

Calendar

WALK: RSVP to outreach@sfbbo.org or 408.946.6548. Space is limited to 15 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

Saturday, January 20, 8:30 – 10:30 a.m.

BIRD BANDING AT COYOTE CREEK

SITE: COYOTE CREEK FIELD STATION, MILPITAS

Visit the Bird Observatory's field station and experience conservation science in action. Tour mist nets, watch a bird banding demonstration, and explore a restored riparian habitat. Meet at the Borders bookstore parking lot in McCarthy Ranch, Milpitas. Please remember to RSVP on the Friday before the tour. In the event of rain, the tour is cancelled.

Wednesday, January 24, 7 – 8 p.m.

NEW VOLUNTEER ORIENTATION

SITE: BIRD OBSERVATORY OFFICE

Interested in volunteering for the Bird Observatory? Come to our New Volunteer

Interested in Carpooling?

Join our e-mail list group to make carpooling to San Francisco Bay Bird Observatory events easier at <http://groups.yahoo.com/group/BirdObsCarpool/>.

Orientation to hear about all the opportunities available in the field, at the office, and out at events. You'll also fill out an application and have a chance to ask questions. RSVP to outreach@sfbbo.org or 408.946.6548.

Saturday, February 11, 8 – 10 a.m.

BIRDING THE BAY TRAIL

SITE: HAYWARD REGIONAL SHORELINE

Join Bob Lewis on a bird walk at the Hayward Regional Shoreline where retired salt production ponds and tidal marsh provide unique birding experiences along the Bay edge heavily modified by human activity.

Sunday, March 11, 8 – 12 p.m.

BIRDING THE BAY TRAIL

SITE: CHINA CAMP STATE PARK

Join Eric Feuss to explore the waterfront on the San Francisco Estuary. Many ducks and waterbirds work the shoreline and deeper waters, while landbirds inhabit the grasslands, forest edges, and mixed oak habitat.

January, February, and April WORKSHOPS FOR THE BIRDER AND NATURALIST

with Alvaro Jaramillo

SITE: DON EDWARDS WILDLIFE REFUGE EEC, ALVISO

These workshops incorporate ecology, evolutionary biology, behavioral ecology, and natural history to complement bird identification. "Gulls" in January, "Waterfowl" in February, and "Shorebirds and Migration" in April. There are two days of classroom instruction and a weekend all-day field trip.

Cost per workshop is \$150 and space is limited.

For course information and registration, call 408.946.6548 or go to www.sfbbo.org/birdingworkshops.htm.



BAY BIRD REVIEW

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



SAN FRANCISCO BAY BIRD OBSERVATORY

Director's Message

Moving into the Future

The San Francisco Bay Bird Observatory is one of approximately 25 bird observatories in North America, mostly small to medium sized organizations like ourselves, with one heavy hitter sitting on each coast—Manomet in the east and PRBO in the west. Both have moved beyond birds into more ecosystem-based conservation science. We at this bird observatory have the interesting position of being the only science-based, exclusively bird-oriented group focused on the Bay Area.

With more than 8 million people now living in the greater Bay Area, we have a huge audience. Bird watching is one of the nation's fastest growing hobbies and we must reach out to those newly interested in this aspect of their environment. Despite the assumed "green-ness" of the Bay Area, a very large proportion of our population is not tuned in at all to our local wildlife and habitat preservation issues. While we are a scientific organization, we know we cannot be effective at our mission of bird conservation if we locked ourselves away in an academic ivory tower.

This past year we successfully met that challenge with our "Birding the Bay Trail" brochure and walk series. Community outreach continues through an update of our outreach materials. We are very pleased to introduce a new logo design for the Bird Observatory, which you see above. This new design will eventually anchor the renewed looks of our newsletter, website, and monthly

Continued on next page



BURROWING OWLS are often found in California Annual Grasslands.

PHOTO BY PETER LATOURRETTE BIRDPHOTOGRAPHY.COM

Landbird Science Report

What Do We Know About California Annual Grasslands as Habitat for Birds?

