

# 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 am particularly excited to share this edition of the Bay Bird Review with you, for several reasons. First, because its feature article addresses the multitude of ways that SFBBO's science and outreach are helping to provide answers to the questions: "How is climate change affecting birds?" and "How can we best conserve birds in the face of climate change?" I know that most of SFBBO's members are very concerned about these issues, as are we at SFBBO. I hope you'll find that this article helps you better understand the climate-related challenges that birds and their habitats face, and the important role that SFBBO is playing to shape the future of birds as they respond to climate change. You'll see that although much of SFBBO's work continues to focus on birds in the Bay Area, the impact of this work extends well beyond the footprint of our study sites.

DIRECTOR'S MESSAGE *continued on page 2*



THE 2014 *Fledglings CFC team.*



THE SANDERLING is one of the birds at risk for climate change.

PHOTO BY NAGESH MULA

## Science Report

### SFBBO Takes Action to Help Birds Cope with Climate Change

In November, the United Nations Intergovernmental Panel on Climate Change (IPCC), a Nobel-prize-winning group of scientists from around the world, released its most recent report.<sup>1</sup> The report stated that the negative effects of human-caused climate change are already occurring on all continents and across all oceans. These effects include rising temperatures, heat waves, fires, extreme storms, flooding, drought, ocean acidification, sea level rise, and more. The report also stated that unless curbed, continued warming of the planet due to climate change will cause long-lasting and irreversible impacts to people and ecosystems.

What might this mean for birds? According to a report released by the National Audubon Society<sup>2</sup> this fall, 314 species—nearly half of all North American birds—will lose more than 50 percent of their current range by 2080. Of these 318 species at risk from climate change, 126 (about 40%) are classified as "climate endangered" and are projected to lose more than 50 percent of their current range by 2050.

There is no doubt that the problems

caused by climate change are both serious and daunting, but scientists and others around the globe are mobilizing to respond. They are working to reduce emissions of greenhouse gases that are causing the problem and to study and implement ways to help species and people adapt to the radical changes taking place in the ecosystems on which they rely.

For more than 30 years, the mission at the San Francisco Bay Bird Observatory (SFBBO) has been to conserve birds and their habitats through science and outreach. We work in partnership with land managers, agencies, local organizations, and the public throughout the Bay Area to help birds and their habitats thrive in this changing world.

From the long-term data collected at the Coyote Creek Field Station to our expertise on waterbirds that live, winter, and migrate through the San Francisco Bay Estuary, to habitat restoration efforts focused on helping tidal marshes respond to sea level rise, SFBBO is conducting science that addresses the consequences of climate change. We

SCIENCE REPORT *continued on page 3*

I'm also happy to share this issue because it highlights a very successful 2014 California Fall Challenge (CFC) fundraising campaign. This year's CFC included over 20 exciting events, a new Kids Bird Art Contest, a matching gift challenge, competition amongst our fundraisers for over \$10,000 in donated prizes, and more. We successfully reached our fundraising goal of raising \$28,000 for bird and habitat conservation, with the help of literally hundreds of donors, volunteers and partners. Thanks to everyone for helping to make this campaign such a success and particularly our matching gift sponsor H.T. Harvey & Associates, and our top prize donors Rockjumper Birding Tours and Wildside Nature Tours. Inside this issue you'll have a chance to see the incredible work of our art and photo contest winners, and you'll learn more about our bird-a-thon, band-a-thon and other competitions.

Finally, on the right side of this page, you'll learn about some exciting new changes on the SFBBO Board of Directors. While we closed a wonderful chapter of SFBBO's history with out-going Board Chair Troy Rahmig in October, we are thrilled with our new Board leadership, and with several new additions to our Board. Brian Fulfrost and Lynne Trulio have now taken the helm and will be leading SFBBO's Board as we move into 2015. Jan Hintermeister returns to the SFBBO Board after serving on the Board for two terms more than a decade ago, and new recruit Leah Russin joins the Board for the first time. I hope you'll take a few minutes to read about each of these Board members, and to introduce yourself to them the next time you are at an SFBBO event. They'd love to hear about your experiences at SFBBO, why you support us, and how you'd like to see the organization grow.

