

BAY BIRD REVIEW

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



SAN FRANCISCO BAY
BIRD OBSERVATORY

Director's Message

Something is different about this issue of the Bay Bird Review. The San Francisco Bay Bird Observatory presents our first Annual Report in years! We are pleased to report that the Bird Observatory is a healthy and strong organization, more committed than ever to our research and monitoring programs that help guide management practices in the Bay Area to the benefit of our native bird populations.

This Bay Bird Review is dedicated to the achievements of our Landbird Science Program, specifically the bird banding research at the Coyote Creek Field Station (CCFS). We have collected almost 30 years of continuous avian data from this riparian restoration site, and have one of the richest datasets in the country. You can read about the varied applications of these data—assessing the quality of the restored habitats for Song Sparrows, and the migration of Rufous Hummingbirds. The article outlining the annual molt cycle of North American passerines by Bird Observatory biologist and CCFS manager Josh Scullen highlights the expertise put to use by our volunteers. We are proud of our accomplishments at CCFS, and as a supporter of the San Francisco Bay Bird Observatory, you can be proud of your contribution to this important and unique program. Thank you so much!

By Jill Bluso Demers,
Executive Director



SONG SPARROW

PHOTO BY GLEN TEPKE

Science Feature

Assessing the Restorations for Birds: Song Sparrows at the Coyote Creek Field Station

Riparian habitat is the transitional zone between streams and upland terrestrial habitats. Although this habitat accounts for less than 1% of the land area of western North America, riparian habitats support more bird species than all other habitats combined. In California, the amount of riparian area has been dramatically reduced, creating ongoing opportunities for conservation of existing riparian habitats, restoration of reduced habitats, and management of both.

Often, the density of birds within an area is used to measure the effectiveness of riparian restorations to birds. However, density may not necessarily correlate with habitat quality. In fact, used alone this measurement may mask the true effectiveness of restorations. For example, sink populations (which depend on individuals emigrating into the population) may exhibit high densities even when individual survival and reproductive success is low.

How birds move within and across habitats may provide information regarding habitat quality and the

effectiveness of restoration actions. For example, movement of individuals towards or away from particular habitat patches may reflect habitat selection decisions, and thus the relative attractiveness of habitat patches to birds.

The San Francisco Bay Bird Observatory's Coyote Creek Field Station (CCFS) is a long-term bird banding station located on a 33-acre riparian area in Santa Clara County. A former orchard, much of the habitat at CCFS has been restored and today there are 4 distinct riparian habitats: (1) a 5-acre remnant, or historic, riparian patch along Coyote Creek, (2) a 5-acre riparian patch restored in 1987, (3) a 14-acre weedy overflow channel constructed in 1990, and (4) a 9-acre riparian patch restored in 1993. Because of these habitat alterations, the longevity of this study, and the high recapture rates of resident species, CCFS offers an opportunity to measure the effectiveness of the restorations.

To assess the restorations at CCFS, we examined the monthly density, survival,

SONG SPARROW *continued on page 2*

and the movement of resident Song Sparrows.