Land managers in California today have no guidelines for managing grassland birds due to an immense information gap in grassland bird data. Basic bird data on species composition, distribution, and abundance are unknown in California grasslands. This information gap makes it difficult for land managers to consider birds in essential grazing management, grassland protection, and weed abatement projects.

California Annual Grasslands are found throughout California, but are concentrated on the edges of the Central Valley and throughout the Coast Range. The grasses that compose this habitat are mostly non-native annual grasses, which evolved after Hispanic settlement in the 1800's. Researchers estimate that less than 1% of the grass biomass in this habitat is composed of native species.

One theory about the evolution of this habitat is that shrub lands and oak woodlands were once the dominant habitat of

the area. When ranchers were displaced in the Central Valley by agriculture, however, ranches moved up into the foothills surrounding the Valley cutting and burning the shrubs and trees to create grazing pastures. The plants that moved into the area came from many sources including, for example, the adobe bricks that were shipped here from Spain for building purposes. Although it was a long process spanning the last 200 years, much of this expansion in California

Continued on next page



MOUNTAIN PLOVER

PHOTO BY PETER LATOURRETTE BIRDPHOTOGRAPHY.COM



SAN FRANCISCO BAY BIRD OBSERVATORY

P.O. Box 247
1290 Hope Street
Alviso, CA 95002

www.sfbbo.org

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e-newsletter. Thank you to our volunteer design committee members who have been generous with their time and expertise as we navigated this process: Kris Olson, Lisa Myers, Matthew Dodder, Patty Aguayo, and Mary Keitelman.

As we celebrate our 25th Anniversary, I would also like to thank that river of people who have contributed to the Bird Observatory over the years.

Some were at the headwaters of this river 25 years ago, when the Bird Observatory was founded by Dick Mewaldt and others. Charter members who have been with us since the beginning include Mike and Theresa Rigney, Jean and Pat DuBois, Lorrie and Ron Emery, Susie Formenti, Russell and Marilyn Fowler, and Peg Woodin. We admire their boldness and willingness to do something about saving the Bay's birds, and send them our thanks, wherever they may be.

Finally, I am pleased to announce a new development program for the Bird Observatory, pushed forward by the recent bequests we have received from the estates of Charter Member Elsie Richey and past board president and advisor Howard Cogswell. We proudly introduce the **Cogswell Society**, a new planned giving program, named with the greatest respect for Howard to honor his generosity to the Bird Observatory over the years and his leadership in bird conservation science in the Bay Area.

I would particularly like to recognize Jennifer Krauel, Joelle Buffa, and Sandra Skolnik for already stepping forward and naming the Bird Observatory as a recipient of funds in their estates. They are guaranteeing the future of the Bird Observatory and its work, and we thank them and honor their generosity.

—Janet T. Hanson, Executive Director

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If you would like more information about joining the Cogswell Society or any aspect of the Bird Observatory, please feel free to contact me at jthanson@sfbbo.org or 408.946.6548.



HORNED LARK PHOTO BY GARRETT LAU

Annual Grasslands occurred in the 1850's with development of a ranch industry after the Gold Rush.

Due to the extent of the California Annual Grassland and the time since the habitat was converted, these areas have become naturalized and restoration of this habitat back to natives would not be realistic. Several grassland birds are dependent on California Annual Grassland habitat, and some species can be found year-round like the Western Meadowlark, Savannah Sparrow, and Horned Lark. In the summer, these birds build their nests on the ground hidden in or under a grass clump.

One of the most prestigious grassland birds is the Burrowing Owl that often takes up residence in an abandoned squirrel hole. There are also migrant species like the Grasshopper Sparrow that spend their summer in grassland habitat

Editor's Note

Welcome to the inaugural issue of the Bird Observatory's Bay Bird Review!



As a redesign of our newsletter "The Stilt," the Bay Bird Review continues to report on the Bird Observatory's science programs and volunteer activities. But as the name change signifies, it also goes beyond the scope of "The Stilt" to feature reports on important avian research in the San Francisco Bay Area by scientists, journalists, project partners, birders, and others who share our dedication to the conservation of birds and their habitats through science and outreach.

