

35th Annual Meeting of the Western Field Ornithologists
Palm Desert, CA • 14–17 October 2010

Science Program

15 and 16 October 2010 • Embassy Suites Palm Desert

Schedule of Presentations and Panels

Friday, 15 October 2010

Afternoon Session – Ballroom

- 12:15–12:40. Opening Presentation by Dr. Cameron Barrows. **Southern California’s Coachella Valley: A hotspot for biodiversity, conservation and research opportunities.** (See Featured Speakers)
- 12:40–1:10. UNITT, PHILIP and LORI HARGROVE. **Centennial resurvey of the San Jacinto Mountains, 1908–2008.**
- 1:10–1:25. MOLINA, KATHY C. **Breeding terns, gulls and skimmers at the Salton Sea: Recent population booms and busts in a changing environment.**
- 1:25–1:40. ANDERSON, THOMAS, A. KEITH MILES, MARK RICCA, DOUGLAS DEUTSCHMAN, REBECCA LEWISON, and DOUGLAS BARNUM. **Avian use and egg selenium at constructed wetland habitat, Salton Sea, California.**
- 1:40–1:55. **Break.**
- 1:55–2:10. DODGE, CHRISTOPHER. **Avian use of restoration sites on the lower Colorado River.**
- 2:10–2:25. MCNEIL, SHANNON, DIANE TRACY, MURRELET HALTERMAN, and JOHN STANEK. **Natal dispersal in Yellow-billed Cuckoos (*Coccyzus americanus*) on the lower Colorado River.**
- 2:25–2:40. BLAIR, KATHLEEN. **Effects of flooding on riparian avian communities on the Bill Williams River National Wildlife Refuge.**
- 2:40–2:55. GÓMEZ-SAPIENS, MARTHA M., E. SOTO-MONTOYA, A. CUELLAR, and S. LANHAM. **Shorebird habitat use during spring and winter based on aerial surveys at the Upper Gulf of California and Colorado River Delta.**
- 2:55–3:10. LUNDBLAD, CARL. **Status of aquatic, marsh, and vagrant birds on Ash Meadows National Wildlife Refuge, Nevada.**
- 3:10–3:25. SULLIVAN, BRIAN, MARSHALL ILIFF, CHRIS WOOD, DANIEL FINK, and STEVE KELLING. **Exploring patterns of western bird distribution and occurrence at multiple spatio-temporal scales using eBird.**
- 3:25–3:30. Announcements.
- 3:30–4:00. **Break.**
- 4:00–5:30. Photo Identification Panel, moderator Ed Harper.

Reception and Evening Program – Off-site (Living Desert, 47900 Portola Ave., Palm Desert)

- 7:00–8:45. Presentation by Dr. Douglas Altshuler. **How hummingbirds fly.** (See Featured Speakers)

Saturday, 16 October 2010

Afternoon Session – Ballroom

- 12:15–12:25. Welcoming Remarks by WFO President Catherine Waters. **WFO accomplishments in the 21st century.**
- 12:25–12:40. WHITE, MICHAEL D., EDWARD R. PANDOLFINO, and ANDREA JONES. **A Purple Martin survey expedition on Tejon Ranch, California.**
- 12:40–12:55. JENNINGS, SCOTT, RENÉE L. CORMIER, DAVID PRESS, WILLIAM MERKLE, and THOMAS GARDALI. **Status of Barred Owl and interactions with Northern Spotted Owls in Marin County, California.**
- 12:55–1:10. DUNN, JON and KIMBALL GARRETT. **The “Winter Wrens” (genus *Troglodytes*) of North America, with emphasis on identification, vocalizations, distribution, and taxonomy.**
- 1:10–1:25. GARRETT, KIMBALL, JON DUNN, and KATHY MOLINA. ***Onychoprion* terns in western North America, with emphasis on identification and geographical variation of the Bridled Tern.**
- 1:25–1:40. GOODENOUGH, KATHARINE and REBECCA LEWISON. **The use of VHF stationary telemetry to determine fine scale movements of a generalist forager, the Gull-billed Tern (*Gelochelidon nilotica vanrossemi*).**
- 1:40–1:55. **Break.**
- 1:55–2:10. MELCER JR., RON and ANN NIGHTINGALE. **Migration ecology of landbirds at a riparian stopover site on Vancouver Island, British Columbia.**
- 2:10–2:25. LATIF, QURESH S., KATHLEEN D. FLEMING, CAMERON W. BARROWS, and JOHN T. ROTENBERRY. **An evaluation of methods for monitoring Burrowing Owls in the Coachella Valley, California.**
- 2:25–2:40. ARNETT, JOHN, STEPHANIE PREVOST, and SHAINA STEWART. **Science, advocacy, and partnerships: The management and conservation of Le Conte’s Thrasher (*Toxostoma lecontei*) in Arizona and beyond.**
- 2:40–2:55. ARNETT, JOHN and LIN PIEST. **Winter distribution and habitat use of Gray Vireo (*Vireo vicinior*) in Arizona.**
- 2:55–3:25. BEARDMORE, CAROL and DAVE KRUEPER. **Western Field Ornithologists-Sonoran Joint Venture bird monitoring expedition to the Sierra de Alamos-Rio Cuchajaqui Natural Protected Area, Sonora.**
- 3:25–3:40. Presentation by CBRC Secretary Guy McCaskie. **California Bird Records Committee – recent activities.**
- 3:40–4:00. **Break.**
- 4:00–5:30. Sound Identification Panel, moderator Nathan Pieplow.

Banquet and Evening Program – Ballroom

- 7:00–10:00. Keynote Address by Paul Lehman. **California's rare migrants and vagrants, 1975-2010.**
(See Featured Speakers)

Featured Speakers

Opening Presentation

Friday, 15 October. 12:15 p.m. Ballroom.

BARROWS, CAMERON W. Southern California's Coachella Valley: A hotspot for biodiversity, conservation and research opportunities.

