Avian Science in an Urban Environment

The San Francisco Bay Bird Observatory (SFBBO) is a nonprofit dedicated to the conservation of birds and their habitats through science and outreach. Since 1981, we have been an authority on birds that rely on the San Francisco Bay and its surrounding environments.

The San Francisco Bay is recognized as a site of hemispheric importance for wildlife and is home to a diverse range of plant and animal species. It nurtures fish populations and colonial-nesting waterbirds, is a significant wintering area for waterfowl, and is a critical stopover site for birds migrating along the Pacific Flyway. The surrounding riparian, grassland, and upland habitats are equally important, supporting numerous plants and animals, as well as hundreds of passerine, raptor, and other local and migratory landbird species.

The Bay is also one of the most heavily developed estuaries in the world, with nearly eight million people living on its shores, placing many pressures on the region’s biological resources. While the existence of so many people undoubtedly puts enormous pressure on local biological resources, for 36 years SFBBO has found ways to harness this human resource through engagement in citizen science, habitat restoration, and environmental conservation and education, to benefit wildlife. In 2016, we continued this legacy, and in the following pages you will read about our latest efforts and the Bay Area community members who helped us.

These efforts include: our 36-year-long citizen science based Colonial Waterbird and Coyote Creek Field Station research; volunteer-powered Annual Pacific Flyway Shorebird Survey, Avian Disease Prevention Program, Snowy Plover monitoring and docent efforts, Burrowing Owl research, and tidal marsh habitat restoration; and our family science, youth environmental education, and community outreach initiatives.

In addition, you will read about our staff-based research to answer questions about the impact landfills, bay use, grazing, fire, and urban development have on bird species. Lastly, you will learn how the Bay Area community financially supported these efforts. Thank you for your support!
California Gull Surveys

Another part of the Colonial Waterbird Program is the annual California Gull walk through survey. This year, from May 2 to May 9, biologists and citizen scientists surveyed seven colony locations in Palo Alto, Alviso, and Fremont and documented 38,040 nesting California Gulls in the South Bay during several all-day walk-through surveys and re-sighted 40 banded gulls.

Thirty-nine of these birds were banded at the A6 colony at the Don Edwards San Francisco Bay National Wildlife Refuge near Sunnyvale from 2008-2010 and one was banded in the South Bay in 1986, making it 30 years old!

Thank you to these citizen scientists for donating almost 40 hours to our California Gull surveys: Vickie Eggert, Jeff Englander, Jeanne Fasan, Candace Harvey, Rachel McCracken, Ryan McLaren, Robert Pardee, and Rachel Tertes.

Colonial Waterbird Education and Outreach

In addition to collecting data, many citizen scientists from the Colonial Waterbird team also shared their passion and experience to educate people in their communities about avian science and conservation through outreach events and activities. They led bird viewings at Sycamore Grove Park in Livermore, Lake Merced in San Francisco, Lake Merritt in Oakland, and at a suburban neighborhood in Morgan Hill to showcase nesting colonies.

They led hands-on activities for kids ages 6 to 12 and their families at public libraries in Campbell, Fremont, Milpitas, San Jose, and Santa Clara, and for Boys and Girls Clubs in San Jose. They also gave a data collection workshop for a class of high school students from Oakland’s College Preparatory School at Shadow Cliff’s Regional Park in Pleasanton, and trained inmates at Elmwood Correctional Facility in Milpitas to collect data on a large colony of egrets that nest at the jail.

They led a butterfly and bird walk at Alum Rack Park in San Jose, gave a presentation about citizen science to members of the Ohlone Audubon Society in Fremont and to students at Santa Clara University, and led activities at the Wingding Family Bird Festival at Skyline Ridge, the Butterfly and Bird Festival in Fremont, the Central Park Earth Day Fair in Fremont, the Bay Area Science Festival in San Francisco, and the Facebook’s Farmer’s Market in Menlo Park.