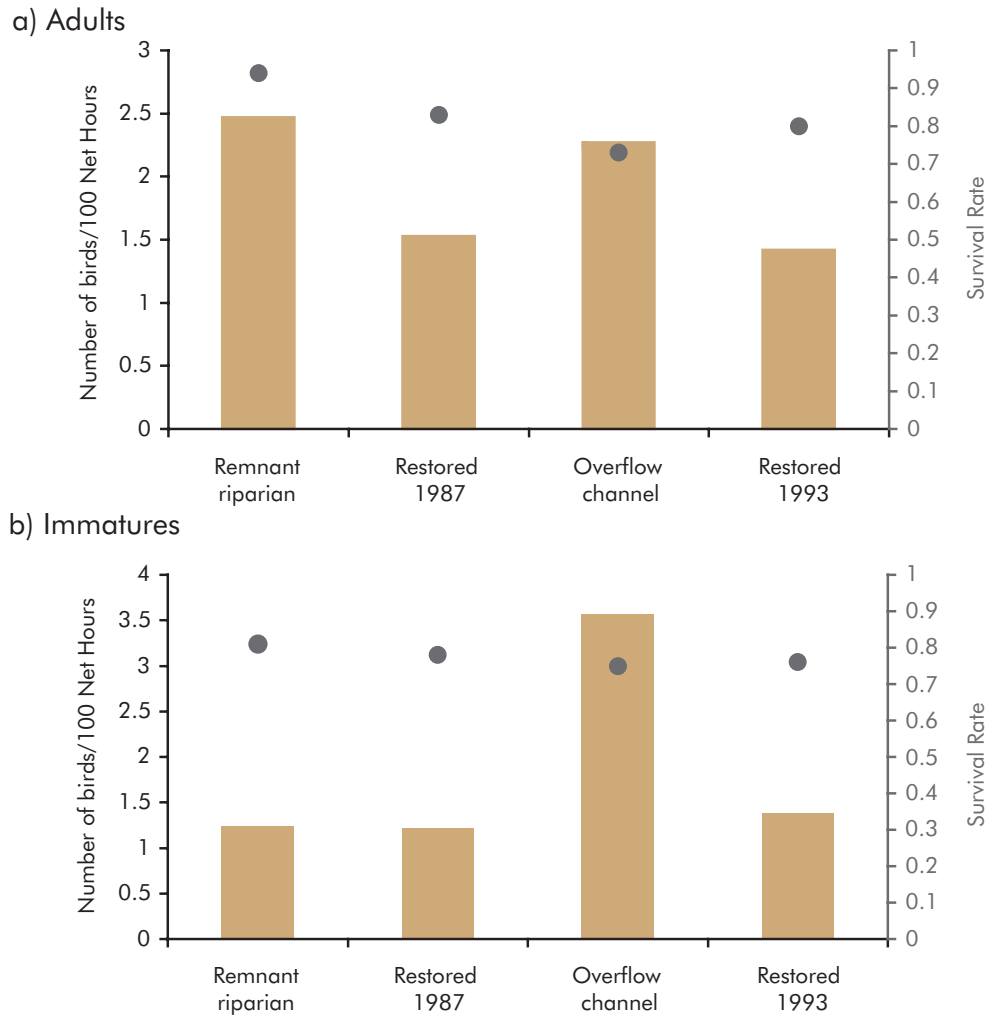
Between 1996 and 2008, we banded 1,809 individual Song Sparrows at CCFS. Immature Song Sparrows (birds that had not yet bred) accounted for 63% of the individuals banded. We found that adult Song Sparrows were nearly evenly distributed among the four habitat patches (Fig. 1a), and remained in the habitat where they were captured (Fig. 2a). Conversely, more than twice as many immature Song Sparrows were in the overflow channel than in any other habitat (Fig. 1b). Moreover, immature Song Sparrows captured in the three other habitat patches preferentially moved to, and subsequently stayed in, the overflow channel (Fig. 2b).

These results suggest individual Song Sparrows were selecting particular habitat patches over others. However, the habitats Song Sparrows moved to did not always correspond to habitat patches where survival was greatest. For both adult and immature Song Sparrows, monthly survival was highest in the remnant riparian habitat patch, followed by the two restored habitat patches (Fig. 1). Adults, however, showed no preferential movement to this habitat (Fig. 2a), and adult density in this habitat was similar to other habitats. Immature Song Sparrows moved preferentially to the overflow channel (Fig. 2b), where survival was lowest. This suggests that other factors were affecting individuals' movement to or preference for a particular habitat.

One possible explanation is that behavioral factors such as territoriality by dominant individuals may reduce the number of Song Sparrows moving to and occupying the higher-quality remnant riparian habitat patch. In particular, dominance of immatures by adults may explain why immature Song Sparrows exhibited such high movement out of, and low densities within, the remnant riparian habitat patch even though survival there was highest.

Although survival of Song Sparrows was greatest in the remnant riparian habitat, Song Sparrows in both restored habitat patches also exhibited relatively high survival. In addition, the restored

FIGURE 1. The average monthly density (bars) and survival (circles) of (a) adult and (b) immature Song Sparrows among habitats at CCFS.