As an organization in the Bay Area, our work is not complete without the resources available from such a rich and diverse science community, and our quarterly publication should reflect that strength. Thus, in this issue, you see articles by staff members like Bird Observatory Executive Director Janet Hanson and Biologist Roy Churchwell, as well as by project partners like U.S. Geological Survey Biologist Josh Ackerman.

I hope that you enjoy these reports that will keep you updated on ornithological news in the Bay Area and connected to the San Francisco Bay Bird Observatory's many projects, activities, and events! —Juliana Chow, Outreach Specialist

also nesting on the ground. In the winter, raptors flock to the annual grasslands to establish winter residence and constitute some of the largest densities of wintering raptors found anywhere in North America. Other wintering birds include the Mountain Plover and interesting winter vagrants like the Chestnut-Collared Longspur.

Currently, there is so little known about these birds that it is difficult to consider them when developing management for annual grassland habitats. Intensifying this need for information is the fact that much of California's annual grassland habitat is uniquely non-native, making comparisons to other native grassland habitats in the U.S. questionable. Future research is necessary to fill this large information gap.

The San Francisco Bay Bird Observatory plans to take a major role in this effort by coauthoring the California Partners in Flight Grassland Bird Conservation Plan and developing research projects in this habitat. While some research is being conducted at UC Berkeley and UC Davis, there is currently no published information on grassland bird use in California Annual Grasslands.

.....
By Roy Churchwell. Roy is the Landbird Program Director of the San Francisco Bay Bird Observatory.

Thank you to our 10th Annual Fall Challenge Sponsors & Donors!

TOP 10 FUNDRAISERS

★ Joelle Buffa	\$3,185.00
Lisa Myers	\$3,012.00
Bonnie Bedford-White	\$1,740.00
Lou and Jean Young	\$1,510.00
Janet Hanson	\$1,455.00
Sandy Moore	\$1,361.00
Gina Barton	\$1,225.00
Jan Hintermeister	\$1,135.00
Cheryl Strong	\$1,025.00
Karen DeMello	\$940.00

FALL CHALLENGE BIRD-A-THONERS

Gina Barton, Bonnie Bedford-White, Joelle Buffa, Juliana Chow, Charles Coston, Karen DeMello, Matthew Dodder, Janet Hanson, Garth Harwood, Jan Hintermeister, Jane Jordan, Jennifer Krauel, Barry Langdon-Lassagne, Bob Lewis, Mike Mammoser, Sharon Miyako, Delma Montes, Sandy Moore, Lisa Myers, Kris Olson, Corina Rahmig, Caitlin Robinson, Mike Rogers, Jim Ross, Jan Smith, Tom Stewart, Brittany Stieg, Cheryl Strong, Scott Terrill, Francis Toldi, Ruth Troetschler, Lisa Weber, Shirley Wodtke, Lou and Jean Young

TOP FUNDRAISING TEAMS

★ Gallinago Go Go's led by Lisa Myers	\$3,679
The Deductions led by Matthew Dodder	\$3,171
Bushtit Happens (staff team)	\$3,120

FALL CHALLENGE COMMITTEE

Jan Hintermeister, chair Bonnie Bedford-White, Joelle Buffa, Gerry Ellis, Lisa Myers, Shirley Wodtke



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FALL CHALLENGE TEAMS/GUIDED TRIPS AND LEADERS:

Amador Owls (Kris Olson, Bob Lewis, and Dave Quady), Banding Buddies (Joelle Buffa), Bushtit Happens (staff), Carolina Californian (Sharon Miyako), Coyote Creek Cuckoos (Charles Coston), Cliffsweepers (Phil and Pat Gordon), The DeDuctions (Matthew Dodder), Fighting Fledglings (Francis Toldi), Gallinago Go Go's (Lisa Myers), Guyana Cocks of the Rock (Joelle Buffa), Intrepid A-to-Zers (Karen DeMello and Kay Partelow), The Jack Sparrows (Barry and Ginger Langdon-Lassagne), Janet's Gannets (Janet Hanson and Mike Mammoser), Pish, Fast, and Loud (Mike Rogers, Scott Terrill, Steve Rottenborn, and Steve Rovell), Plasserines (David Rice, Helen Green, Kay