Thanks to these citizen scientists for volunteering in our Outreach Program: Tonya Anderson, Laurie Bechtler, Dolores Bengston, Laura Berube, Kristal Caidoy, Charles Coston, Deanna de Castro, Nancy DeStefanis, Vickie Eggert, Jeff Englander, Al Goggins, Tom Goodier, Michael Grunow, Peter Grunow, Jean Halford, Jan Hintermeister, Carole Hutchinson, Rita Jennings, Beth Kean, Stephanie Klein, Nicola Klier, Svetlana Klier, Clare Lacy, Patricia Lindsey, Jennifer Litteral, Cathy Loewen, Nelle Lyons, Michael Mammoser, Larry Manning, Cindy Margulis, Deborah Murakami, Hiroshi Murakami, Dan Murphy, Aidan Ng, Karen Ng, Donna Niccolletti, Jean Perata, Stephen Peterson, Ana Prussia, Bob Richmond, Barbara Robeson, John Robeson, Bill Rose, Tina Silverstein, Christine Slocumb-Zach, Dane St. George, Gail Stevens, Tom Stewart, Linda Sullivan, Eric Taylor, Nancy Teeter, Ricci Teefy, Susan Teefy, Sree Vallath, Jackie Vargo, and Carolyn Wong.

In addition to these volunteers, SFBBO biologists Victoria Heyse, Cole Jower, Ben Pearl, Alex Rinkert, Karine Tokatlian, Yiwei Wang, and Dan Wenny and interns Anqi Chen, Rock Deliquanti, and Wray Gable helped with data proofing, data base entry, and analysis. This program was fully funded by donations and memberships from the community.

Colonial Waterbird Program

For 35 years, team of biologists and citizen scientists has monitored herons, egrets, terns, and other colony-nesting waterbirds through our Colonial Waterbird Program.

The 2016 team—led by Waterbird Program Director Natalie Washburn, Waterbird Program Director Max Tarjan, and Outreach and Communications Director Kristin Butler—monitored 78 colonies throughout the Bay Area from February to August using observational methods. They recorded the number of adults, chicks, and nests they saw and also noted conservation threats such as predation and human disturbance. Thanks to these citizen scientists for donating more than 620 hours monitoring colonies:

Tonya Anderson, Bob Bathgate, Liz Bathgate, Laurie Bechtler, Dolores Bengston, Laura Berube, Kristal Caidoy, Charles Coston, Deanna de Castro, Nancy DeStefanis, Vickie Eggert, Jeff Englander, Al Goggins, Tom Goodier, Michael Grunow, Peter Grunow, Jean Halford, Jan Hintermeister, Carole Hutchinson, Rita Jennings, Beth Kean, Stephanie Klein, Nicola Klier, Svetlana Klier, Clare Lacy, Patricia Lindsey, Jennifer Litteral, Cathy Loewen, Nelle Lyons, Michael Mammoser, Larry Manning, Cindy Margulis, Deborah Murakami, Hiroshi Murakami, Dan Murphy, Aidan Ng, Karen Ng, Donna Niccolletti, Jean Perata, Stephen Peterson, Ana Prussia, Bob Richmond, Barbara Robeson, John Robeson, Bill Rose, Tina Silverstein, Christine Slocumb-Zach, Dane St. George, Gail Stevens, Tom Stewart, Linda Sullivan, Eric Taylor, Nancy Teeter, Ricci Teefy, Susan Teefy, Sree Vallath, Jackie Vargo, and Carolyn Wong.
Coyote Creek Field Station Landbird Banding

For 35 years, SFBBO staff and volunteers have banded birds at our Coyote Creek Field Station (CCFS) located on a restored riparian habitat on City of San Jose property in northern San Jose. SFBBO and academic partners use this information to track avian responses to climate change, restoration and urbanization, and to document long-term demographic trends.

In 2016, this program was led by Landbird Program Director Josh Scullen. Biologist Anqi Chen, Alex Rinkert, and Dan Wenny, and interns Savannah Robinson, Kelly Valentine, and Wray Gable also worked on this program. Together, they and citizen scientists captured 3,534 birds of 63 species. This was below our average of 3,900 birds captured per year, although it feels significantly lower after three years of above-average totals. We are noticing declining trends of certain species, however: Song Sparrow, our usual top capture for the year, is at its lowest capture total for the past 15 years. Song Sparrows are still more abundant today than they were in the late 1980s and 1990s, but their steady decline has us on alert.