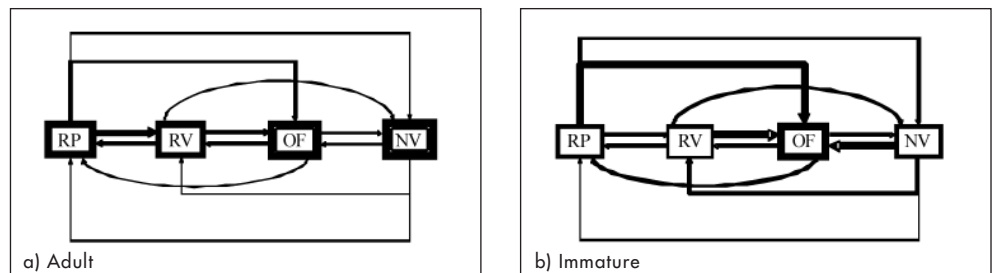
habitat patches together support more adult and immature Song Sparrows than the remnant riparian habitat patch, and may provide important habitat for individuals "pushed out of" the higher quality remnant riparian habitat by dominant individuals. These results indicate a positive impact of restoration efforts at CCFS to Song Sparrows.

We thank Santa Clara Valley Water District for funding and access to the Coyote Creek Field Station. The daily

operation of CCFS depends on our dedicated and skilled volunteers, and we thank each of our past and present volunteers. This work could not have been completed without the generous donors to the San Francisco Bay Bird Observatory, and we sincerely thank them for their contribution to avian conservation in the San Francisco Bay.

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 By Alex Hartman, former Landbird Program Supervisor

FIGURE 2. Movements between habitats for a) adult and b) immature Song Sparrows at CCFS. Habitats include remnant riparian (RP), riparian restored in 1987 (RV), overflow channel (OF), and riparian restored in 1993 (NV). Arrows indicate direction of movement. Boxes around habitat patches indicate the probability of remaining in a particular habitat. Heavier lines signify greater movement probabilities.



Click Off 2010 Kicks Off July 1st!

Announcing the Second Annual Click Off! Join our photo contest highlighting the birds and habitat diversity found in the Bay Area and beyond. Share your best photos and win valuable prizes while supporting the San Francisco Bay Bird Observatory.

Winners are selected from six categories: Bird Portraits, Endangered Species, Birds in their Habitat, Bird Behavior, Human Interaction, and Birds of the World. In addition, one People's Choice Award is selected from the Category Winners. All winners are announced at the Annual Meeting on October 17, 2010.

When, How & How Much

Participants can begin submitting images on July 1st, 2010. Submit photos via www.sfbbo.org/support/clickoff/click-off.php. Images must be received before September 20th, 2010. A \$25 fee to this competition entitles you to enter up to

five images. See contest rules, including usage rights at www.sfbbo.org/support/clickoff/clickoff_rules.php.

The Winners

Awards of Merit – In each category, judges give special recognition awards.

Category Winners – In each category, one image is selected by the judges as the Category Winner.

People's Choice Award – Prints of each Category Winner will be displayed at the Annual Meeting on Saturday, October 17th, 2010. SFBBO Members choose one People's Choice award.

The Prizes

Winning images will appear in the Bird Observatory's web site and newsletters reaching over 3000 people and will also be displayed for public enjoyment. Last year's images were displayed at the Don Edwards SF Bay National Wildlife Refuge Environmental Education Center.

People's Choice Award: A day in the field with a Bird Observatory biologist! Spend a day in the field photographing with a biologist at one of our unique project locations, an exclusive chance to capture dramatic images while spending one-on-one time with a scientist. Learn about the Bay Area's common, migratory and/or endangered species and habitats.

Category Winners: Bird Blind Photography Workshop with Bruce Finocchio and Michael Kern, plus a weekend stay at the private Ramrod Ranch in Monterey County. Value: \$475. View Bruce's work and images of his ranch at www.dream-catcherimages.net.

Awards of Merit: BorrowLenses Gift Certificates. Value: \$25 each

Contact Michael Kern (mkern@sfbbo.org) or Melanie Kimbel (mkimbel@sfbbo.org) with questions regarding the Click Off 2010 Photo Contest.



