation, some by gulls themselves, among tens of thousands of uncooperative birds. The biologists are monitoring numbers of nesting gulls and recording nesting habitats. Gulls breeding in the South Bay grew from less than 1,000 in 1982 to more than 46,000 in 2008.

The birds, medium size gulls with yellow bills and legs, white bodies, and black-tipped wings, aren't impressed. They have deposited speckled brown eggs in flimsy nests of grass and twigs scraped together on the hard pan. I am partnered with Collin, a USGS biologist in hip boots, and Richard, an experienced SFBBO volunteer. Richard and I

will be monitoring general nesting, but Collin, armed with a GPS unit, is also pinpointing birds nesting on different habitat types.

My job is counting nests with one or four eggs. If I see just one, I click once on a hand counter. If I see four, which is rare, I shout to Richard, who notes it on a clipboard. Most nests have two or three eggs. Collin, a clicker in each hand, registers the 2's on one clicker, the 3's on another.

This lacks the precision of the U.S. Census and it's the gulls' fault. Indignant birds scream in protest, refusing to leave nests until we are only a few feet away. Fortunately, none attack me.

Small white bones litter the ground. A biologist explains: chickens. Chickens? Ah, yes...gulls are great scavengers. They regard open landfills in San Jose, Mountain View, and even San Francisco as all-you-can eat buffets, zeroing in on Kentucky Colonel leftovers.

Time passes, punctuated by periodic swigs of tepid water. It's getting warmer. Finally, Collin pulls out a cell phone and checks in with Count Central. Good news. All areas of A6 have been covered. The final tally: Almost 13,000 nests containing more than 30,000 eggs.

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By SFBBO volunteer Art Carey. Art started volunteering with SFBBO in 2001 monitoring heron and egret colonies on Coyote Lagoon. He currently monitors colonies of egrets and herons at the Baylands and at Duck Island at Lake Elizabeth in Fremont.



THE A6 CALIFORNIA GULL colony.

PHOTO BY MICHAEL KERN

Monitoring Snowy Plover Nests with Remote Cameras

Reproductive success, or the capability of an organism to pass on its genes to subsequent generations, is limited by a variety of environmental factors in wildlife species. In many bird species, nest predators are a leading cause of reproductive failure and often will limit the population size of prey species. Hence, many bird species, especially waterbirds, are long-lived and are able to nest several times in one breeding season. In other words, they are able to “hedge their bets” and balance the risk of nest predation with the capability of nesting many times over the course of their lives.

However, with the rapidly increasing human population, environments have been altered in such a way that nest predation has increased some prey species’ vulnerability to extinction from other sources, such as habitat loss or degradation. Or in some cases, population levels may have been previously reduced to low levels by other factors, thereby making a species more susceptible to nest predation. For instance, with the removal of apex predators (i.e. wolves and brown bears), there has been an increase in mammalian mesopredators (i.e. skunks, foxes, and raccoons), which have adapted well to urbanized areas. These species, in the absence of natural population control, are more capable of causing reproductive failure on bird species than before. Also, in urban areas, predation by human-adapted bird predators, such as corvids (Common Ravens and American Crows) or gulls (e.g., California Gulls), on less common species may be particularly severe because these predators are more likely to cause extinctions when food subsidies, such as trash at landfills, allow predator populations to remain high as their natural prey populations decline.