The Mojave and Sonoran (Colorado) Deserts and the south coast biogeographic provinces all meet in the Coachella Valley, each influencing the species associations and communities that are found here. From the south the Peninsular Range, including Mt. San Jacinto, is a geographic and ecological extension of Baja California and the myriad of endemic species that peninsula has spawned. At least six species of northern Baja California "endemic" lizards reach the northern edge of their distribution in the mountains that frame the southern boundary of the Coachella Valley. To the north the San Bernardino Mountains, including Mt. San Gorgonio, are ecological extensions of the Sierra Nevada range, bringing with them California Spotted Owls, Northern Goshawks, White-headed Woodpeckers, Northern Flying Squirrels and others to near their southern range limits. The changes in elevation from the +10,000' peaks in the west to the below sea level in the eastern Coachella Valley are among the most dramatic in the world. The Coachella Valley floor was once covered by 100 square miles of sand dunes, habitat for a bevy of endemic species, including the endangered Coachella Valley Fringe-toed Lizard. At least a dozen listed or candidate species of birds, reptiles, fish and plants are restricted to or find important habitat here and surrounding the Coachella Valley. Morongo Canyon, just to the northwest of the Coachella Valley, and the Salton Sea represent the premier birding spots in the western U.S. This rich biodiversity, coupled with a huge opportunity for economic development, has catalyzed a series of conservation efforts ranging from Bureau of Land Management (BLM) and Forest Service Wilderness Areas, a new and proposed National Monument, BLM Areas of Critical Environmental Concern, Joshua Tree National Park, three State Parks, a National Wildlife Refuge, a University of California Research Center, and the first regional, multi-jurisdictional Habitat Conservation Plan in the U.S. The juxtaposition of developed lands with wildlands, multiple ecoregions, and dramatic gradients in temperature and precipitation provide a backdrop for important research questions ranging from species' responses to climate change, effects of fragmentation, effectiveness of corridors and conservation efforts overall, hybridization at distributional boundaries, impacts of invasive species, and many more. In many ways, the Coachella Valley forms an important natural experiment for balancing human economies and biodiversity and a quality of life for everyone. That experiment is still in play, still changing, and so provides an exceptional opportunity for sharp minds to ask critical questions and seek answers that can guide conservation here and elsewhere.

Cameron W. Barrows received an M.S. from CSU Long Beach with his thesis on the roost habitat selection of Spotted Owls. In 2006, he earned a Ph.D. from UC Riverside. His dissertation presented a framework for evaluating the success of multiple species habitat conservation programs. He is currently an assistant research ecologist for the Center for Conservation Biology at UC Riverside. Dr. Barrows has published over 40 articles focusing on conservation biology, with a recent focus on impacts of invasive species and sensitivities of species to climate change. He also teaches at College of the Desert, with classes in wildlife and ecosystem management.

Evening Program

Friday, 15 October. 7:00 p.m. Off-site at the Living Desert (47900 Portola Ave., Palm Desert).

ALTSHULER, DOUGLAS. How hummingbirds fly.

One of the most remarkable adaptations in animals is the ability to fly. Birds, bats and insects are among the most successful of terrestrial organisms, and their colonization of diverse habitats and ecological roles provides a rich context for studies of animal behavior and ecology. The study of how animals fly is an intrinsically multidisciplinary field that involves aspects of aerodynamics, physiology, and neuroscience. Although most flight research concerns either mechanisms or ecological interactions, flight behavior provides a powerful yet experimentally tractable system with which to merge reductionist and comparative approaches to understand how complex locomotion is accomplished, and how variation in locomotor performance influences higher-order behaviors. In my laboratory, we aim to integrate approaches ranging from laboratory experiments to evolutionary comparisons because understanding the mechanisms of flight control also requires understanding the historical forces that have shaped it. Conversely, to evaluate the mechanisms by which ecological changes result in biological adaptations requires a well-described system that can be studied in different environments.

Doug Altshuler began his academic career studying the history of religion with a special emphasis on the Indian subcontinent. He spent his junior year abroad at the University of Delhi and graduated from the University of California, Santa Cruz in 1992. At the very end of his undergraduate studies, Doug took a field course in tropical biology and realized that although biology poses simpler questions than religion, it also provides more tractable answers. Continuing his quest for field work and travel, Doug performed master's research on the interactions between plants and animals in the tropical setting of the Panama Canal. This work was supervised by Rick Howard at Purdue University, where Doug was awarded a M.S. in biology in 1994. His Ph.D. research was completed in Robert Dudley's laboratory at the University of Texas and concerned the influence of flight performance on hummingbird evolutionary ecology. This project involved laboratory studies in Austin as well as field work in the Peruvian Andes and the Colorado Rockies. Upon graduation in 2001, Doug joined Michael Dickinson's laboratory at UC Berkeley, and then helped move the lab to Caltech. As a postdoc, he worked on the aerodynamics and neurophysiology of flight in hummingbirds, zebra finches, and honeybees. He joined the faculty at UC Riverside in 2006 as an assistant professor of biology, where he studies the integrative biology of animal flight.

Keynote Address
Saturday, 16 October. 7:00 p.m. Ballroom.

LEHMAN, PAUL. California's rare migrants and vagrants, 1975-2010.

Paul Lehman, currently the Chair of the California Bird Records Committee, was also the special editor for WFO to the CBRC's opus "Rare Birds of California", edited by Robb Hamilton et al. A noted field ornithologist who began birding in his home state of New York at the age of nine, Paul has a long east-west (New York to Santa Barbara, back to Cape May, New Jersey, then back to California) and north-south (Gambell, Alaska to his current home in San Diego) migratory history of his own. Paul's accomplishments are inspiring. An expert in weather, migration, distribution, geography, and mapping, Paul's work can be found in The Sibley Field Guides to Birds of Eastern and Western North America, Roger Tory Peterson's Field Guide to Birds of North America, The National Wildlife Federation Field Guide to Birds of North America, and the National Geographic Society's Field Guide to the Birds of North America, to name a few. A former lecturer at the University of California Santa Barbara in the geography and environmental studies departments, Paul also served as the editor of ABA's *Birding* magazine for nearly a decade. Paul is currently an associate editor for *North American Birds* and *Western Birds* and a professional birding guide for Wings, Inc.

Abstracts of Scientific Presentations

ANDERSON, THOMAS, A. KEITH MILES, MARK RICCA, DOUGLAS DEUTSCHMAN, REBECCA LEWISON, and DOUGLAS BARNUM. **Avian use and egg selenium at constructed wetland habitat, Salton Sea, California.** *USGS Salton Sea Science Office, 78-401 Hwy. 111, Suite R, La Quinta, CA 92253; tanderson@usgs.gov.*