THE 2009 CLICK OFF *People's Choice Award* "My Tern to Dance" by Edward Minh Nguyen

The Annual Molt Cycle, Terminology, and Ageing Systems in North American Passerines

There are many synonymous terms used to describe various age classes and plumage stages of birds. The terms Hatch Year, After Hatch Year, Second Year, juvenile, immature, first-cycle, and formative-plumage can all refer to birds within their first 12 months of life. Similarly, After Hatch Year, Second Year, adult, definitive-cycle, and basic-plumage can refer to birds that have survived 12 months or more. Here, I hope to clear up some of the confusion with a diagram that lays out each of these terms and describes them within the context of a bird's annual molt cycle. For bird banders, defining age in terms of the molt cycle allows for more precise ageing of birds and facilitates age-related studies using banding data. For birders, knowledge of the molt cycle can be used in the field for more precise identification.

Most North American passerines (hereafter passerines) follow the same annual molt cycle, which I used to create the Molt Cycle Diagram. Of course, there are a myriad ways birds deviate from this general cycle, but for a basic foundation this is a good starting point.

There are three general ageing systems used by birders and bird banders: 1) the Calendar-Year system, used by bird banders to age birds in the hand, 2) the Molt-Cycle system, used to describe species with two or more distinct cycles

before the Definitive Basic Plumage, and 3) the Maturity system, used casually by many birders and bird banders alike. When describing the molt cycle, I insert references to the Molt Cycle Diagram and indicate the age according to each of the three ageing systems. I abbreviate three systems as follows: Calendar-Year (C-Y), Molt-Cycle (M-C), Maturity (MA).

The C-Y system is centered around the idea that all birds turn a year older on January 1, no matter when they were actually hatched. This method allows for easy comparisons within a particular year; for instance, it's easy to separate the Second Years (birds hatched in the previous year) from the After Second Years (birds hatched at least two years ago). However, the term After Hatch Year can apply to both Second Years and After Second Years and is sometimes used to indicate Adult, even if a bird is within the first 12 months of its life.

The M-C system is best applied to species, such as gulls, that have a two or more distinct molt cycles before reaching the Definitive Basic Plumage cycle. Passerines have one distinct cycle before reaching the Definitive Basic Plumage cycle. I included the M-C system to highlight that within the First Cycle, the term Hatch Year, After Hatch Year, and Second Year could all be used to refer to the same individual.

The MA system becomes more confusing with species that have two or more distinct molt cycles before reaching the Definitive Basic Plumage. The distinction between Immature and Adult is rather indistinct, and based mostly on assumptions about whether or not the bird has started breeding.

To explain the annual molt cycle, we start at hatch. For this example, we assume these passerines hatched in April of 2009. Passerines hatch with a sparse set of Natal Down feathers (C-Y: Local, M-C: First Cycle, MA: Juvenile). These feathers do not provide much insulation, so a nestling passerine begins its Prejuvinal Molt (Circle 1) within its first few days, while it's still in the nest. The Prejuvinal Molt yields the Juvenal Plumage (C-Y: Hatch Year, M-C: First-Cycle, MA: Juvenile). As a general rule, if you drop the "Pre" from any Molt type, you get the Plumage type. The Juvenal Plumage is a complete set of feathers which usually look fairly distinctive, but can be similar to non-Juvenal feathers in some species.

Passerines keep Juvenal Plumage throughout the summer 2009 until just before migration, when they begin the Preformative Molt (Circle 2). There is significant variation among species in the amount of feathers that are replaced during this molt, but most passerines do not replace all of their feathers. Because some feathers are retained from the Juvenal Plumage, bird banders can identify this particular molt pattern, as well as the resulting Formative plumage (C-Y: Hatch Year, M-C: First Cycle, MA: Immature).

The Formative Plumage is retained during winter 2009 and into spring 2010 (C-Y: Second Year or After Hatch Year, M-C: First Cycle, MA: Immature) until the 1st Prealternate Molt occurs (Circle 3). The Alternate plumages are known as the breeding plumages, since they occur during the breeding season (C-Y: Second Year or After Hatch Year, M-C: First Cycle, MA: Adult). The Prealternate molts do not occur in all species, and some species retain their Formative

Invest in the Future of the Coyote Creek Field Station

The Coyote Creek Field Station (CCFS) is a place like no other in the South San Francisco Bay. We invite you to explore it in many ways – through volunteer activities, bird walks and banding demonstrations, and tours. But please help us fund the important research that takes place here, too.