Loughman), The Refugees (Mike Rogers, Mike Mammoser, and Francis Toldi), Shasta Brdrdrs (Bob and Carol Yutzky), Slack Bimmers (Karen DeMello, Jan Hintermeister, and Tom Stewart), Varied Twitchers (Mike Rogers), Warblequest (Garth Harwood), and Wet and Wild Waterbird Wonders (Shirley Wodtke)

SPECIAL THANKS FOR CONTRIBUTIONS TO THE 25TH ANNIVERSARY CELEBRATION

Barefoot Wine (Randy Arnold), Jasper Ridge Biological Preserve (Philippe Cohen, Ron Arps, Bob Buell, Ted Chandik, Ed Ehmke, and Peter LaTourrette), Robots Inc. (Jim Hall), Nob Hill Foods, Steve and Sandy Moore, Starbucks, and Chris Illes



TOP: SCOTT TERRILL'S CFC Guided Trip to Monterey PHOTO BY JOE DIANDREA

LEFT: CORINA RAHMIG AND ROY CHURCHWELL of Bushtit Happens birding in Merced County. PHOTO BY CAITLIN ROBINSON

BELOW: BIRD OBSERVATORY members and guests raise their champagne glasses to a toast for another 25 years. PHOTO BY CHRIS ILLES

PHOTO BY BROOKE HILL, USGS



FIGURE 1. A remotely triggered net set ready to capture a group of roosting black-necked stilts in a San Francisco Bay marsh.

Science Feature

A Collaborative Project to Study Mercury Levels in San Francisco Bay Waterbirds

The San Francisco Bay has a legacy of mercury contamination from historical mercury mining in the Coast Range and gold extraction in the Sierra Nevada's. Because of this pollution, the Bay is listed as an impaired water body under the Clean Water Act and several human advisories for limits on fish consumption are currently in place by the State of California's Office of Environmental Health Hazard Assessment (<http://www.oehha.ca.gov/fish/general/sfbaydelta.html>).

Additionally, current restoration plans to convert salt evaporation ponds into tidal marsh could result in increased availability of methyl mercury, the most toxic and bioavailable form of mercury to humans and wildlife. The reproductive success of waterbirds breeding within the Bay may also be impaired by mercury contamination but few studies have examined its effects on avian reproduction within the estuary.

U.S. Fish and Wildlife Service, U.S. Geological Survey, San Francisco Bay Bird Observatory, and PRBO Conservation Science biologists are investigating the

risks of mercury to waterbirds within the Bay in a large collaborative project funded by the CalFed Bay Delta Program. The project seeks to assess the dietary sources and current mercury concentrations in waterbirds and, ultimately, the effect of mercury exposure on avian reproduction.

This is a complex research project that examines many aspects of avian reproduction, beginning in the pre-breeding time period (February to April) when birds accumulate much of the mercury deposited into eggs and throughout the

PHOTO BY BROOKE HILL, USGS



FIGURE 2. Biologists measure the bill length of a captured female Avocet.

breeding and post-breeding seasons (April to August) when birds are actively nesting and chicks are growing to fledging.

The project has many field components, including capturing and radio-marking birds to track habitat use, sampling bird blood and feathers for mercury concentrations, evaluating nesting success, and examining chick movements and survival. Although the study is just two years old, it has already produced several interesting findings. For example, mercury concentrations in breeding birds are higher in birds that eat fish, like terns, than in birds that eat mainly aquatic invertebrates, like avocets and stilts.