As always, thank you so much for all you do to support SFBBO.

.....  
*By Cat Burns, SFBBO Executive Director*

## Staff Migrations



### *Jan Hintermeister*

Welcome to Jan Hintermeister, who recently joined SFBBO's Board of Directors! Jan has always enjoyed science and mathematics. His love for birds blossomed during his long career as an engineer. Love for birds expanded into an appreciation for nature and the importance of preserving habitats. He served as an SFBBO Board member for two terms in the late 1990s and early 2000s. He has also served as a member of the Santa Clara County Parks and Recreation Commission and led nature walks for the Mid-Peninsula Regional Open Space District and the Santa Clara County Open Space Authority. Jan is eager to rejoin the SFBBO Board and to work on the issues that unite all SFBBO members: the conservation of birds and their habitats through science and outreach.



*Jan Hintermeister*

### *Leah Russin*

Welcome to Leah Russin, who recently joined SFBBO's Board of Directors! In her first career, Leah taught earth and life science, math, and ecology to high school students. In her second career, she litigated corporate disputes, represented environmental nonprofits in court, and mentored law students. In her third career, Leah advised Senator Dianne Feinstein on environmental policy, focusing on San Francisco Bay restoration projects, California water issues, and other environmental policy matters, and briefly worked at the Department of the Interior on off-shore energy issues. Now in her fourth career, she spends most of her time chasing an energetic toddler. She is excited to be joining the SFBBO Board and broader community working towards nature conservation in the Bay Area.



*Leah Russin*

### *Troy Rahmig*

This fall, Troy Rahmig wrapped up his six-year term on our Board of Directors—thank you, Troy, for all you've done for SFBBO! Troy started volunteering for SFBBO in 2006 with his wife Corina on the power line/avian mortality project. That led to other volunteer projects monitoring heron rookeries and tern colonies, and in 2008 Troy joined the Board of Directors. During his tenure he's served as Secretary, Vice-Chair, and finally as Chair since 2010 and has seen the organization go through some significant changes. "I can't wait to see what SFBBO does next," Troy said. "I feel like the organization is stronger than ever and the potential to conserve birds and their habitats is limitless at this point. Corina and I will miss the volunteer opportunities, but we will miss the people most. SFBBO has been a really important part of our South Bay community. We will continue to support the organization from afar, and don't be surprised if you see us at bird walks, the banding station, or future annual meetings."



*Troy Rahmig*

### *Brian Fulfrost and Lynne Trulio*

During SFBBO's 2014 Annual Meeting, Board members Lynne Trulio and Brian Fulfrost were voted in as Board Co-Chairs. Prior to serving in this position, Brian chaired the Board's Fundraising Committee and Lynne chaired SFBBO's Science Committee. Both Lynne and Brian look forward to their new roles at SFBBO, and both plan to continue to serve on SFBBO's Science Advisory Board.



*Brian Fulfrost*



*Lynne Trulio*

are also engaging more than 100 citizen scientists in our work and are expanding our efforts to build public awareness about climate change and concern for birds through our new “Look Up” outreach campaign coming in 2015.

### *Climate Change's Impact On Birds*

Birds are vulnerable to climate change in various ways. Droughts, extreme storms, fires, and unusual temperatures caused by this growing phenomenon are throwing ecosystems into disarray and forcing birds to contend with new predators, search for new food sources, cope with new diseases, and handle thermal conditions their bodies may not be used to.

For instance, research shows that climate change can disrupt normal seasonal patterns, cue migratory birds to start their migrations at the wrong time, and cause them to miss critical opportunities to feed. It can also disturb avian breeding activities. In addition, as oceans absorb CO<sub>2</sub> from the atmosphere, they become more acidic, a condition that threatens food sources for seabirds and shorebirds. Climate change is also causing sea levels to rise, drowning tidal marshes that in some cases cannot migrate fast enough to keep pace with rising sea levels. Ultimately, this will impact the millions of waterbirds that rely on tidal marsh habitats like our San Francisco Bay Estuary.