We are challenged to raise \$28,000 this year to operate the facility, things like paying the utilities at the trailer, purchasing new mist nets and banding pliers, and supporting the skilled biologists that oversee the data collection. But more, we plan to spruce up the place! And we can't do it without your help.

Your investment will help us continue and expand the scientific research, and support the staff and volunteers. Rally for the CCFS and our avian science efforts! Please send your donation today.





MALE BLACK-HEADED GROSBEAK in *Formative Plumage*. Note how the wing coverts (upper left block of feathers on the wing) are darker than the flight feathers (ignoring the white patches; compare to Black-headed Grosbeak in *Definitive Basic Plumage*). The darker wing coverts were replaced during the *Preformative Molt*, and the lighter flight feathers have been retained from the *Juvenal Plumage*.



MALE BLACK-HEADED GROSBEAK in *Definitive Basic Plumage*. Note how all the feathers on the wing are uniformly dark (ignoring the white patches; compare to Black-headed Grosbeak in *Formative Plumage*). All the feathers on the wing were replaced during the *Definitive Prebasic Molt*.

(and later, Basic) Plumage throughout the summer.

Prior to migration in fall 2010, passerines molt again; this time going through the *Definitive Prebasic Molt* (Circle 4) into the *Definitive Basic Plumage* (C-Y: After Hatch Year, M-C: *Definitive Cycle*, MA: Adult; note that the C-Y system does not differentiate Second Year birds from After Second Year birds at this point as the *Definitive Basic Plumage* appears identical between the two age classes). This molt occurs roughly at the same time as the *Preformative Molt*, but in contrast to the less-than-complete feather replacement in the *Preformative Molt*, all feath-

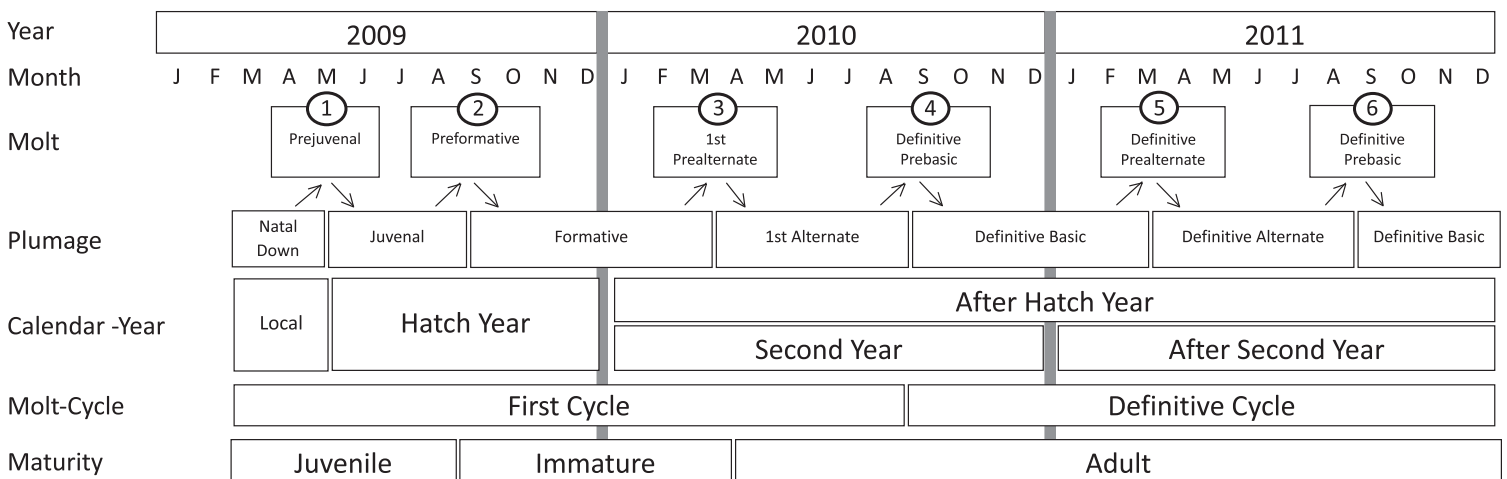
ers are replaced during the *Definitive Prebasic Molt*.