Citizen science volunteers spent more than 4,500 hours on Wednesday, Saturday, and Sunday mornings year-round collecting, entering, and proofing our CCFS data. This was shared with researchers at several universities as well as other organizations. Two graduate students from San Jose State University and California State University East Bay completed their Master’s projects in 2016 using SFBBO datasets to study Western Flycatcher and Common Yellowthroat populations, migration timing, breeding destinations, and the impact of climate change on breeding timing.

Thank you to these citizen science volunteers for donating more than 4,500 hours working as predator patrollers, extractors, banders, station maintenance, and data entry:


Bird Banding Outreach

In addition to collecting data at CCFS, in 2016 staff and citizen scientists in this program also taught the public about bird banding through a number of outreach activities and events.

They led bird banding demonstrations at the Coyote Creek Field Station for students from Santa Clara University, for families in Santa Clara Valley Audubon Society’s Young Audubon Program, and for the general public.

They also led hands-on bird banding activities for kids ages 6 to 12 and their families at family science events at public libraries in Fremont, Milpitas, Santa Clara, and San Jose, and for Boys and Girls Clubs in San Jose. They gave a presentation about citizen science for members of the Ohlone Audubon Society in Fremont, and they led activities at the Facebook Farmer’s Market in Menlo Park and the Butterfly and Bird Festival in Fremont.

Thanks to these CCFS citizen scientists for volunteering in our Outreach Program: Tonya Anderson, Martha Castillo, Christina Garcia, Bill Hoppes, Nikola Klier, and Tom Stewart.
Pacific Flyway Survey

In 2016, we again participated in the annual Pacific Flyway Shorebird Survey. Biologists and citizen scientists surveyed 40 sites across the South Bay, the same number of sites as 2015, which was a significant increase from the 28 sites surveyed in 2014. The SFBBO team counted 152,000 shorebirds and also collected data on habitat conditions. Our data collected for this multi-partner monitoring program provided a Flyway-wide assessment of shorebird communities that is used to identify conservation needs along the Pacific coast.


Managed Pond and Landfill Surveys

Managed Pond Surveys

Since 2005, SFBBO biologists have conducted surveys of waterbirds that use managed ponds around the Bay (as well as water quality) that are associated with the South Bay Salt Pond Restoration Project. For the past three years, these surveys covered 82 ponds extending across the Alviso, Newark, Mowry, Ravenswood, and Hayward Eden Landing Ecological Reserve complexes.

In 2016, Waterbird Directors Max Tarjan and Natalie Washburn, as well as biologists Cole Jower, Victoria Heyse, Alex Rikert, Josh Scullen, Yiwei Wang, Dan Wenny, and interns Anqi Chen, Wray Gable, and Rock Delliquanti, surveyed over 20,000 acres of managed ponds in the South Bay and counted more than one million birds over the course of the year. These data guide the restoration efforts of the project and enable our partners to maintain ponds that support the needs of multiple local species.

SFBBO reported the pond survey data regularly to managers at the U.S. Fish and Wildlife Service (who funded the project) and the California Department of Fish and Wildlife. They used the data to maintain target numbers for particular waterbird guilds, like Eared Grebes and phalaropes.

Landfill Surveys

SFBBO staff have surveyed gulls at a local landfill since 2007, and expanded this project to include a local recycler and the survey of corvids in 2014. In 2016, SFBBO found that gull numbers were lower than earlier surveys and abatement efforts to minimize gull use of the landfill are highly successful. SFBBO further provided recommendations regarding the most effective abatement strategies. Reducing landfill use by nuisance species limits population growth and their potential to negatively affect other local ground-nesting waterbirds.

Avian Disease Prevention Program

In 2016, SFBBO staff and volunteers involved in the Avian Disease Prevention Program (ADPP) conducted surveys from June through November on several sloughs in the South Bay to retrieve dead, sick, and injured birds with the ultimate goal of detecting and preventing avian botulism.

We’ve conducted these surveys annually since 1982 and are happy to report another year with no detected outbreaks of avian botulism in the South Bay.