Inflows to the Salton Sea are expected to decrease by 30% beginning in 2018, affecting the availability and quality of this critical waterbird habitat along the Pacific Flyway. The California Natural Resources Agency has recommended a preferred alternative intended to mitigate expected impacts, a major component of which is Saline Habitat Complex, a series of shallow wetland impoundments maintained with a blend of saline Salton Sea water and agricultural drainwater. The use of drainwater is necessary but it presents the potential for excessive selenium exposure. In cooperation with the Bureau of Reclamation, the efficacy of creating such habitat was assessed through a Saline Habitat Project (SHP) pilot study near the southeast corner of the Salton Sea. We evaluated bird use and selenium risks associated with a 100-acre constructed habitat which resembles the proposed Saline Habitat Complex. Bird densities of eight waterbird guilds measured July 2006–June 2008 indicated use of the SHP site was comparable to reference sites at both the Salton Sea and salt ponds at San Diego Bay. Bird densities and diversity were lowest in the highest salinity pond. Predation and flooding were the main causes of nest failure of Black-necked Stilts (*Himantopus mexicanus*) and American Avocets (*Recurvirostra americana*). Selenium concentrations in stilt eggs collected from the SHP site and three nearby reference sites likely reflected concentrations in the water sources (Salton Sea water, drainwater, and Colorado River water) of each site. Stilt egg selenium concentrations from the SHP site in 2007 averaged 5.01 µg/g (1.91–7.94) and were similar to those in eggs from pooled reference sites. Among SHP ponds, egg selenium concentrations were greatest in the first pond of the series.

ARNETT, JOHN¹ and LIN PIEST². **Winter distribution and habitat use of Gray Vireo (*Vireo vicinior*) in Arizona.** ¹56th Range Management Office, 7224 N. 139th Dr., Luke Air Force Base, AZ 85309; *John.Arnett@luke.af.mil.* ²Arizona Game and Fish Department, 9140 E. 28th St., Yuma, AZ 85365.

Gray Vireo (*Vireo vicinior*) is a Partners in Flight high priority species whose non-breeding range is closely tied to the distribution of elephant tree (*Bursera microphylla*) in the Sonoran Desert. From December 2009 to February 2010, we conducted the first systematic survey for Gray Vireos in Arizona's elephant tree habitat. Here we report on the results of this survey, discuss the relationship between Gray Vireo presence and winter habitat, and provide recommendations for future Gray Vireo survey and monitoring efforts. Because sufficient elephant tree location data were lacking prior to our study, we conducted intensive ground and aerial searches for suitable elephant tree patches and used a non-random "look-see" method to establish and conduct vireo survey transects. Transects consisted of three points at least 250 m apart, from where we conducted a three-minute passive observation period followed by twice broadcasting a recorded Gray Vireo song. Habitat structure and elephant tree fruit availability were measured at each survey point. Gray Vireos detected in Maricopa County may represent the first winter records for the vireo in this county. Though the vireo depends to some degree on elephant trees during winter, vireo presence was not associated with elephant tree density. Of the 14 vireos found at 56 transects, all but one were detected in response to the song broadcast. At least one vireo was detected at adjacent survey points, suggesting that playback points should be further apart than 250 m. Extensive drought-related mortality of elephant trees in our study area raises concerns about the possible effects of climate change on the persistence of elephant trees and the associated avifauna in Arizona. In response, we recommend complete mapping of Arizona's elephant tree habitat and focused monitoring of its avifaunal community.

ARNETT, JOHN¹, STEPHANIE PREVOST², and SHAINA STEWART². **Science, advocacy, and partnerships: The management and conservation of Le Conte's Thrasher (*Toxostoma lecontei*) in Arizona and beyond.** ¹56th

Range Management Office, 7224 N. 139th Dr., Luke Air Force Base, AZ 85309; John.Arnett@luke.af.mil. ²Cabeza Prieta National Wildlife Refuge, 1611 North Second Ave., Ajo, AZ 85321.

Le Conte's Thrasher (*Toxostoma lecontei*) is a secretive bird of lowland deserts of the southwestern United States and northwestern Mexico; the species is considered a Bird of Conservation Concern by the U.S. Fish and Wildlife Service, a Species-at-Risk by Department of Defense, and a YellowList (Rare) bird in the 2007 WatchList for United States Birds. Basic information about Le Conte's Thrasher distribution and ecology is lacking. Further, its habitat faces multiple threats including, but not limited to, development for renewable energy and conventional anthropocentric land uses, and climate change. As such, managers of public lands containing suitable habitat must work proactively, at large spatial scales, and across jurisdictional boundaries in order to promote the persistence of the species. Beginning in early 2009, we began a multi-agency collaborative project to understand the distribution, density, and habitat use of Le Conte's Thrashers on the Barry M. Goldwater Range and Cabeza Prieta National Wildlife Refuge in southwestern Arizona. Surveyors used digital playback devices to elicit responses, recorded the location of detected bird(s) using a laser rangefinder or a global positioning system (GPS) device, and described the structure and diversity of the immediate habitat. In early 2010, a 3-day international workshop about thrasher ecology and survey methods bolstered efforts to collaborate internationally, improve monitoring for Le Conte's Thrasher throughout its distribution, share knowledge of thrasher ecology and survey techniques, and compile results of studies conducted among multiple agencies and researchers. Ongoing and proposed projects related to Le Conte's Thrasher management and conservation include (1) a Department of Defense Legacy project on distribution and landscape-level occupancy correlates in southwestern Arizona, (2) additional training and population monitoring in Mexico, (3) standardized methods for surveys and habitat analysis, and (4) developing a range-wide monitoring plan.

BEARDMORE, CAROL¹ and DAVE KRUEPER². **Western Field Ornithologists-Sonoran Joint Venture bird monitoring expedition to the Sierra de Alamos-Rio Cuchajaqui Natural Protected Area, Sonora.** ¹*Sonoran Joint Venture, U.S. Fish and Wildlife Service, 2321 W. Royal Palm Rd. Suite 103, Phoenix, AZ 85021; carol_b Beardmore@fws.gov.* ²*Migratory Bird Office, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, NM 88710; dave_krueper@fws.gov.*

Western Field Ornithologists and the Sonoran Joint Venture jointly sponsored and conducted a bird monitoring expedition to the Sierra de Alamos-Rio Cuchajaqui Natural Protected Area in southern Sonora, Mexico, 27 June–2 July, 2010. The purpose of the expedition was to collect data on the breeding bird species of the protected area, for which no quantitative monitoring had ever been conducted of which we are aware. We were invited to conduct the monitoring by the protected area and two non-governmental organizations, Nature and Culture International and Pronatura. The field team included 13 biologists/birders from the U.S. and 11 Mexican biologists/bird guides. We completed 59 area search plots, 118 vegetation measurements, 10s of nest record cards, nightjar surveys, and photo and sound recording documentation. Three different camps were established from which the daily surveys were based. El Palmarito camp was at 470 m in dry tropical deciduous forest, while the other lowland camp was based out of El Cajon at an elevation of 420 m. The higher elevation site, based at Santa Barbara, was at 1240 m and was primarily in pine-oak woodland. A total of 149 bird species were recorded from the three camps combined, with 24 occupied nests discovered and 42 species documented to breed in the area. Santa Barbara recorded the highest number of species present with 108. Four species of psittacids, nine species of owls, and also five nightjar species were documented. The first nest of Elegant Euphonia (*Euphonia elegantissima*) to be documented in Sonora was discovered, as well as one of the few nests of Grayish Saltator (*Saltator coerulescens*) for the state. This expedition established a strong baseline for future replicate monitoring efforts to determine avian response to management activities through time. This presentation will be given in two parts by Carol Beardmore and Dave Krueper.