The *Definitive Basic Plumage* is kept through winter 2010 into spring 2011, when the *Definitive Prealternate Molt* occurs (Circle 5; C-Y: After Second Year or After Hatch Year, M-C: *Definitive Cycle*, MA: Adult). The *Definitive Alternate Plumage* is retained during summer 2011 until just before migration, when the *Definitive Prebasic Molt* occurs again (Circle 6; C-Y: After Hatch Year, M-C: *Definitive Cycle*, MA: Adult). From here on out, passerines will repeat Circle 5 and Circle 6, alternating between *Definitive Alternate* and *Definitive Basic* plumages for the rest of their lives.

In North America, a passerine's life cycle is strongly influenced by seasonal changes and birds maintain a rigorous cycle. Biological processes like molt and breeding are very predictable, and can be used with accuracy by banders and birders. Understanding the annual molt cycle that passerines undergo is important for correct identification in the hand and in the field. Additionally, considering how various ageing terminologies overlap and sometimes conflict is vital for accurate communication among banders and birders alike.

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By Josh Scullen, Bird Observatory Biologist and Coyote Creek Field Station manager.

MOLT CYCLE of a North American passerine and the three commonly used ageing systems.



The Rufous Hummingbird: Understanding Migration Using Cumulative Statistics

We look at the patterns of bird migration by plotting the number of birds captured for a specific, often arbitrary time interval (a 3-day period, a 1-week period, and so forth) over a year's time. An alternative approach to looking at these patterns is to show the cumulative statistics. In other words, each new capture recorded is added to the previous total to show the increase in capture numbers over the year. In this case, there is no need to select an interval, and the fine details of migration timing can be easily understood.

In Figure 1, I have used cumulative statistics to illustrate the new captures of Rufous Hummingbirds at the Coyote Creek Field Station (CCFS) from 1986 to 1996. Over this period, nets were placed near shrubs attractive to migrant hummingbirds, such as tree tobacco, with the specific intent of better understanding the temporal patterns of our rarer hummingbirds. Over the 11-year period, 527 new captures of Rufous Hummingbirds were recorded.

I have added straight lines to the cumulative plot to illustrate three main periods for this hummingbird. The first of these lines shows a spring migration from late March to mid-April. Roughly two-thirds of all captured birds were found at that time. From mid-April to the end of July, only a few birds were

captured, all non-breeders. Then, from early August to mid-September, there was a fall migration, but fewer birds were captured than in the spring.

The capture and banding of Rufous Hummingbirds allows us to both sex and age these birds, something we can't do with field observations. It turns out that most of the birds we captured were either females or hatch-year (HY) males. In the spring, a third were after-hatch-year (AHY) males, with vibrant orange gorgets and rufous backs. The remainder of the captures were females or immatures. AHY males were almost never captured after April.

I have been keeping the Santa Clara County notebooks since 1980 and these include records of AHY male Rufous Hummingbirds. These birds have been regularly reported because of their rarity. In Figure 2, I compare the migration period of males based on observations recorded in the notebooks from 1993 to 2009. These observations, mostly in the field, but some from feeder observations, were obtained from many areas in the county. The banding results for AHY years were, of course, obtained from just a small area along Coyote Creek. Despite these differences, the two methods show similar results. There are some differences in the transition areas and a slight difference in the migration rate.



RUFIOUS HUMMINGBIRD

PHOTO BY OWEN HOLT

Both banding and field observation can assist us in better understanding bird migration in our local area, whether it is of the furtive Swainson's Thrush, best understood from banding data, or that aerial master, Vaux's Swift, where we must rely on field observation. As shown here, cumulative statistics provides another way of looking at these data and may sometimes provide us a better understanding of migration.

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 By Bill Bousman, Santa Clara County records compiler

FIGURE 1. Cumulative statistics of new Rufous Hummingbird captures at CCFS, 1986 to 1996. Straight line slopes added to illustrate spring and fall migration.