Many of these changes are happening more rapidly than ever before and present big challenges to numerous species. While some birds may do well under these rapidly changing circumstances, many will not. If we are to retain healthy biodiversity in the face of climate change, it is imperative that people act. For biologists and ecologists, action means understanding what is occurring, making good predictions about what will happen next, designing and implementing plans to conserve critical habitats, creating wildlife corridors, restoring ecosystems, and helping resource managers make informed decisions.

### *SFBBO Science in Action*

Scientists at SFBBO are conducting research that will help resource managers

understand how the birds that live in or pass through the Bay Area are being impacted by climate change. They are also working with others to use this information to devise strategies to help birds adapt to rapidly changing conditions.

**Landbird Program** For more than 30 years, SFBBO has conducted bird banding research on birds living in and migrating through restored South Bay riparian habitat at our Coyote Creek Field Station (CCFS) and has shared this data by sending it to the U.S. Geological Survey's Bird Banding Laboratory. Our unique, long-term dataset allows scientists from around the world to see patterns in bird behavior, population size, and health that can help them better understand how climate change is affecting birds.

Universities also use our banding data to understand climate change impacts on birds. A graduate student at the University of California San Francisco used CCFS data to study how climate change impacted bird morphology and found that it affected birds' body size by increasing body mass and wing length. This research reached a worldwide audience when it was published in the high impact, international journal *Global Change Biology*.<sup>3</sup> It was one of the journal's top downloaded papers in 2012 and has since been cited in several other high-impact scientific journals, including *Ecology Letters* and *Evolutionary Applications*. In addition, a graduate student at CSU East Bay is currently using CCFS data to study how climate change impacts breeding phenology (the timing of breeding) in the Common Yellowthroat.

Both of these studies not only reveal what is happening to birds in our region in response to changing climate, but can also serve as models and springboards for scientists working to understand what is happening to birds in other regions. They also provide evidence of the impact of climate change—evidence that can help land managers, policy makers, and the public make decisions regarding climate change. These climate change studies, and others like them, could not take place without long-term datasets like the ones SFBBO provides.

**Waterbird Program** The San Francisco Bay Estuary is a site of hemispheric significance for migratory shorebirds, a vital wintering area for waterfowl, and home to many colonially-nesting waterbird species. For more than 30 years, SFBBO has studied Colonial Waterbirds nesting around the Bay. We also conduct waterbird surveys on the Bay's managed ponds and recently produced a study<sup>4</sup> that revealed how waterbird populations have changed in the region over the past 30-plus years.

Like those developed at CCFS, these long-term datasets are critical in helping scientists understand how climate change is impacting waterbirds. We share our data with federal, state, and local agencies. We also share our expertise by participating in several important collaborative efforts aimed at helping wildlife adapt to climate change.

For instance, SFBBO staff have served on a panel of experts in a Bay-wide effort to determine how diverse wildlife communities respond to climate change and to establish a set of priority actions to protect wildlife in the face of climate change. The group, led by the San Francisco Bay Joint Venture, plans to share their findings and recommendations in 2015 with Bay Area land owners who manage the area's wetlands. These include state and federal agencies, land trusts, municipalities, and corporations concerned with the impact climate change may be having on the Bay Area's wildlife, infrastructure, and economy.

In addition, SFBBO participates in the annual Pacific Flyway Shorebird Survey led by Point Blue Conservation Science. The purpose of the study, part of the Migratory Shorebird Project, is to help scientists understand how large-scale environmental changes—including climate change—are affecting shorebirds and their habitats along the Pacific Flyway from Canada to Peru and to identify ways to conserve these species.

**Habitats Program** Climate change adaptation has become a primary focus of SFBBO's Habitats Program. In their first project three years ago, ecologists in this program tested ways to reestablish and revegetate transitional habitats that

# CALIFORNIA FALL CHALLENGE 2014

## Thank you to our Sponsors and Donors!

The 2014 California Fall Challenge was a huge success! We achieved our goal of raising \$28,000 and engaged hundreds of people—as volunteers, participants, and donors—in our mission to conserve birds and their habitats through science and outreach. Thank you to our staff, to everyone who made a donation or participated in a CFC trip, and to the following volunteers: Kick-off Party organizers Shannon McMahon and Anne Hepburn; T-Shirt designers Allison Connor and Bob Nass; prize solicitors Pati Rouzer and Richard Jeffers; Click Off judges Michael Kern, Mike Mammoser, and Tom Grey; Kids Bird Art Contest promoters Raleigh Mclemore and Marisa Stills; and art contest judge John Muir Laws.