Along with removing dead birds and other vertebrates from the sloughs, biologists and volunteers collected 12 sick or injured birds and brought them to the Wildlife Center of Silicon Valley. Half of these birds were successfully released after rehabilitation!

Thank you to these volunteers for donating almost 100 hours searching South bay sloughs and maintaining boats to prevent avian diseases:


This program was led by Waterbird Lead Biologist Victoria Heyse and was funded by the cities of San Jose and Sunnyvale.

In addition to helping biologist search the sloughs, some of the volunteers in the ADPP also helped educate the community about avian science by volunteering at SFBBO Outreach events.

They led hands on activities for kids ages 6 to 12 and their families at family science events at libraries in Fremont, Milpitas, Santa Clara, and San Jose and for Boys and Girls Clubs in San Jose. They also led activities for the public at Facebook’s Farmer’s Market in Menlo Park and at the Central Park Earth Day Fair in Fremont.

Thank you to Tonya Anderson, Vickie Eggert, and Joleen Tseng for enriching the lives of people in the community by offering science education with SFBBO.
Snowy Plover Program

In 2016, SFBBO continued our long-term effort of recovering the federally threatened Western Snowy Plover in the San Francisco Bay. SFBBO staff and volunteers worked passionately to achieve our annual research goals of monitoring breeding birds by tracking nest success, and chick survival. The team was led by Plover Program Director Karine Tokatlian, and included biologist Jessica Gonzalez, Ben Pearl, Alex Rinkert, and Dan Wenny, and Intern Savannah Robinson.

In addition to breeding surveys, the team studied the effects of oyster shell habitat enhancement on these parameters for a second year at Eden Landing Ecological Reserve in Hayward, which may provide camouflaging protection in otherwise bare habitats. Graduate research by students at San Jose State University found that enhancement does not influence nest success site selection, but does not impact nest success without concurrent predator management.

Unfortunately, breeding plovers experienced heavy predation from Commons Ravens which underscored the need for frequent predator control in urban impacted habitats. We maintained our valuable partnerships with local agencies and projects, like the U.S. Fish and Wildlife Service and the South Bay Salt Pond Restoration Project, to achieve species recovery while plover resource needs continue to change in the South Bay.

Through the South Bay, salt ponds support more plovers than were historically found here. These sensitive birds face substantial and unnatural threats—habitat loss, predation, human disturbance, and imminent sea level rise—throughout their coastal range, making the South Bay an important breeding and wintering refuge for these sensitive birds.

Through this program, in 2016 our team monitored 258 plover nests. This was a drop from 298 in 2015. We also monitored 208 plover adults, which is an increase from 195 in 2015. In addition, SFBBO banded 66 plover chicks. Unfortunately, these chicks only reached a 27% fledge rate. This is a decrease from 2015’s 166 chicks and 34% fledge rate.

This work was funded by the U.S. Fish and Wildlife Service, and Ducks Unlimited through grants from the Wildlife Conservation Board and California State Coastal Conservancy.
**Burrowing Owl Education**

In addition to helping collect data and create Burrowing Owl habitat, many of the volunteers in this program also helped educate the community about bird conservation and science. They led hands-on activities for kids ages 6 to 12 and their families at family science events at libraries in Campbell, Fremont, Milpitas, San Jose, and Santa Clara, and for Boys and Girls Clubs in San Jose.

They also gave a presentation to members of the Ohlone Audubon Society in Fremont, and led activities at Facebook’s Farmer’s Market.

Thank you to the following Burrowing Owl citizen scientists for participating in SFBBO’s Outreach Program: Tonya Anderson, Diane Bennett, Tom Bennett, Vickie Eggert, and Susan Teefy.

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**Western Burrowing Owl Program**

In 2016, SFBBO continued a five-year project funded by the Santa Clara Valley Habitat Agency to monitor Western Burrowing Owls and enhance, maintain, and restore nesting habitat at the Warm Springs Unit, a vernal pool alkaline grassland part of the Don Edwards San Francisco Bay National Wildlife Refuge in Fremont.

With the help of our citizen science volunteers, Habitat Ecologist Aidona Kakourous conducted two weekly line transect breeding burrow surveys as well as photo trapping to estimate the population and breeding success of the Burrowing Owls at the 719-acre unit.