Further, mercury concentrations in birds breeding within the southern-most region of the San Francisco Bay (such as the Alviso salt pond complex of the Don Edwards San Francisco Bay National Wildlife Refuge) are higher than birds breeding in the south-central bay at Eden Landing Ecological Reserve or in the North Bay in the Napa-Sonoma Marsh Wildlife Area. These higher mercury levels in the southern San Francisco Bay are likely a consequence of highly con-

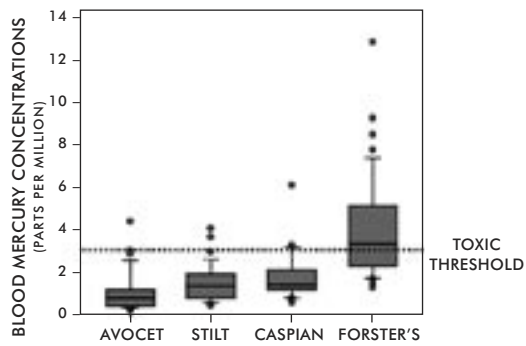


FIGURE 3. Mercury concentrations in the blood of breeding waterbirds in the San Francisco Bay. Each species had individuals above the toxic threshold concentration of 3.0 parts per million, where effects of mercury on breeding birds has been observed in the wild. The box plots depict the range of the data, from the 25th percentile (lowest portion in color bar), median (center white line in color bar), and upper 75th percentile (upper portion in color bar). Bird samples were analyzed by the USGS Davis Field Station Mercury Lab.

taminated sediments that have been transported through Alviso Slough, the discharge point for the Guadalupe River watershed which contains the historic New Almaden mercury mine. It is difficult to detect the effects of mercury on the

See videos of the camera nests online at www.sfbbo.org/baybirds_projects.html



A SCREENSHOT from an American Avocet camera nest in the South Bay.

reproduction of wild birds because of other stressors such as predation. Therefore, an additional component of the project is monitoring waterbird nest success to document effects of both mercury and predators. Included in this research was the use of remote infrared video cameras to determine the types of predators eating bird eggs (see Maliheh Nakhai's internship report for further explanation). The study documented gulls as voracious predators on waterbird nests and chicks, especially on avocet chicks that were particularly susceptible to aerial predation. If you click on the video links available from http://www.sfbbo.org/baybirds_projects.html, you can see the before and after pictures of an avocet nest being visited by a gull. In the first video, the avocet parent returns to the nest for an incubation shift whereas in the second video, a gull steals an egg from the avocet nest.

Scientists will continue to examine waterbird mercury burdens in the Bay. Our ultimate goal is to assess the impact of mercury contamination on waterbird reproduction and to be able to advise current restoration efforts to convert existing salt evaporation ponds back into tidal marsh. The project is now entering its final year and is sure to uncover more interesting results as data are more thoroughly analyzed.

By Dr. Josh Ackerman¹ and Collin Eagles-Smith²

¹U.S. Geological Survey, Western Ecological Research Center, Davis Field Station

²U.S. Fish and Wildlife Service, Environmental Contaminants Division

Field Log | Waterbird Extravaganza

AS THE BIRD OBSERVATORY INTERN working on the mercury contamination study in 2006, I joined the research crew to capture, tag, and nest-monitor American Avocets, Black-necked Stilts, and Forster's Terns at study sites in and around Alviso, Fremont, and Vallejo.

ROCKET ORNITHOLOGY The field season began in late February, with pre-breeding "captures" of avocets and stilts. Each capture was done with box nets or net launchers—a net was put in place, attached to a number of rockets, and set off when birds were roosting close by.

Each net rocketed off was a gamble dependent on whether birds were lined up, whether they were within range of the net, and whether they were likely to get away while the net was still flying. When a capture finally happened, the crew would be adrenaline-charged from the anticipation and we would sprint out to the nets to extract the birds.

After the excitement of a successful capture, we happily buckled down to "process" the birds. Processing involved radio-tagging the birds and taking a small blood sample, as well as many other measurements. To tag the birds, we fitted a ring, to which a radio was attached, around the bird's upper leg and also placed a series of three color-bands and a numbered identification band on the opposite leg. Later, technicians tracked the movement of those birds using radio-telemetry as well as sight identification.

BIRDS, CAMERA, ACTION! Due to the excessive rains this year, breeding season for the stilts and avocets began in May. Assigned to an area to search for and monitor nests, I spent this time numbering each egg, determining its incubation stage, and tracking the progress of each nest.