### MEWALDT CUP

Four teams competed in our Mewaldt Cup Bird-a-Thon this year, and the winning team was the Refugees—Richard Jeffers, Mike Mammoser, Mike Rogers, and Francis Toldi who won with 168 species. They won an assortment of birding books donated by Princeton University Press, a series of birding CDs and subscriptions to *Birds of North America* donated by Cornell University, bird-themed greeting cards designed and donated by Sandy Ferreira, and car wash vouchers from Classic Car Wash.

The other teams who competed were: “Takin’ it to the Street,” Bob Power, Bill Walker, Bruce Mast, Eli Gross, and Mary Wisnewski, with 146 species; and SLO Swifts, Maggie Smith, Doug Stinson, and Herb Elliot with 144 species.

In addition, The Fledglings youth team led by Pati Rouzer participated again this year. The group counted 66 species, visited SFBBO’s Coyote Creek Field Station and saw a bird banding demo by Land-bird Program Director Josh Scullen, and raised almost \$1,000 for SFBBO’s bird banding station! To thank The Fledglings for their support, SFBBO gave Pati and The Fledglings a bird house donated by Bob Schultz, a three-year subscription to *Birds of North America* donated by Cornell University, subscriptions to a birding app by Kestral Moon, an opportunity to film a bird banding demonstration at CCFS, and a chance to work with SFBBO citizen scientists in SFBBO’s Colonial Waterbird program to collect data from a nesting site in 2015.

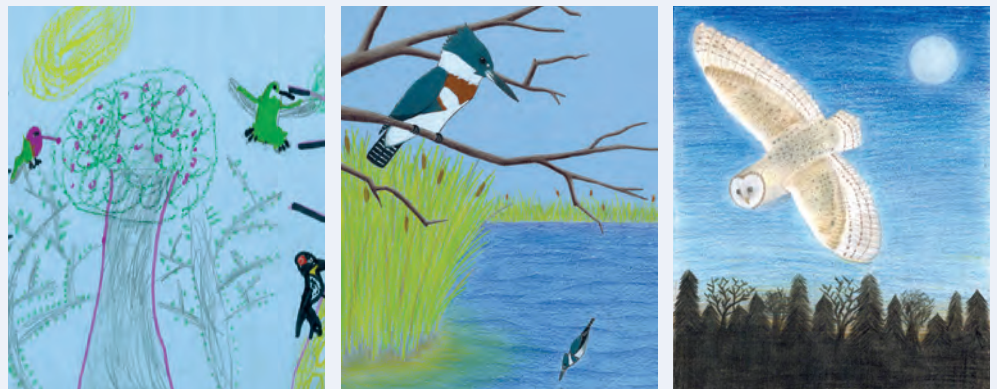
### KIDS BIRD ART CONTEST

As part of our new Family Outreach Program, we held our first Kids Bird



Richard Jeffers, center, accepts the Mewaldt Cup on behalf of the winning team, the Refugees (Mike Mammoser, Mike Rogers and Francis Toldi, not pictured).

PHOTO BY JASON ST. PIERRE



Kids Bird Art Contest Winners, from left: Libby Palkovacs, age 5, Hummingbirds and Friends; Lena Pang, age 10, Belted Kingfisher; Angela Ross, age 12, Barn Owl.

Art Contest and received more than 80 entries from children age 3-17! Our category and Merit Award winning pieces will be showcased on SFBBO’s Facebook page. Congratulations to our three category winners:

**Ages 3-6 years Category:** Libby Palkovacs, age 5, “Hummingbirds and Friends.” Libby won four tickets donated by the California Academy of Sciences, a coloring book, a book about nests, and art supplies.