BLAIR, KATHLEEN. **Effects of flooding on riparian avian communities on the Bill Williams River National Wildlife Refuge.** *U.S. Fish and Wildlife Service, Bill Williams River National Wildlife Refuge, 60911 Hwy. 95, Parker, AZ 85344; Kathleen_blair@fws.gov.*

The Bill Williams River has one of the last remaining flood-regenerated riparian woodlands in the southwestern United States. The largest tract of these forests found on the Lower Colorado River is on the Bill Williams River National Wildlife Refuge. Overall, 357 species of birds have been documented on the 6,105 acre refuge including many species of national and regional concern such as Southwestern Willow Flycatcher, Yuma Clapper Rail, Western Yellow-billed Cuckoo, Bell's Vireo, Lucy's Warbler, Elf Owl, Gilded Flicker, Abert's Towhee, and California Black Rail. In the winter of 1998–1999 long-term monitoring transects for terrestrial vertebrates and vegetative communities were established in six habitats on the Bill Williams River National Wildlife Refuge which remain on-going. Beginning in the fall of 2005 and through the spring of 2006, major winter rains produced large flood releases from Alamo Dam, approximately 30 miles upstream of the Refuge. Data from the long-term monitoring transects have been used to document the effects of that flood on the avian communities of four major riparian habitats including abandoned agriculture/mesquite bosque terraces and cottonwood/willow/tamarisk floodplain forests. Each habitat varied in flood impacts as well as characteristics of the vegetative community before and after the flood. For each habitat, avian community parameters measured included species composition, relative abundances, diversity indices, and total contacts. Comparisons of these parameters as well as community similarity indices showed both differences between habitats before the flooding and changes within habitats from pre-flood to post-flood values in a complex and dynamic mosaic.

DODGE, CHRISTOPHER. **Avian use of restoration sites on the lower Colorado River.** *U.S. Bureau of Reclamation, Lower Colorado River Multi-Species Conservation Program, P.O. Box 61470, Boulder City, NV 89006; cdodge@usbr.gov.*

The Lower Colorado River Multi-species Conservation Program (LCR MSCP) has currently created approximately 1,252 acres of willow, cottonwood, and mesquite habitat at five different restoration sites along the lower Colorado River. The LCR MSCP is a 50-year program with the goal of creating a minimum of 8,100 acres of riparian, marsh, and backwater habitat for four listed species and 16 additional species native to the Colorado River. Bird monitoring has taken place at these restoration sites since the LCR MSCP program began in 2005. Each site is monitored for Yellow-billed Cuckoo and Willow Flycatcher using species-specific protocols. The sites are also monitored for all birds present at a site using the double sampling method, MAPS, and winter banding techniques. At each site, different planting techniques and watering regimes are used. The different planting schemes and the management of the sites benefit different species and not all bird species use the sites equally. This has led to the current effort to synthesize all the avian monitoring data from the restoration sites and compare them to vegetation monitoring data collected at the sites. This synthesis will be used to guide future restoration and management goals for each site. Overall, the initial data indicates that larger patch sizes with a diverse habitat mosaic would benefit both species diversity and richness, as well as provide habitat for important covered species.

DUNN, JON and KIMBALL GARRETT. **The “Winter Wrens” (genus *Troglodytes*) of North America, with emphasis on identification, vocalizations, distribution, and taxonomy.** *52 Nevada St., Bishop, CA 93514; cerwa@earthlink.net.*

The two North American groups of Winter Wrens, long known to be vocally distinct, have recently been split by the AOU as a result of a recent paper by Toews and Irwin (2008) which revealed that the two groups come into contact in north-central Alberta and do not interbreed. This presentation will focus on the distribution of the various taxa, including related Old World groups, their distinctive vocalizations, and their morphological differences. While Pacific Wren (*T. pacificus*) is the more common taxon in the West and is the only breeding type, the eastern Winter

Wren (*T. hiemalis*) also occurs casually in California and southeast Arizona in late fall and at least early winter. The talk will not focus on the English names chosen!

Toews, D.P.L., and D.E. Irwin. 2008. Cryptic speciation in a Holarctic passerine revealed by genetic and bioacoustic analyses. *Molecular Ecology* 17:2691-2705.

GARRETT, KIMBALL, JON DUNN, and KATHY MOLINA. ***Onychoprion terns in western North America, with emphasis on identification and geographical variation of the Bridled Tern.*** *Natural History Museum of Los Angeles County, 900 Exposition Blvd. Los Angeles, CA 90007; kgarrett@nhm.org.*

All four species of *Onychoprion* terns occur locally or peripherally in the eastern Pacific Ocean and/or west coast of North America and are potential vagrants over a wide area. In California, all Bridled and nearly all vagrant Sooty Terns have been adults found at active tern colonies, rather than at sea; in Alaska the Aleutian Tern is seen only casually away from its known colonies and its migration routes and main wintering areas remain poorly known. After providing context on the general distribution and patterns of vagrancy of terns of this genus, we discuss the three California records of Bridled Tern and note the field characters that distinguish it from Sooty, Aleutian, and Gray-backed terns. We also summarize patterns of geographic variation in the Bridled Tern, particularly with respect to the poorly known eastern Pacific subspecies *nelsoni*, breeding from Nayarit and Guerrero in western Mexico south to Nicaragua, Costa Rica, and perhaps to Ecuador.