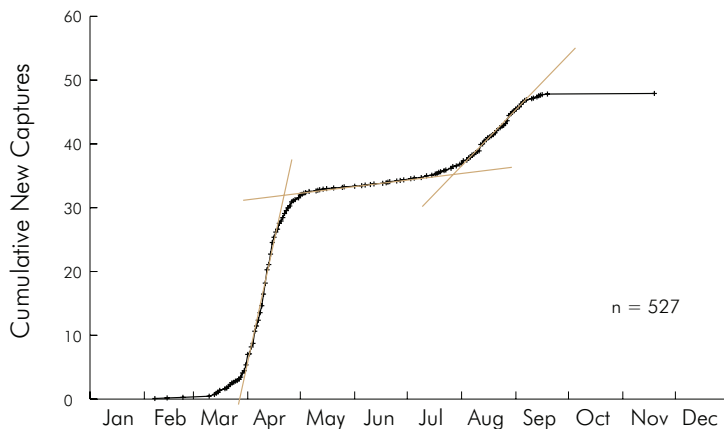
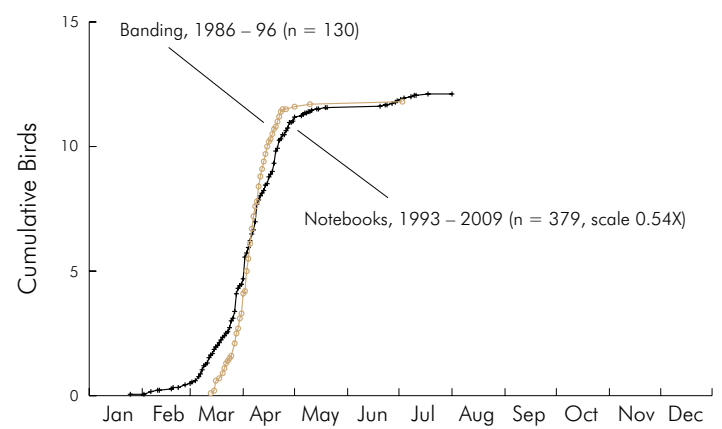


FIGURE 2. Comparison of cumulative statistics for AHY Rufous Hummingbirds for CCFS banding data and Santa Clara County notebooks. For comparison, the notebook records have been scaled to match the banding results.



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



Thank you new and returning members and generous donors, January – March 2010.

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STILT SOCIETY – FOUNDING MEMBERS

Janet and Jay Hanson, Jan Hintermeister

Staff Migrations



Welcome to our New Biologist, Alexis Clark

Last year ago I ventured to California from upstate New York to temporarily explore the Bay Area. Little did I know that I would soon become part of a dynamic team of scientists dedicated



to avian conservation around the Bay.

Prior to joining the Bird Observatory, I completed a Master's in Environmental Studies at Antioch University New England, with a focus on human disturbance of shorebirds on Cape Cod. I worked with the Coastal Waterbird Program of Massachusetts Audubon Society, the Monomoy National Wildlife Refuge, and the University of Washington's Zoology Department. My work at the Bird Observatory will concentrate mainly on the California Gull Research and Monitoring Program and the Avian Disease Prevention Program. I will also be conducting waterbird surveys on the South Bay Salt Ponds and assisting with the Snowy Plover Recovery Project. I am excited to bring my passion and experience in waterbird work to my role of biologist at SFBBO!

Say Hello to our Seasonal Biology Staff

Bridget Greuel is the Snowy Plover intern for this season. Bridget is already a volunteer bander at the Coyote Creek Field Station, and leads regular bird walks for the Bird Observatory. She is a graduate student at CSU East Bay, and she plans on analyzing the Bird Observatory's Snowy Plover nest camera data for her thesis research.

Karine Tokatlian is our Snowy Plover Field Assistant. Karine has a degree in biology from CSU San Luis Obispo. She has two years experience working with plovers at Oceano Dunes State Park near Pismo Beach.

Welcome New Members

All of us at SFBBO would like to extend a heartfelt welcome to our newest members, those of you who are reading the *Bay Bird Review* for the first time. You care deeply about birds, their homes in our precious environment, and the research that helps define conservation decisions, and you joined us in that effort.

Your contributions to the work of the San Francisco Bay Bird Observatory go far beyond the financial. Your volunteer time, your friendship, and your enthusiasm for bird life are just as important, as you bring these qualities to us and spread them to others. Successful conservation depends on this sort of community. Each of you brings us new strength. The stronger the community, the greater our impact will be. To all of you—our members, new and old—thank you!