**Ages 7-11 years Category:** Lena Pang, age 10, “Belted Kingfisher.” Lena won four tickets donated by the Exploratorium, a

bird journal, and art supplies.

**Ages 12-17 years Category:** Angela Ross, age 12, “Barn Owl.” Angela won four tickets donated by the California Academy of Sciences, the “How to Draw Birds Book” donated by John Muir Laws, and art supplies.

### FUNDRAISING COMPETITION

This year we held three different fundraising contests during our CFC. Thank you to everyone who competed, and to our prize donors listed next to the winners, and congratulations to the following winners:

## GENERAL CONTEST

**1st Place:** Mike Mammoser, \$1,655! The prize Mike chose is the Los Gatos Bird-watcher package (a pair of 10X42 Opticon Verano binoculars, the Sibley Guide to North American Birds, and assorted birdwatching items and books).

**2nd Place:** Richard Jeffers, \$1,542! The prize Richard chose is the 14-day Eastern South Africa Birding Trip with Rock-jumper Birding Tours.

**3rd Place:** Robin Leong, \$925! The prize Robin won is the pelagic boat trip in Monterey Bay with Cheeseman's Ecology Safaris.

## TRIP LEADER CONTEST

**1st Place:** Lisa Myers, \$1,440! The prize Lisa chose is the hand-made bird-themed porcelain artwork created and donated by Kent Tool and Dana Gardner of Ruby's Clay Studio and a set of decoupage bird-themed plates donated by Marilyn's Creations.

**2nd Place:** Gina Barton, \$1,010! The prize Gina chose is the overnight stay at Sorenson's Resort in the Sierras.

**3rd Place:** Tom Stewart and Martha Castillo, \$750! The prize Tom and Martha chose is the whale watching trip for two to the Farallon Islands with Oceanic Society Expeditions.

**4th Place:** Bob Power, \$560! The prize Bob chose is the five day International Bird Watching Trip to Puerto Rico with Wildside Nature Tours.

**5th place:** Mike Rogers, \$536! The prize Mike won is a pair of V04 10X32 inch Waterproof Binoculars and a Flash 22 Backpack from REI.

## STAFF CONTEST

**1st place:** Natalie Washburn, \$1,605! The prize Natalie chose is the four night stay in a condominium penthouse on Lake Superior in Duluth, Minn., airfare for one, and a guided tour of Hawk Ridge donated by Tom and Carol Burns.

**2nd Prize:** Josh Scullen, \$1,169! The prize Josh chose is a prize package of clothing and a daypack from Patagonia.

## GUIDED TRIPS

We offered 21 guided birding trips, led by some of the best birders and conservation scientists in our region. Trip Leaders included Lee Aurich, Gina Barton, Dean and Lisa Bickford, Cat Burns, Martha



General Contest 2nd Place Winner Richard Jeffers. First Place Winner Mike Mammoser not present.



Trip Leader Contest 1st Place Winner Lisa Myers.



Trip Leader Contest 3rd Place Winners Tom Stewart and Martha Castillo (not pictured). First Place Winner Gina Barton not present.



Staff Contest Winners Josh Scullen (middle) and Natalie Washburn (far right).

Castillo, Malia DeFelice, Vickie Eggert, Stephanie Ellis, Jeff Englander, Sandy Ferreira, Alvaro Jaramillo, Greg Ker-ekes, Aidona Kakouros, Ginny Marshall, Lisa Myers, Allison Nelson, Bob Power, Mike Rogers, Bill Rose, Pati Rouzer, Jason St. Pierre, Josh Scullen, Tom Stewart, Cheryl Strong, Scott Terrill, Karine Tokatlian, David Thomson, and Natalie Washburn. The trips took place all over the Bay Area, ranged in length, and focused on a variety of topics, including migrants, plovers, raptors, photography, bird banding, waterbirds, birding by kayak, and five trips were especially for families!