GÓMEZ-SAPIENS, MARTHA M., EDUARDO SOTO-MONTOYA, ANDREA CUELLAR, and SANDRA LANHAM. ***Shorebird habitat use during spring and winter based on aerial surveys at the Upper Gulf of California and Colorado River Delta.*** *Department of Soil, Water and Environmental Science, University of Arizona, P.O. Box 210038, Shantz Bldg. Room # 38, Tucson, AZ 85721-0038; gomezsap@email.arizona.*

The Upper Gulf of California and Colorado River Delta in Baja California and Sonora, Mexico, provide feeding and resting areas for migratory and resident shorebirds. The objectives of this study are 1) to document shorebird habitat use of coastal and inland wetlands using aerial surveys during winter and spring migration, and 2) to document patterns of habitat use in the Cienega de Santa Clara Slough in relation to tidal dynamics and changes in the inundation patterns. We used a total count method covering a total area of 465.8 km² from Bahía San Jorge to the Colorado River Delta and San Felipe coastline. We conducted five flights: December 2006, April 2007, December 2009, February 2010, and April 2010. The flights were performed using a Cessna 172 aircraft during spring and neap tide days. Individuals were grouped by size categories and when possible species were identified. The total number of shorebirds ranged from 56,156 to 195,073 with a high proportion of individuals using the Cienega de Santa Clara Slough (29 to 75%). The total number of shorebirds utilizing the study area was highly variable in both spring migration and wintering, with equally high and low numbers occurring in both seasons. Large shorebirds consistently used mudflats and estuaries from Bahía Adair, and small shorebirds (mostly Western Sandpipers) were more frequent in the Cienega de Santa Clara Slough, an inland wetland that depends on agricultural return flows that come from Arizona. Aerial surveys confirm the importance of maintaining the suitability of different types of wetlands. The results also point out that the contribution of Cienega de Santa Clara water and tidal inflows to the inland main shorebird aggregation area must be addressed in order to understand the factors (water management, evaporation, tidal dynamics and seismic events) that control the suitability of this habitat.

GOODENOUGH, KATHARINE and REBECCA LEWISON. ***The use of VHF stationary telemetry to determine fine scale movements of a generalist forager, the Gull-billed Tern (*Gelochelidon nilotica vanrossemi*).*** *San Diego State University, Tijuana National Estuarine Research Reserve-NOAA, Biology Department, 5500 Campanile Ave., San Diego, CA 98182; goodenou@rohan.sdsu.edu.*

Gull-billed Terns are a local resident to Southern California and a candidate for Federal listing. They have been linked to predation of other listed seabirds yet little is known about their foraging behavior. As part of a project exploring the foraging ecology of Gull-billed Terns breeding in San Diego Bay, we are using a combination of field techniques, including VHF radio telemetry to obtain data on fine scale movements of Gull-billed Terns foraging throughout San Diego Bay, California. Very high frequency (VHF) has been available to researchers since the 1950s. Many studies in avian research have used radio telemetry to document both small scale and large scale movements, e.g. Caspian Tern local foraging ecology (Anderson et al. 2007) and Forster's Tern juvenile dispersal (Ackerman et al. 2009). Tagging Gull-billed Terns and tracking them via standard VHF telemetry protocols is challenging: the terns are sensitive to disturbance, travel several kilometers a day, have a wide range of dietary items and foraging habitats, and forage on the wing. To meet the challenge of discerning fine scale movements of individual terns, we paired stationary radio telemetry with manual telemetry. Stationary radio telemetry provides individual Gull-billed Tern movements by documenting the frequency and length of visits at particular sites, while manual telemetry provides information on the general presence of tagged terns throughout the Bay. With the careful placement of these receiver stations, we are developing a clearer picture of Gull-billed Tern distribution in and around San Diego Bay, identifying important foraging sites, preferences, and potential interactions with other listed seabirds.

Ackerman, J.T., J.D. Bluso-Demers, and J.Y. Takekawa. 2009. Post-fledging Forster's Tern movements, habitat selection, and colony attendance in San Francisco Bay. *The Condor* 111(1): 100-110.

Anderson, S.K, D.D. Roby, D.E. Lyons, and K. Collis. 2007. Relationship of Caspian Tern foraging ecology to nesting success in the Columbia River estuary, Oregon, USA. *Estuarine, Coastal and Shelf Science* 73: 447-456.

JENNINGS, SCOTT, RENÉE L. CORMIER, DAVID PRESS, WILLIAM MERKLE, and THOMAS GARDALI. **Status of Barred Owl and interactions with Northern Spotted Owls in Marin County, California.** *PRBO Conservation Science*, 3820 Cypress Dr., #11, Petaluma, CA 94954; sjennings@prbo.org.

Marin County, California, is the southern limit of the range of the Federally Threatened Northern Spotted Owl (*Strix occidentalis caurina*). The Marin population of Northern Spotted Owl has an unusually high breeding density, unique breeding habitat associations, and is likely isolated from other Spotted Owl populations. Unlike elsewhere in the Spotted Owl's range, the threat of habitat loss due to logging is not an issue in Marin County. Barred Owls began expanding into the northern extent of the Northern Spotted Owl range in approximately 1950, and were first detected in Marin County in 2002. In the Pacific Northwest, evidence suggests Barred Owls (*Strix varia*) outcompete and/or interbreed with Northern Spotted Owls. We have been monitoring the Northern Spotted Owl in Marin County since 1997, providing an opportunity to examine the impact of the Barred Owl invasion on Northern Spotted Owls in the southern limit of their range. We report the spatial and temporal occurrence and range expansion of Barred Owls in Marin County. We document and describe two Barred Owl nesting attempts and we describe Barred Owl interactions with Northern Spotted Owls. We will discuss Barred Owl expansion in the context of the unique characteristics of, and stressors on, Marin County Northern Spotted Owls and provide an overview of proposed management alternatives.

LATIF, QURESH S., KATHLEEN D. FLEMING, CAMERON W. BARROWS, and JOHN T. ROTENBERRY. **An evaluation of methods for monitoring Burrowing Owls in the Coachella Valley, California.** *Center for Conservation Biology, UC Riverside, 1303 Webber Hall, 900 University Ave., Riverside, CA 92521*; qlati001@ucr.edu.

Standardized surveys are widely used to collect distribution and abundance data, which inform biological conservation. In North America, Burrowing Owl (*Athene cunicularia*) populations are declining, but dispersed

distributions challenge efforts to survey this species. We evaluated various methods to survey Burrowing Owls in the Coachella Valley, California, to inform population monitoring. We conducted passive point-based surveys (point counts), point-based call-broadcast surveys designed to elicit responses by owls (audio point counts), and driving surveys (linear surveys) along roadside routes. We also surveyed wildland plots (wildland surveys) where sandy soils facilitated detection of owls by their tracks. During the 2009 breeding season (April–August), we conducted repeated surveys of routes and plots using each of our methods. We divided our study area into 540×540-m cells and developed occupancy models describing method-specific detection probabilities for surveys of occupied cells, as well as cell-based occupancy probabilities. We compared the fit of various models to field data using information theory. The best fitted models described strong seasonal detection patterns that differed among methods. Likely driven by early-season pair establishment behavior and consequently elevated responses to call-broadcasts, early-season detectability was relatively high during audio point counts. By contrast, late-season detectability was higher during linear surveys, likely reflecting improved late-season visibility of offspring as they emerged from their burrows. Studies in Wyoming and Washington found similar seasonal patterns, so these patterns are likely generally relevant to the study of Burrowing Owl demography. Although limited in applicability to sandy habitats, wildland surveys achieved the highest detection probabilities, whereas non-audio point counts achieved the lowest detection rates. We recommend future monitoring couple early-season audio point counts (mainly April) with late-season linear surveys (mainly August). In addition, supplementary data from roadless areas (e.g., wildland surveys) could offset potential biases associated with roadside surveys.