Through this effort, we recorded five active nests and 29 other occupied burrows. Two of the five active nests were successful, one with nine chicks and one with four chicks.

In addition, we conducted 177 hours in vegetation management, biologists Cole Jower, Ben Pearl, Alex Rinkert, Dan Wenny, and ecologists Eric Lynch and Miranda Melen also conducted winter surveys.

In the fall, we also started a new partnership with the Santa Clara Valley Audubon Society to survey Burrowing Owls in Alviso.

Thank you to the following volunteers who contributed more than 280 hours to this program: Tonya Anderson, Diane Bennett, Tom Bennett, Bill Bilobran, Debbi Brusco, Julie Bryson, Kristal Caidoy, Kelly Cox-Gonzalez, Jacqueline Deely, Victoria Denman, Don Dvorak, Vickie Eggert, Jeff Englander, Belinda Espino, Byron Fan, Matthew Fogarty, William Grant, Terry Hart, Kristofer Hausmann, Tran Le, Phillip Higgins, Lisa Kau, Elia Kazemi, Jane Klee, Kaitlyn Kuehn, Joan Lampshire, Mary Lindemuth, Cathy Loewen, Hector Maldonado, Alicia Manfroy, Ryan McDonald, Laurenmarie Moore, Kari Olandese, Jean Perata, Jasmine Quinn, Steve Rentmeesters, Dayana Robles, Ariana Rogers, Byron Ryono, Nicholas Sunamoto, Susan Teefy, Elsa Valenzuela, Danielle Willkom, Alissa Wilson, Rob Witthaus, Suk-Ann Yee, Christina Yunker Rodriguez, and Kurt Zias.

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**Montane Grassland Surveys**

In 2016, SFBBO continued its partnership with the Midpeninsula Regional Open Space District to evaluate bird communities in montane grassland habitat throughout central coastal California. Montane grassland is a unique habitat that has largely gone unstudied, yet faces threats from habitat alteration such as grazing and fire suppression, as well as urban development. Landbird Program Director Josh Scullen and Biologist Alex Rinkert compiled bird survey data from local agencies, researchers, and eBird in order to evaluate the impact that these management practices have on bird communities in this unique habitat.

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**Urban Biodiversity Surveys**

SFBBO continued our partnership with H. T. Harvey and Associates conducting biodiversity surveys on Silicon Valley technology company campuses. This project was led by Landbird Program Director Josh Scullen, and conducted by biologists Dan Wenny and Alex Rinkert. We successfully wrapped up our first year of surveys, and are seeking funding opportunities to continue these surveys in the near future.
Tidal Marsh Habitat Restoration

For six years, SFBBO has been working to restore tidal marsh habitat in the transition zones between marsh and upland around the San Francisco Bay.

By doing so, we hope to help marshes adapt to sea level rise and protect Bay Area human communities and wildlife habitat for Bay Area species.

In 2016, under the leadership of Habitats Program Director David Thomson, SFBBO restored habitat at two sites: Inner Bair Island in Redwood City and Pond A17 in Alviso, in partnership with the US Fish and Wildlife Service, Santa Clara Valley Water District, California Coastal Conservancy, and Peninsula Open Space Trust.

Our work at Bair Island was on Phase two of at least six phases of work that should keep us busy through 2020. Our work in Alviso on Pond A17 was the first of several work sites in the area that will also continue through 2020, at which time we may have created over 50 acres of habitat critical to many birds and other wildlife at the estuary’s margin.

As a part of that work we have searched for and collected around a dozen species of locally native plants that are an important part of these communities.

The SFBBO Habitats team worked to create and enhance over 10 acres of bird habitat at the Bay’s margin. Maintenance and monitoring work included five more acres, bringing our recent total to over 15 acres.

The SFBBO Habitats’ projects directly contribute to the conservation of species such as California Ridgeway’s Rail and the Western Burrowing Owl, as well as many others.

Members of the staff team included ecologists Matt Bertken, Aidona Kakouros, Eric Lynch, and Miranda Melen, and biologists Ben Pearl, Cole Jower and Alex Rinkert.