## BAND-A-THON

Our third Coyote Creek Field Station Band-a-Thon was another big success! Landbird Program Director Josh Scullen and his team of citizen scientists banded 468 birds at the Coyote Creek Field Station during the CFC. Pledge donations ranged from \$0.10 to \$1.00 per bird and lump sum donations ranged from \$10 to \$500. As a result, we raised more than \$5,000 through the CFC Band-a-Thon! Thanks to this wonderful support, H. T. Harvey & Associates made a \$3,000 matching gift. All of

this will go to support the operation of our Coyote Creek Field Station landbird banding program.

## CLICK OFF

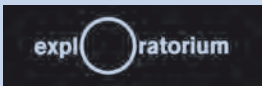
Thirty people competed in our Click Off photo contest this year, submitting almost 200 images and raising nearly \$1,000! Our People's Choice Award Winner, chosen by SFBBO members at our Annual Meeting, is Joe Messina's photo "Crested Caracaras" (see page 6). Joe won a two-day Bird Blind Photography Workshop donated by Ramrod Ranch, and a copy of Adobe Lightroom software and an accompanying instruction book donated by Steve Dakin.

Congratulations also to the following Category Winners who each received a \$100 gift certificate donated by Borrow Lenses:

**Joe Messina**, "Crested Caracaras," Bird Behavior Category  
**Grant Yang**, "Baylands," Birds and Their Habitats Category  
**Sridatta Chegu**, "Excuse Me! I am Beautiful Too!" Bird Portraits Category  
**Jason St. Pierre**, "Egg Envy," Birds and Humans Category

These winning photos have been showcased on SFBBO's Facebook page.

Thank you to our  
CFC Sponsors!



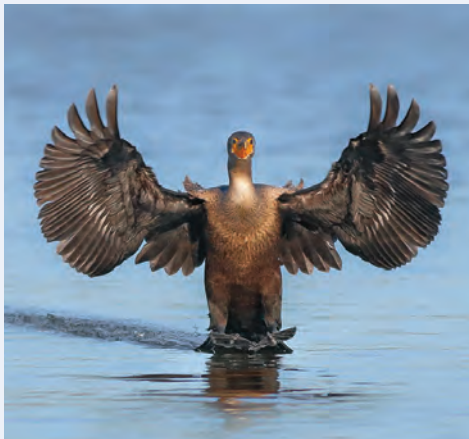
Anne Hepburn, Tom and Carol Burns, Annette Jung, George Walker House, Steve Dakin, Larry Manning, Marilyn's Creations, Classic Car Wash, John Muir Laws, Kestral Moon, Sandy Fierra, and Bob Schultz.



"CRESTED CARACARAS", by Joe Messina, winner of the Bird Behavior Category.



"BAYLANDS", by Grant Yang, winner of the Birds and Their Habitats Category.



"EXCUSE ME! I am Beautiful Too!", by Sridatta Chegu, winner of the Bird Portraits Category.



"EGG ENVY", by Jason St. Pierre, winner of the Birds and Humans Category.

## The 2014 Annual Membership Meeting

The 33rd Annual Membership Meeting was at Stanford University's Jasper Ridge in Woodside on Saturday, October 18th. Highlights included bird walks led by Richard Jeffers, Phil Leighton and Sophia Christel and a presentation about early SFBBO leader Richard Mewaldt by Ron Duke, president of our Band-a-Thon \$3,000 matching gift donor H. T. Harvey & Associates. We also said goodbye to Board Chair Troy Rahmig, welcomed new Co-Chairs Lynne Trulio and Brian Fulfroost, and voted in new Board members Jan Hintermeister and Leah Russin. Thank you to Larry Spivak and Guglielmo Winery for donating wine, Gail Richardson and Dave Austin for donating mimosas, and to the following silent auction donors: Cave Creek Ranch, the George Walker House, Zanker, Aidona Kakouros, David Thomson, Cat Burns, Larry Manning, Anne Hepburn, and Annette Jung.



2014 SFBBO Annual Membership Meeting participants.

PHOTO BY JASON ST. PIERRE

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



*Thank you new and returning members, and generous donors. July – September 2014*

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Patty McGann, Gail Richardson and David Austin, Patricia Rouzer, Byron and Elizabeth Ryono, Thomas Stewart and Martha Castillo, Bill Walker and Mary Wisnewski

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## **STILT SOCIETY**

Deanna de Castro, Jacqueline Deely, Jeanne Fouts, Katherine Greene, Janet and Jay Hanson, Carole Hutchinson, Bethany Krebs, Ed Lombard, Sandy and Steve Moore, Patricia Polentz, Gena and Jeff Zolotar

Thank you to the 106 people who gave up to \$59 each.