LUNDBLAD, CARL. Status of aquatic, marsh, and vagrant birds on Ash Meadows National Wildlife Refuge, Nevada. *Great Basin Institute, 16750 Mt. Rose Hwy., Reno, NV 89511; carl_lundblad@fws.gov.*

Systematic surveys for secretive marsh birds and monthly aquatic bird censuses have been conducted on Ash Meadows National Wildlife Refuge in southern Nevada since 2007. We sought to collect baseline inventory data regarding the distribution and abundance of water birds on this desert wetland complex, which continues to be subject to intensive restoration actions targeting a suite of endemic non-avian species. Marsh bird surveys utilized standardized call-broadcast for eight focal species, and were conducted three times annually at six sites. Peterson Reservoir showed the highest species richness, averaging 6.5 focal species detected annually. At Lower Crystal Marsh and Horseshoe Marsh, 5.5 and 4.7 focal species were detected annually, respectively. Abundance was also highest at Peterson Reservoir (35.6 focal birds/survey) followed by Lower Crystal Marsh (20.9 focal birds/survey) and Horseshoe Marsh (17.4 focal birds/survey). Diversity and abundance were lower at Carson Slough, Jackrabbit Spring Outflow, and Crystal Reservoir. Populations of most species and at most sites appear to be generally stable. Surveys have shown the Yuma Clapper Rail (*Rallus longirostris yumaensis*) to be a regularly occurring species on Ash Meadows, representing a significant expansion of its known range, and a Black Rail (*Laterallus jamaicensis*) was a notable detection at Peterson Reservoir. Aquatic bird censuses were conducted monthly at five sites using shoreline surveys. Average aquatic bird abundance and density were highest at Peterson Reservoir with 541 birds/survey and 9.0 birds/survey/acre. The highly degraded Carson Slough area had the lowest bird abundance and density. Average species richness was highest at Peterson Reservoir (17.3 species/survey) followed by Lower Crystal Marsh and Crystal Reservoir (17.1 species/survey and 16.0 species/survey, respectively). Exceptional records obtained during counts include Trumpeter Swan (*Cygnus buccinator*), Eurasian Wigeon (*Anas penelope*), Yellow-billed Loon (*Gavia adamsii*), and Least Tern (*Sternula antillarum*), and incidental observations have yielded numerous additional vagrant records.

MCNEIL, SHANNON, DIANE TRACY, MURRELET HALTERMAN, and JOHN STANEK. Natal dispersal in Yellow-billed Cuckoos (*Coccyzus americanus*) on the lower Colorado River. *Southern Sierra Research Station (funded by Bureau of Reclamation Lower Colorado River Multi-Species Conservation Program), P.O. Box 1316, Weldon, CA 93283; semcneil@email.arizona.edu.*

We have been working on a study of Yellow-billed Cuckoos on the lower Colorado River since 2008. Objectives of our study are to assess the population of breeding cuckoos within the lower Colorado River watershed, and to build on the limited knowledge of this species' breeding biology, including natal dispersal, breeding site fidelity, home range and population dynamics. In 2010, we color-banded or recaptured 27 adult cuckoos, and radio-tracked 23 of these, in both restored and natural riparian habitat patches. Through recapturing/radio-tracking or re-sighting birds color-banded in 2009, we obtained two natal dispersal distances (the net movement between hatch site and first breeding site), of 135 and 100 meters, indicating strong natal site fidelity. These results differ from our single 2009 result, when a breeding second-year bird was recaptured 33 kilometers north of its 2008 natal site. Natal dispersal may be male or female biased; however the sexes of these three second-year birds are presently unknown (although they may be known by October). Dispersal is important in maintaining genetic diversity and local population viability, and can be impacted by habitat fragmentation and isolation, two common factors describing cuckoo habitat within the watershed. Knowledge of natal dispersal requirements of this species may inform management decisions regarding optimal size and spacing of breeding habitat patches and the importance of non-breeding habitat corridors linking breeding sites. While this data set is currently small, in addition to 12 birds in 2009 and 25 adults this year, we also color-banded 24 nestlings in 2010; thus we expect our knowledge of all aspects of Yellow-billed Cuckoo biology to grow considerably over the next two years of this project.

MELCER JR., RON^{1,2} and ANN NIGHTINGALE². **Migration ecology of landbirds at a riparian stopover site on Vancouver Island, British Columbia.** ¹*Department of Water Resources, Floodway Ecosystem Sustainability Branch, 1416 9th St., Room 1148, Sacramento, CA 94236-0001.* ²*Rocky Point Bird Observatory, c/o 954A Queens Ave., Victoria, BC, V8T1M6; rmelcer@water.ca.gov, motmot@shaw.ca.*

Rocky Point Bird Observatory (RPBO) is located on the southern tip of Vancouver Island, British Columbia and is the only Pacific coastal member of the Canadian Migration Monitoring Network. RPBO provides important information on coastal and western landbird populations which allows us to gain insight into age and sex differences in the stopover ecology of migrant passerines. Migration monitoring has been conducted during southward migration (July–October) at RPBO since 1994. Mist nets are located within a Scouler's willow (*Salix scouleriana*), red alder (*Alnus rubra*)–dominated riparian corridor surrounded by a Douglas fir (*Pseudotsuga menziesii*), Garry Oak (*Quercus garryana*)–dominated forest. We investigated the migration chronology, mass differences and morphological characteristics of eight common fall migrants: Common Yellowthroat (*Geothlypis trichas*), Wilson's Warbler (*Wilsonia pusilla*), Golden-crowned Kinglet (*Regulus satrapa*), Ruby-crowned Kinglet (*Regulus calendula*), Lincoln's Sparrow (*Melospiza lincolni*), Fox Sparrow (*Passerella iliaca*), Hermit Thrush (*Catharus guttatus*) and Swainson's Thrush (*C. ustulatus*).