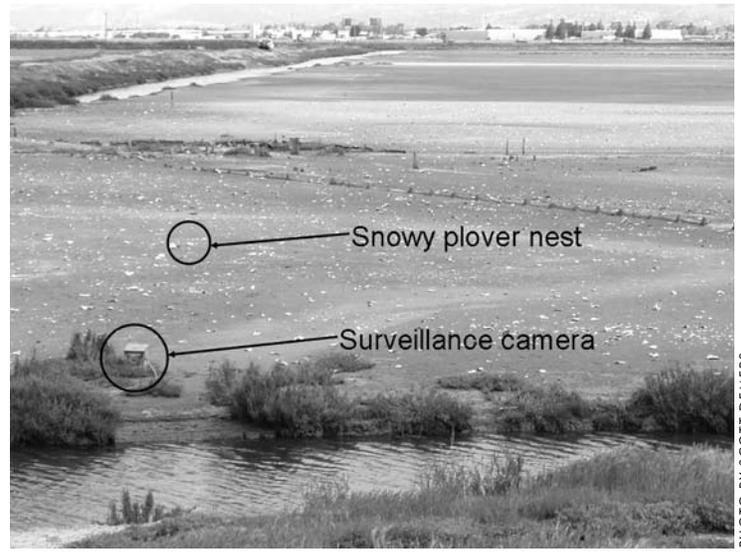


PHOTO BY SCOTT DEMERS

FIGURE 1. A SURVEILLANCE CAMERA continuously monitors a Snowy Plover nest in a South Bay salt pond with oysters shell substrate.

The effect of such artificially high predator abundance may be evident in the case of the federally threatened Western Snowy Plover. The U.S. Fish and Wildlife Service identified nest predation by gulls, corvids, and mesopredators as one of the major limiting factors of Snowy Plover reproductive success. Identifying nest predators, especially specific nest predators in different nesting habitats, would be extremely beneficial to biologists that manage resources for these birds. However, identifying nest predators is often extremely difficult because predators may not leave tracks or other evidence at the nest. Therefore, to positively identify nest predators of Snowy Plovers, researchers began a program using remote camera monitoring systems last year on beach habitats in Humboldt County. These systems continuously monitor plover nests, even at night, and have been instrumental in identifying nest predators that previously would have been identified as “unknown” by traditional nest monitoring methods.

Since this program on Humboldt beaches had been so successful after just one year, SFBBO staff has teamed with ecologists from Humboldt State University and H. T. Harvey & Associates to design a camera monitoring system that can be used in San Francisco Bay salt pond habitats. This project is especially timely in that the South Bay Salt Pond Restoration Project is underway and SFBBO staff, assisted



PHOTO BY SCOTT DEMERS

FIGURE 2. CAITLIN ROBINSON of SFBBO retrieves video recording data of a Snowy Plover nest in a South Bay salt pond.

by volunteers, has experimentally altered salt pond substrate with oyster shells in an attempt to increase reproductive success of plovers. Information on how oyster shells, and other environmental factors, influence nest predation would be extremely informative for future management actions.

Designing the camera system for South Bay salt ponds was challenging in that the cameras need to be camouflaged, and far enough from the nest to avoid attracting predators and altering the behavior of nesting plovers. Also, the system had to be designed so that researchers could minimize disturbance to nesting plovers while maintaining the system. To do this we used waterproof surveillance cameras, equipped with night vision, connected to heavy-duty batteries and a portable

DVR with coaxial and electrical wire. We hid the camera by installing it in a small box that was painted to match salt pond substrate (Figure 1). Each surveillance system has a spool of 1000 ft of wire, so that researchers can access the DVRs and batteries without entering the pond and unnecessarily disturbing the plovers and attracting or deterring predators (Figure 2).

After just one month, we have already received early returns on our investment. The first camera-monitored nest was preyed upon by a Red-tailed Hawk, which is a species that is not necessarily considered a nest predator by avian ecologists. Since hawks have routinely been observed roosting on powerlines over Snowy Plover nesting habitat, this camera data highlights the problems associated with the availability of predator roosts in habitat that is managed

for federally-listed species. The second nest predator was a California Gull. The California Gull population has grown exponentially in the South Bay and this species has been suspected of causing the decline in plover populations, but this is the first unequivocal evidence that they depredate Snowy Plover nests.

Despite the early success of this project, the work is far from over. The next step is to continue recording nest predation events over the next few years to determine what species are having the most impact on Snowy Plover populations in the South Bay and if habitat variables, such as oyster shells, influence the types or the intensity of predation events in salt ponds.

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By Scott Demers. Scott is a wildlife ecologist at H. T. Harvey & Associates, specializing in avian ecology and estuarine ecology.



PHOTO BY KEN PHENICIE

A RED NECKED PHALAROPE forages on brine shrimp in a salt pond.