Most intriguing of all was having the opportunity to view video footage of the nests. Some nests had been chosen as "camera nests" and motion-sensor video cameras were placed near the nests. These cameras enable researchers to observe the behavior of both the parents and any predators that may have eaten eggs.

Not only was it just fun to watch the birds roosting, but I also learned so much about nest predation. Avian predators, especially gulls, are notorious for catching the chicks—radios that had previously been put on chicks were often found in the local gull colony and even in owl pellets. However, weeks into the nesting season, we still had not seen any gull predation videos. Then, much to our surprise, we caught a Red-tail Hawk eating the eggs on video!

After that, we started to finally see gull predation. Other predators caught on video included ravens, skunks, foxes, and raccoons. So while I got to see common predations, I was also privileged to view some of the more uncommon predators.

BABY STEPS Terns migrated into the area after the stilts and avocets were already nesting, and the capturing, tagging, and nest-monitoring procedure was similar. Unlike avocets and stilts, terns nest in large colonies and this made tagging the chicks more challenging since hundreds of chicks were running around at once.

Each week, we recaptured, weighed and measured tern chicks, and a growth curve was assembled. The field season came to a close as these chicks matured and eventually fledged, and I went on my way to Ashland, Oregon to be closer to the nature that I love.

Working with experienced biologists was a huge learning opportunity. I heard many stories of past field experiences and whenever I had questions about our project or even a random biology-related question, I had a wealth of resources and people to learn from.

By Maliheh Nakhai. Mali was an intern for the Waterbird Program from March to August 2006.



PHOTO BY CHERYL STRONG

Thank you, Bonnie!



BONNIE BEDFORD-WHITE geared for a bird-a-thon.

On November 17, the Association of Fundraising Professionals recognized San Francisco Bay Bird Observatory member Bonnie Bedford-White for her outstanding commitment to promoting support for the Bird Observatory. Along with 26 other honorees,

Bonnie attended the annual Philanthropy Day luncheon where she received the Distinguished Volunteer Fundraiser Award.

As a birder and owner of Cherry Pie Graphic Design, Bonnie has brought both enthusiasm and a keen entrepreneurial spirit to fundraising for the Bird Observatory. When Bonnie first started to participate in our annual bird-a-thon, she astounded us by raising over \$7,000. The following year, she taught others her prize-winning ways and completely redesigned our bird-a-thon materials. Her "trainees" have gone on to raise over

\$30,000 in support of the Bird Observatory's mission of bird conservation through science and outreach.

The Bird Observatory thanks Bonnie for her dedication and support through the years and congratulates her for her achievements in philanthropy. Bonnie's generosity also extends beyond the Bird Observatory, and she has done pro bono graphic design work for VIA (Santa Clara), YSI, Santa Clara Valley Audubon Society, and the local chapter of the National Association of Women Business Owners.

We interviewed Bonnie about her approach to fundraising and asked her to share some of her secrets:

Q: WHAT INSPIRED YOU TO PARTICIPATE IN THE CALIFORNIA FALL CHALLENGE BIRD-A-THON?

A: *Well, I think the most fun for me is just the "big day." Any "big day." Whether it is the Fall Challenge, Audubon's Christmas Bird Counts, or any day that I get to be out in the field from early morning to dusk. You need to know that a lot of my friends don't quite "get" the bird thing, but clearly, this is something that I am enthusiastic and passionate about and, well, when you*

are that way it can be contagious. I mean, really, how often can you have a "big day" AND raise money for a good cause at the same time?

Q: WHAT WAS YOUR REACTION TO THE RESULTS OF YOUR FIRST BIRD-A-THON?

A: *I was astonished by the results. I had no idea that a simple letter could generate so much money. In fact, the funny thing was that my husband got into it even more than I did. When I would get home from work, he would have already opened the envelopes. He simply could not believe his eyes!*

Q: ANY ADVICE FOR NEW BIRD-A-THONERS?