MOLINA, KATHY C. **Breeding terns, gulls and skimmers at the Salton Sea: Recent population booms and busts in a changing environment.** *Natural History Museum of Los Angeles County, 900 Exposition Blvd. Los Angeles, CA 90007; kmolina@nhm.org.*

The Salton Sea is a highly dynamic environment for waterbirds, and recent reductions in irrigated agriculture in the region have accelerated habitat changes that impact the Sea's suite of breeding larids (gulls, terns and skimmers). The past decade has seen a boom in populations of tilapia (virtually the only fish now populating the Sea) and a corresponding increase in the numbers of breeding Caspian Terns and California Gulls. Increased populations of these two colonial species have reduced the number of protected nesting sites available to Gull-billed Terns and Black Skimmers, and recent severe declines in the level of the Salton Sea have rendered most formerly occupied breeding sites unsuitable due to exposure to mammalian predators. I outline the population trends of the breeding larids at the Salton Sea over the past 20 years and explore future scenarios. Concern for the Gull-billed Tern subspecies *vanrossemi* at the Salton Sea and elsewhere (leading to a recent proposal for Federal

threatened/endangered listing) underscores the importance of protecting and managing all interior and coastal nesting sites of that taxon.

SULLIVAN, BRIAN, MARSHALL ILIFF, CHRIS WOOD, DANIEL FINK, and STEVE KELLING. **Exploring patterns of western bird distribution and occurrence at multiple spatio-temporal scales using eBird.** *Cornell Lab of Ornithology, 159 Sapsucker Woods Rd., Ithaca, NY 14850; bls42@cornell.edu.*

eBird (www.ebird.org) is a large-scale citizen-science project that collects bird data via online tools from thousands of participants worldwide. California has the highest participation of any state, typically recording over 100,000 bird observations per month, and all states throughout the West have shown substantial growth in participation in recent years. With all of these data collected on a continuous basis, we can now use eBird to create reports, generate results, and model bird occurrence at multiple spatio-temporal scales. Here we examine patterns of bird distribution and occurrence at the regional, state, and county level, and show specific examples using eBird data. We use raw eBird data to discover migration phenology, and reveal patterns of interannual variation in migratory birds. We map species' distributions at multiple scales, and show how these distributions change over time. Finally, we model the predicted occurrence of several western species using Spatio-temporal Exploratory Model (STEM) methodology, and create visualizations of population-level bird movements across the West. With its steadily increasing participation, eBird will continue to become a better and more valuable tool for gathering, accessing, archiving, and analyzing bird data across the West.

UNITT, PHILIP and LORI HARGROVE. **Centennial resurvey of the San Jacinto Mountains, 1908–2008.** *San Diego Natural History Museum, P.O. Box 121390 San Diego, CA 92112; punitt@sdnhm.org, lhargrove@sdnhm.org.*

In 1908, Joseph Grinnell, Harry Swarth, Charles Richardson, and Walter Taylor thoroughly surveyed the San Jacinto Mountains, covering 19 sites ranging in elevation from 225 to 2800 m and recording all vertebrates, including 166 species of birds. The most intensive survey of the fauna of southern California before large-scale urbanization, it affords a unique opportunity for comparison. The San Diego Natural History Museum is replicating the effort of 1908 as closely as possible while broadening temporal sampling and increasing standardization that will enable the current effort to be replicated even more closely in the future. In this region, the detrimental effects of urbanization and climate change are especially pronounced. Average seasonal temperatures have increased (locally by up to 5°C since 1961), and, at lower elevations, catastrophic fires have proliferated. Warming climate is expected to cause upward elevational shifts, northward latitudinal shifts, and extirpation of the highest-elevation species. The study will test how consistently these expectations are being met and evaluate factors such as fire and urbanization contributing to variation in responses. It will also provide important updates to the current distribution and conservation status of the birds of the region, interpreting changes and their causes in the context of history. Preliminary results suggest strong influences of urbanization and altered fire regimes, upward elevational shifts consistent with climate warming among some species but not others, and possible extirpations or declines of some high-elevation species. Notable findings include the probable extirpation of the Sharp-shinned Hawk and Golden-crowned Kinglet, implying northward retraction of those species' breeding ranges, widespread colonization of the Rufous-crowned Sparrow, absent in 1908, perhaps facilitated by fires and the proliferation of the exotic fountain grass, and southward spread of at least seven species of forest birds not known to nest as far south as the San Jacinto Mountains in 1908. This talk will be co-presented in two parts by Philip Unitt and Lori Hargrove.

WHITE, MICHAEL D.¹, EDWARD R. PANDOLFINO², and ANDREA JONES³. **A Purple Martin survey expedition on Tejon Ranch, California.** ¹*Tejon Ranch Conservancy, P.O. Box 216, Frazier Park, CA 93225; mwwhite@tejonconservancy.org.* ²*Western Field Ornithologists, 5530 Delrose Ct., Carmichael, CA 95608.* ³*Audubon California, 601 Embarcadero, Suite 14, Morro Bay, CA 93442.*

Purple Martin (*Progne subis*) is a California Species of Special Concern that naturally nests in tree cavities. Dramatic population declines have been documented state-wide probably due in large part to the expansion of European Starlings in California. Audubon California designated a portion of the Tehachapi Mountains, including part of Tejon Ranch, as the Tehachapi Oaks Important Bird Area because the oaks in the region have been estimated to provide nesting habitat for possibly 10% of the state's breeding Purple Martins. Approximately 100–200 pairs have been estimated to nest in the Tehachapi Mountains, and this may represent the last place in central and southern California where significant numbers of Purple Martins regularly nest in oak woodlands. The Tehachapi Mountains population estimate, based on studies on land adjacent to Tejon Ranch, would make the region the largest breeding population in the state. To investigate the status of Purple Martins and other cavity nesting species in an unexplored portion of the Tehachapi Mountains, the Tejon Ranch Conservancy, in partnership with Audubon California and Western Field Ornithologists, sponsored a Purple Martin survey expedition on Tejon Ranch. We conducted two types of surveys: standardized surveys of Purple Martins and other cavity nesters in randomly located, 200 m diameter plots and unconstrained nest surveys in presumed suitable habitat. Surveys were conducted over three days with 20 volunteer participants, grouped into 4–5 teams for each day's surveys. We documented 22 Purple Martin occupied nest sites, confirming the importance of the Tehachapi Mountains for conserving this species. All nest trees were large Valley oaks (*Quercus lobata*) in fairly open habitat on or near the tops of ridges, and nest tree characteristics will be discussed in greater detail. The results for other cavity nesting species, including European Starling, will also be discussed.