WATERBIRD REPORT *from page 3*

that gulls' use of the salt ponds was related to water quality or pond size. Rather, their use of ponds may be influenced by the location of the available habitat. The Coyote Hills California Gull colony was established in 2005 and hosts nearly 5,000 breeding birds, which all nest on levees. Gulls' use of the other Coyote Hills ponds was low, suggesting the birds go elsewhere to forage. Similarly, the Mowry California Gull colony continues to grow annually, and we found that gulls were the most abundant guild in the Mowry salt pond complex. Not only were the gulls nesting there, but they also roosted in large numbers year-round on a nearby pond which is adjacent to the Tri-

Cities landfill and in close proximity to Newby Island landfill.

Many of these ponds surveyed for this study are closed to the public. If you would like to visit salt ponds, please ensure the areas you plan to access are open to the public by visiting the following websites:

DON EDWARDS SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE:
www.fws.gov/desfbay/

SOUTH BAY SALT POND RESTORATION PROJECT:
www.southbayrestoration.org/

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By Caitlin Robinson. Caitlin is the Waterbird Program Supervisor for SFBBO.

Our thanks to these supporters of the San Francisco Bay Bird Observatory!



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January – March 2009.*

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Calendar

Sat. July 25, 7:30–9:30am

★🐦👤 RSVP

A BIRD IN THE HAND

SITE: MEET AT THE BORDERS BOOKSTORE PARKING LOT IN MCCARTHY RANCH, MILPITAS
Tour mist nets, watch a bird banding demonstration, and explore a restored riparian habitat. Learn why bird banding is important and how it helps protect birds and their habitats. For more info about the Coyote Creek Field Station please visit www.sfbbo.org/science/banding.php. If we do not have enough sign-ups (a minimum of 5) we will cancel the program. Space is limited to 15.



PHOTO BY ANN HEPENSTAL

DON'T MISS the next "Bird in the Hand" demonstration!



WALK: RSVP to outreach@sfbbo.org or 408.946.6548. Space is limited to 20 people. Free for members; \$10 for non-members.



ACCESSIBLE: Please contact the Outreach Specialist so that we can coordinate with you.



SPECIAL EVENT



VOLUNTEER ACTIVITY

Fri.—Sun. Aug. 28–30

WESTERN BIRD BANDING ASSOCIATION ANNUAL MEETING

★🐦👤 RSVP

SITE: SOBRATO CENTER FOR NON-PROFITS, 600 VALLEY WAY MILPITAS, CA 95035
FIELD TRIPS AT VARIOUS LOCATIONS AROUND THE BAY AREA.

This year the San Francisco Bay Bird Observatory is hosting the Western Bird Banding Association (WBBA) Annual Meeting. WBBA is a great opportunity for bird banders and those interested in bird banding to exchange of information on banding. The registration fee will include several field trips, banding demonstra-

tions, and scientific paper presentations. Some of the highlights of this year will be Keynote Speaker Dr. John Y. Takekawa, Research Wildlife Biologist USGS Western Ecological Research Center, banding demonstrations and workshops at the Coyote Creek Field Station, a field trip with Alvaro Jaramillo along the San Mateo Coast, a field trip with Acting Executive Director/Science Programs Director Jill Demers to observe Waterbirds at South Bay Salt Pond Restoration Project sites, and much more! More information about this event will be posted on our website. If you have any questions feel free to contact Lindy Nice at outreach@sfbbo.org.

Sept. 11–October 11

CALIFORNIA FALL CHALLENGE — 2009

SITE: FIELD TRIPS AT VARIOUS LOCATIONS AROUND THE BAY AREA

We are getting geared up for our 13th Annual California Fall Challenge!

What is it? The California Fall Challenge is the San Francisco Bay Bird Observatory's only fundraiser. This is the most important fundraising event for the Bird Observatory, as funds raised help us to continue our efforts to apply science to the problems of saving birds and their habitats.

Helping out is easy! We need help obtaining donated prizes to be awarded to those who raise the most money, or become the most successful first time fundraiser, or see the most species, etcetera. Prizes from previous years have included gift certificates to various businesses, birding paraphernalia, outings, artwork, wine, outdoor gear, or pretty much anything you can think of. If you would like to support the Bird Observatory by donating an item or requesting a donation from a business you love, please let us know. If you aren't sure how to help, feel free to contact Lindy Nice at outreach@sfbbo.org or by phone at 408-946-6548. More information will be winging your way!