Tidal Marsh Restoration Outreach

In 2016, much of our outreach work in the Habitat Program consisted of sharing our research with many local and regional groups to support their conservation work.

These partners included: the U.S. Fish and Wildlife Service; San Francisco Bay Joint Venture; California Landscape Conservation Cooperative; U.S. Geological Survey; National Parks Service; U.S. Army Corps of Engineers; California Coastal Conservancy; California Department of Fish and Wildlife; East Bay Regional Parks District; Elkhorn Slough Foundation; Sonoma Land Trust; Santa Clara County Parks; the cities of East Palo Alto and Palo Alto; Grassroots Ecology; Save the Bay; and others.

We also participated in the U.S. Fish and Wildlife Service Tidal Marsh Ecosystem Recovery Implementation Team, which works to implement the recovery plan for San Francisco Bay’s tidelands.

Through our work on mapping and ranking potential habitat at the estuary’s margin we also worked with a variety of groups such as the San Francisco Estuary Project, San Francisco Bay Joint Venture, Conservation Biology International, and others.

Other outreach included organizing the 8th Annual Vegetation Manager’s Working group, which brought together people from Tomales, San Pablo, Suisun, and San Francisco Bays, as well as Elkhorn Slough to discuss working on these habitats through sharing our successes and failures.

In addition, we participated in the U.S. Fish and Wildlife Service Tidal Marsh Ecosystem Recovery Implementation team, which works to implement the recovery plan for San Francisco Bay’s tidelands.

Lastly, we installed a sign along the trail near our Bair Island restoration site that invites passersby to use their smart phones to take photos of a specific location on our site and submit them to be included in a time-lapsed display to showcase the growth at this site (photo at right).
Board Volunteers

Thank you to the following volunteers for donating almost 250 hours to board governance and board committees:

Cat Burns, Brian Fulfrost, Anne Hepburn, Jan Hintermeister, Shannon McMahon, Leah Russin, Tom Stewart, Lynne Trulio, and Anna Zivian.

Environmental Education Volunteers

Led by Outreach and Communications Director Kristin Butler, Senior Biologist Alvaro Jaramillo, and Science Outreach Intern Ana Prussia, SFBBO offered avian science and conservation education to hundreds of people in the community in 2016.

Thanks to the following volunteers for donating more than 350 hours to this Bay-wide effort:


Science Advisory Board

Thank you to our Science Advisory Board

Catherine (Cat) Burns, Ph.D.
The Nature Conservancy

Don Croll, Ph.D.
UCSC Ecology & Evolutionary Biology

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USFWS, S.F. Bay National Wildlife Refuge

Scott Terrill, Ph.D.
H.T. Harvey and Associates

Lynne Trulio, Ph.D.
SJSU Environmental Studies

Fundraising and Communications Volunteers

Thank you to the following volunteers for donating more than 680 hours to help raise money for SFBBO programs through the California Fall Challenge, membership drives, and other fundraising initiatives; to design our website, brochure, and 2015 Annual Report; and to reorganize our library:

Tonya Anderson, Gina Barton, Diana Bloch, Martha Castilo, Anqi Chen, Charles Coston, Brian Fulfrost, Julian Garcia, Tom Gray, Jean Halford, Anne Hepburn, Jan Hintermeister, Dave Johnston, Michael Kern, Steven King, Stephanie Klein, Robin Leong, Mike Mammoser, Alexandra Montoya, Lisa Myers, Bob Power, Ana Prussia, David Rice, Mike Rogers, Leah Russin, Tom Stewart, Chuq Von Rospach, Mary Wisnewski, Kurt Zias, and Anna Zivian.

Workshops and Science Talks

In 2016, Senior Biologist Alvaro Jaramillo taught workshops for the public on how to identify seabirds and shorebirds and also how to identify birds by sound. We also offered science talks from these guest lecturers: Abe Borker, “Soundscape of Seabirds and Systems;” Steve Mandel, “Photos of Antarctica;” and Tanya Diamond and Ahiga Snyder, “Pathways for Wildlife.”
2016 Financials

SUPPORT AND REVENUE

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