Presenter Biographies

Tom Anderson is a wildlife biologist for the U.S. Geological Survey and has worked at the Salton Sea since 2002. His work there has focused on the shallow shoreline habitat and how to best maintain this resource for migratory birds.

John Arnett holds B.S. and M.S. degrees in wildlife ecology from the University of Florida, and has studied a variety of taxa in North and South America. He is currently a wildlife biologist based at Luke Air Force Base in Phoenix, Arizona, a representative in the Department of Defense Partners in Flight working group, and Secretary of Sonoran Audubon Society.

Carol Beardmore is the science coordinator of the Sonoran Joint Venture of the U.S. Fish and Wildlife Service. She helps coordinate bird monitoring activities and a small grant program along with other bird conservation work. She is also on the Board of the WFO.

Kathleen Blair received her B.S. from Kansas State University, her M.S. and Ph.D. from Oklahoma State University and has been the ecologist for the Bill Williams River National Wildlife Refuge since 1998. Previously she was a faculty member at both Central Missouri State and West Texas A&M universities and a U.S. Peace Corps volunteer in Brazil.

Chris Dodge is a wildlife biologist with the U.S. Bureau of Reclamation and the Lower Colorado River Multi-Species Conservation Program. He is in charge of the Southwestern Willow Flycatcher monitoring and MAPS and winter banding programs.

Jon Dunn – see Workshop Leader Bio

Kimball Garrett – see Workshop Leader Bio

Martha M. Gómez-Sapiens is an ecologist with an M.S. in environmental biology. She spent four years working as a monitoring coordinator at the Upper Gulf and Colorado River Delta Biosphere Reserve where she implemented a shorebird monitoring program. Her interest in shorebird ecology and in the Colorado River Delta motivated her to pursue a Ph.D. to continue studying shorebird habitat use patterns.

Katharine Goodenough is a Master's student in the conservation ecology program at San Diego State University where she is currently researching Gull-billed Tern diet and movement in San Diego Bay. She completed her undergraduate studies at Humboldt State University focusing on marine biology and zoology. Her research focus includes seabird and shorebird foraging, migration, and conservation ecology.

Lori Hargrove recently completed her Ph.D. in biology at the University of California, Riverside, and is currently a researcher with the San Diego Natural History Museum.

Scott Jennings lives in Bolinas, California, and works as a biologist for the non-profit research organization PRBO Conservation Science. He participates in studies monitoring song birds and Spotted Owls in Marin County, California, and Adélie Penguins on Ross Island, Antarctica.

David Krueper is the assistant nongame bird coordinator for Region 2 of the U.S. Fish and Wildlife Service. He has been an avian biologist for 28 years, having also worked for the U.S. Forest Service and the Bureau of Land Management. He has birded extensively in the New World tropics and has a particular interest in the avifauna of northwestern Mexico.

Quresh S. Latif began working for the Center for Conservation Biology after receiving his Ph.D. under Dr. Rotenberry from UC Riverside. Quresh studied nest site selection and nest predation patterns for Yellow Warblers at Mono Lake, California, for his dissertation. He received his B.S. from UC Davis and worked in various locations, including New Mexico and Papua New Guinea, before entering graduate school.

Carl Lundblad is a professional field biologist and full-time naturalist with extensive experience throughout the desert southwest and beyond. He is currently employed on the Ash Meadows National Wildlife Refuge in southern Nevada where he works on bird monitoring and habitat restoration. When not working he is usually hiking, birding, and looking for general outdoor adventure.

Guy McCaskie, a past president of Western Field Ornithologists, was at the core of the group that founded the California Bird Records Committee in 1970. Guy served as a voting member of the CBRC for 27 years, longer than any other member, and since 2000 has served the CBRC as its non-voting secretary.

Shannon McNeil is a research associate with Southern Sierra Research Station. She has a B.S. in computer science and graduate diploma in environmental management, and has worked in IT, GIS, ecological restoration and field biology. Shannon has been bewildered by cuckoos since 2002. She recently began graduate studies at the University of Arizona, studying the conservation and genetics of cuckoos.

Ron Melcer Jr. holds a B.S. in wildlife biology from UC Davis. His research interests are focused on avian conservation and landbird monitoring in western North America. Currently he is writing a thesis on the habitat-

associations of coastal landbirds at CalPoly (SLO) while working on the synthesis of a California central valley conservation strategy for the Department of Water Resources.

Kathy Molina has been researching the breeding biology of larids at the Salton Sea since 1991. When not sweltering in the Imperial Valley summer she manages the UCLA-Dickey Bird and Mammal Collection and is a Research Associate at the Natural History Museum of Los Angeles County.

Brian Sullivan is the eBird project leader for the western region. He has conducted field work on birds for the past 18 years, and written and consulted on various scientific and popular literature.

Philip Unitt is the curator of the San Diego Natural History Museum's department of birds and mammals. His publications include *Birds of the Salton Sea: Status, Biogeography, and Ecology* (2003) and *San Diego County Bird Atlas* (2004).

Michael White is the conservation science director for the Tejon Ranch Conservancy, where he oversees all aspects of the Conservancy's Science Program. He earned his Ph.D. from the joint doctoral program at San Diego State University and UC Davis, and has over 20 years of professional experience with expertise in conservation planning, environmental regulations, and ecosystem assessment, management, and restoration.

Panel Information

Expert Panel: Photos. *Friday, 15 October. 4:00–5:30 p.m. Ballroom.* Always a favorite and ever popular staple at WFO meetings, a distinguished panel of identification experts will examine and comment on photographs of "mystery" birds. Panelists will analyze photographs of birds and discuss the relevant aspects of each bird and its particular characteristics that lead to an identification. Conducted not so much as a "stump the chumps" challenge, the session is more educational in nature, stressing identification tips and strategies. The intent is to provide a real learning experience for audience and panel alike. Panel moderator is **Ed Harper**.

Ed Harper is one of the finest birders and bird photographers in the country. His lively talks and programs are always highly informative and full of humor. An educator at heart, he taught mathematics and field ornithology classes at American River College for 34 years before recently retiring to spend more time in the field. An active birder, he travels widely and he and his wife, Susan Scott, lead birding and natural history tours all over the world.

Expert Panel: Sounds. *Saturday, 16 October. 4:00–5:30 p.m. Ballroom.* **Nathan Pieplow** returns again to fascinate participants with the sounds that birds make. Is it a chorus of ten different species, or is it simply a European Starling with an overdeveloped talent for mimicry? With a format revamped for greater audience participation, expect to use what you know about bird sounds and learn even more!

Nathan Pieplow – see Workshop Leader Bio