A: *If people are a little intimidated by fundraising, they should just take a big breath and try it out anyway. And ask everyone they know. You just never know who will support you.*

My main rule is to never, never dwell on who couldn't support you. You cannot take it personally! I could have dwelled on the percentage of people who didn't give and let this get me down. No way! I was so thankful for each check that came in!

.....
By Juliana Chow, Outreach Specialist

"BIG DAY" COMPETITIVE BIRDING HIGHEST PERCENTAGE OF COUNTY LIST

	1	2	3	4
TEAM	The Refugees	Pish, Fast, & Loud	Shasta Brrdrers	Amador Owls
TRIP DATE	10/10	10/15		
MEMBERS' NAMES	Mike Rogers Mike Mammoser Francis Toldi	Mike Rogers Scott Terrill Steve Rottenborn Steve Rovell	Bob and Carol Yutzky	Kris Olson Bob Lewis Dave Quady
COUNTY	Merced	Monterey	Shasta	Amador
COUNTY TOTAL	212	292	245	231
NUMBER OF SPECIES SEEN	134	172	125	93
% OF LIST	0.6321	0.5890	0.5102	0.4025



MIKE ROGERS AND MIKE MAMMOSER receive the Mewaldt Cup.

PHOTO BY CHRIS ILLES

Our thanks to these supporters of the Bird Observatory!

We thank all these members for their contributions during the third quarter of 2006.

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Recent Publications

ANNOTATED ATLAS AND THE IMPLICATIONS FOR THE CONSERVATION OF HERON AND EGRET NESTING COLONIES IN THE SAN FRANCISCO BAY AREA.

Kelly, J.P., K. Etienne, C. Strong, M. McCaustland, and M.L. Parkes. 2006.

<http://www.egret.org/atlas.html>.

Through the help of countless volunteers in the Colonial Waterbird Monitoring Project, the Bird Observatory began collaborating with Audubon Canyon Ranch in 1991 to create a heron and egret atlas. The historical atlas provides bay-wide data extending from the outer Pacific Coast to the Central Valley of California in the north and the Santa Clara Valley and interior East Bay subregions in the south. Thank you to all who helped to make this atlas possible!

INDIVIDUAL

Patricia Abreu, Jennacy Backo, Deborah Benham, Pete Bloom, Andrew Bogan, June Cancell, Marie Culwell, Sheila Curtin, Jennifer Daggy, Al Demartini, Michele Dennis, Anna DeVine, Richard Drechsler, John P. Eells, Peter Eimon, Frances Escherich, Pamela Estalio, Susan Fishbein, Norma Foss, Harry Fuller, Wrefford Fulton, Mary Gerber, Tony Hall, Cliff Harlan, Selma Hemiup, Deborah Hurst, Roland Kenner and Patricia Kenny, Carolyn Krehmar, Theodora Kreps, Alison Litts, Karen Loro, Libby Lucas, Nelle Lyons, Gloria Martinengo, Dahnesh Medora, Paula Miller, Jean Montes, MaryLee Mueller, Karen Nichols, Leah Norwood, Kay Partelow, Lois Poole, Donald and Diethild Price, Joan Raiter, Laurel Rezeau, JoEllen Rice, Gail Richardson, Jean Rigden, Elsa Rosenberg, Judith Scarborough, Lionel Schour, Dan Singer, Bob Smith, Pat Smith, Don Stang, Michelle Steinauer, Linda Swanson, Jan Talbert, Marta Van Loan, Dan Vint, Alan and Sandra Walther, Ron Watson, Carol Webb, Christine Wildsoet, Meredith Williams, Brent Willson, Sherri and Jack Wood, Shu-Chieh Wu, Carolyn Yale

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Juliana Chow

The San Francisco Bay Bird Observatory is a 501(c)(3) nonprofit corporation dedicated to the conservation of birds and their habitat through science and outreach, and to contributing to informed resource management decisions in the Bay Area. Annual membership is \$35; donations are appreciated. Renewals and donations should be sent to the office.

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San Francisco Bay Bird Observatory
P.O. Box 247
1290 Hope Street
Alviso, CA 95002

t 408.946.6548
f 408.946.9279
www.sfbbo.org

sfbbo@sfbbo.org

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