Calendar

Saturday, June 19th,
8:30 am–10:30 am

A BIRD IN THE HAND

SITE: COYOTE CREEK FIELD STATION
(MILPITAS)

Tour the Bird Observatory's banding station and learn about the bird banding research at the Coyote Creek Field Station. We will tour mist nets, watch a banding demonstration, and explore a restored riparian habitat. Join us and learn why bird banding is important for protecting birds and their habitats. RSVP required.



Saturday, June 26th,
7:45 am–10:30 am

BIRDING AN URBAN SANCTUARY

SITE: HELLYER COUNTY PARK

Why would birds want to live in the big city? Join Eric Feuss on a leisurely bird walk along middle Coyote Creek, a natural sanctuary in central San Jose. We will explore the variety of bird species that thrive in the urban riparian habitat at Hellyer County Park. Come out and see how the Bird Observatory studies the city birds, and why this habitat is important to our ecosystem!



Saturday, July 24th,
7:45 am–Noon

WALK THROUGH FIRE

SITE: RUSSIAN RIDGE OPEN SPACE PRESERVE

Eric Feuss takes us on a birding trip to one of the Bird Observatory's most scenic field sites – Russian Ridge Open Space Preserve in the Santa Cruz Mountains. Take a walk through this beautiful grassland, where Bird Observatory biologists study the response of avian communities to grassland fires. Nesting season will be over, but we should see adults and young birds preparing for migration.



Saturday, July 31st,
7:45 am–10:00 am

YOUNG AUDUBON SUMMER ADVENTURE: BIRD BANDING

SITE: COYOTE CREEK FIELD STATION
(MILPITAS)

Together with Santa Clara Valley Audubon Society, we are offering a very special bird banding demonstration at the Coyote Creek Field Station for families and children. Come learn about bird banding, tour the field station, and see wild birds up close and personal. This tour is for ages 7 and up and lasts approximately 2 hours. RSVP required and space is limited. Call Santa Clara Valley Audubon Society at (408) 252-3740 for reservations. Groups with children receive priority.



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

Save the Date

September 11th – October 3rd

CALIFORNIA FALL CHALLENGE

Our 14th annual California Fall Challenge fundraiser is just around the corner. Save at least one weekend day, between September 11th and October 3rd, to attend an expert guided trip or participate in a bird-a-thon. Come support the San Francisco Bay Bird Observatory!



Sunday, October 17th

ANNUAL MEETING

SITE: HIDDEN VILLA, LOS ALTOS, CA

The 29th Annual Membership Meeting of the San Francisco Bay Bird Observatory will be held at beautiful Hidden Villa on Sunday, October 17th. Join us for a morning of birding, followed by science presentations, Silent Auction, voting for the Click Off Photo Contest, and more. Come celebrate the Bird Observatory and our contribution to avian science.



Workshops for the Birder and Naturalist - 2010

WITH: *Alvaro Jaramillo, SFBBO Senior Biologist*

SITE: *Sobrato Center for Nonprofits in Milpitas*

Tuesday, June 8th and Thursday, June 10th (instruction),
6:30 – 9:00 pm

Sunday, June 13th (fieldtrip)

BIRD SOUND WORKSHOP

One aspect of birds that particularly captivates us is their song. This workshop will train birders to identify birds by song, and also focus on understanding the ecology and behavior of bird vocalization. Topics covered: the development of song; song variations; the purpose of song; and how to visualize, learn, and study bird sounds. On the field trip we will listen to bird sounds in nature and do some simple experiments to hear what we learned in the class.

Birding Level: Beginner and up.



Tuesday, August 31st and Thursday, September 2nd (instruction),
6:30 – 9:00 pm

Sunday, September 5th (fieldtrip)

SHOREBIRDS IN FALL

Shorebirds can be difficult to identify, especially in fall, when duller juvenile and non-breeding plumages are seen. To identify these fall shorebirds, we will dig deeper into bird behavior, physiology, ecology, and everything else that is relevant to this season and your enjoyment of migrating shorebirds. This is an opportunity for you to create depth to your shorebird identification skills, have a great time, and view many shorebird species.

Birding Level: Intermediate and up.