## **BOARD OF DIRECTORS**

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## **WATERBIRD FIELD BIOLOGIST**

Jason St. Pierre, MS

## **ACCOUNTANT**

Gail Richardson, MS

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## Holiday Gift in Honor—A Great Gift for the Birds

Give a Gift in Honor for the holidays to recognize a special person or family! For each Gift in Honor donation of \$25 or more, we'll send this beautiful San Francisco Baylands card to the person or family you indicate, to notify them of your thoughtful donation, which will support research to conserve birds and their habitats. Learn more at [www.sfbbo.org](http://www.sfbbo.org), [outreach@sfbbo.org](mailto:outreach@sfbbo.org), or 408.946.6548.



PHOTO BY GRANT YANG



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SCIENCE REPORT *from page 3*

exist at the convergence of the Bay’s tidal marsh and upland habitats. Transitions are critical when it comes to adapting to sea level rise because they will facilitate a marsh’s ability to migrate upland in response to rising seas. SFBBO’s Habitats Program team tackled everything from a lack of native seed banks to prolonged drought as they tested techniques for bringing transitional habitats back to life, and their efforts will continue to yield information and serve as models as these strategies are employed at new restoration sites around the Bay.

Ecologists in the Habitats Program are also working with partners to map Bay Area tidal marsh transition zones under different sea level rise scenarios in order to identify priority areas for future restoration. SFBBO has carried out this research in partnership with the Don Edwards San Francisco Bay National Wildlife Refuge and the South Bay Salt Pond Restoration Project.

*Spreading Climate Change Awareness*

A 2006 study by the U.S. Fish and Wildlife Service<sup>5</sup> found that one out of five Americans is a birder. Birds’ accessibility and popularity across generations make them exceptionally good at awakening a love for nature. Since its founding, SFBBO has increased public awareness about birds and conservation through numerous citizen science and

outreach activities.

While SFBBO has not previously included much information about climate change in our outreach work, we plan to weave climate change information into our new “Look Up” outreach campaign coming in 2015. This campaign includes our communications, bird walks, bird ID workshops, banding demos, Birds in Your Neighborhood events, Lunch ‘N Learn presentations to corporate groups, and new Family Science Night series.

We also plan to educate the citizen science volunteers in our Coyote Creek Field Station, Colonial Waterbird, and Pacific Flyway Shorebird Survey programs about how their efforts are helping scientists address climate change. Citizen scientists like ours have been critical to understanding climate change across the country. The Cornell Lab of Ornithology<sup>6</sup> recently conducted a study that found that citizen science

projects are especially good at providing data for both long-term and geographically broad studies—like those done by SFBBO—and that up to 77% of climate change research is aided by citizen scientists.

Lastly, this fall we joined the Climate Literacy Collaborative, a group of Bay Area science and environmental groups that are partnering to educate the public about climate change, and we plan to work in partnership with members of this group to promote climate change awareness throughout the Bay Area.

All of this work would not be possible without the steadfast support of our donors, partners, and volunteers. Together we will continue to conduct science to inform solutions and build community support to help birds adapt and thrive in a changing world.

.....  
*By Kristin Butler, Outreach and  
Communications Director*

<sup>1</sup>IPCC. 2014. Summary for Policymakers. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*. Cambridge University Press, Cambridge, UK. pp. 1-32.

<sup>2</sup>National Audubon Society. 2014. *Audubon’s Birds and Climate Change Report: A Primer for Practitioners*. National Audubon Society, New York. Version 1.2.

<sup>3</sup>Goodman, R.E. G. Lebuhn, N.E. Seavy, T. Gardali, and J.D. Bluso-Demers. 2012. *Avian body size changes and climate change: warming or increasing variability?* *Global Change Biology* 18(1): 63-73.

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