

WBBA MEETING SCIENTIFIC SESSION: SATURDAY OCTOBER 8, 2016

900-930: Plenary: The Western Hummingbird Partnership & banding hummingbirds in the far north.

Gwen Baluss, Juneau Audubon Society; Lily Calderón, Environment for the Americas.

In 2013, Gwen established Rufous Hummingbird monitoring stations near Juneau, Alaska. She will talk about Northern hummingbirds, challenges working in the world's largest temperate rain forest. Both Gwen and Lily will offer new information learned from other hummingbird banders and the Western Hummingbird project.

930-945: Cavity Nesting Raptors. *Steve Simmons, Retired; Aaron Rives, Point Blue Conservation Science; Isabel Lawrence, Golden Gate Raptor Observatory*

Two species of raptors nesting in the Central and Sacramento Valleys are in decline. Research shows that American Kestrels are declining in numbers and burrowing owls have declined by 60%. Screech owls and barn owl populations can be increased with the use of nest boxes. Many farmers are using barn owls to help control prey like pocket gophers, voles and deer mice. The methodology will be covered as to when to handle the raptors and leave them alone.

945-1000: Monitoring migration at a stopover sight in Korea. *Hyun-Young Nam, Migratory Birds Center, Korea National Park Research Institute; Chang-Yong Choi, University of Oklahoma; Sook-Young Cho, Migratory Birds Center, Korea NPRI; Se-Young Park, Migratory Birds Center; Korea NPRI*

Located on the East Asian-Australasian flyway, islands in the southwestern part of Korea take an important role as stopover sites for migratory birds crossing an ecological barrier, the Yellow Sea. Migratory Birds Center in the Korea National Park Research Institute is the first constant-effort bird banding station located on Heuksan Island (Heuksan-do) in Korea, and around 6,000 birds are annually banded since 2005. A total of 192 m of mist nets are used on the marsh of the island from dawn to noon in the spring (Mar 1 - May 31) and autumn (Aug 15 - Nov 30). More than 95% of banded birds are passerines (order Passeriformes), and in particular, buntings (family Emberizidae) are the most abundant group. Annual variation in phenology and population size of the buntings from diverse geographic origins are monitored in addition to studies on their migration strategies and morphological characteristics. The center is about to set two more banding stations to collect further information on migration connectivity and to provide better accessibility, service, and information on banding and conservation of migratory birds to the public.

1000-1015: Use of yearling probability estimates (reflecting SY:ASY ratios) from capture-station data to investigate landbird demographic variables and habitat quality. *Peter Pyle, The Institute for Bird Populations; Kenneth R. Foster, Owl Moon Environmental; Christine M. Godwin, Owl Moon Environmental; Danielle R. Kaschube, IBP; James F. Saracco, IBP*

Vital rates such as productivity and adult survivorship can be estimated from constant-effort, landbird, capture-station data; however, capture-recapture data have not been effective for measuring some parameters such as first-year survivorship due to extremely low fidelity of yearling (SY) first-breeding landbirds to natal territories. Here we correlate yearling probabilities (the probability that a bird is an SY) among breeding adults with demographic dynamics and habitat characteristics. Our sample consists of 10,941 individuals of 29 landbird species captured at 35 mist-netting stations from 2011 to 2015 in the boreal forests of northeastern Alberta. Rigorous training and protocols resulted in a mean error rate separating SY from older (ASY) birds of 6.3% (range 2.9-10.8% among species) based on recapture data. The mean yearling probability for all 29 species was 0.441, ranging from 0.192 to 0.629. Among 14 species with sufficient data, yearling probability generally correlated negatively with adult population size, negatively with productivity during the same year, and positively with productivity the year before

capture for many species. Remote-sensed Enhanced Vegetation Index (EVI; a measure of vegetation structure and greenness) correlated negatively with yearling probability in species favoring forested habitats and positively in species favoring successional habitats. These combined results suggest that 1) yearlings may occur in lower breeding densities and are forced into poorer quality habitats through despotic exclusion by older birds; 2) yearlings in these habitats may have poorer reproductive success than older birds in some cases; and 3) yearling probability may thus help identify source and sink populations. We also suggest that yearling probabilities can be used to measure the general habitat quality for breeding landbirds and, potentially when enough data have been collected, to help estimate juvenile survival.

1015-1030: Impact of the five-year California drought on chaparral birds. *Walter Sakai*

The impact of the five-year drought on the avifauna in the chaparral habitat of southern California was analyzed by looking at seven species breeding in the Santa Monica Mountains. Spotted Towhee (*Pipilo maculatus*), California Towhee (*Melospiza crissalis*), Song Sparrow (*Melospiza melodia*), Bewick's Wren (*Thryomanes bewickii*), Common Yellowthroat (*Geothlypis trichas*), and Lesser Goldfinch (*Spinus psaltris*) are year-round residents. The seventh, Black-headed Grosbeak (*Pheucticus melanocephalus*), is a breeding summer migrant. A comparison was made between the pre-drought avifauna (2008-2011) and the present drought (2012-2016) using bird banding data from a long term constant effort banding station in Zuma Canyon (340-1184) in the Santa Monica Mountains of southern California. Encounters (b/100 nh) during the first two years of the drought were similar to pre-drought years, indicating the avifauna is adapted to drought condition. By the third year of the drought, the avifauna began to be noticeably affected. Encounters declined to 75% of pre-drought years in 2014-15, and to 62% by 2016. AHY bird adult encounters did not decline during the first three years of the drought, declining by ~25% during the last two years of the drought. Breeding bird encounters did not decline during the first two years of the drought, declining by a third thereafter. HY bird encounters declined to ~75% of pre-drought years in 2012-13, and to ~25% in 2014-16. California Towhees and Black-headed Grosbeaks declined during the first two years of the drought and produced no young in the last three years.

1030-1100: COFFEE BREAK

1100-1115: Analysis of between-year passerine stopover site fidelity in the Klamath-Siskiyou Bioregion. *Pedro Martins, Klamath Bird Observatory; Luiza Figueira, KBO; Bob Frey, KBO; Jaime Stephens, KBO; John D. Alexander, KBO; C. John Ralph – USFS, Redwood Sciences Laboratory*

To help elucidate our knowledge about passerines stopover fidelity, we use 32 years of banding data from the Klamath Landbird Monitoring Network to build a Commarck-Jolly-Seber model for estimating fidelity rate of long-distance migrants to stopover sites. From our exploratory analysis, we could detect returning individuals to same stopover site between years during fall migration in ten different passerine species. Our preliminary results, under analysis by now, will be shared at the meeting.

1115-1130: Twenty-year trends in capture rates of birds in a riparian woodland surrounded by urban development. *Dan Wenny, San Francisco Bay Bird Observatory; Alex Rinkert, SFBBO; Yiwei Wang, SFBBO* SFBBO runs a banding station at Coyote Creek Field Station in riparian woodland on the southeast edge of the San Francisco Bay. Four habitats are sampled: remnant riparian woodland, two woodland restoration areas planted in 1987 and 1993, and an overflow channel mowed annually to eliminate woody vegetation. Nets are run three days a week, year-round. Here we report on the last 20 years of banding data (1996-2015). Capture rates (birds/100 net-hours) for all birds and new birds (not previously banded) peaked annually during fall migration. Capture rates of previously banded birds (recaptures) peaked in early winter, typically in December. Total capture rates declined over the 20-yr

period, a pattern driven by a strong decline in capture rates of new birds. Capture rates for recaptures slightly increased over the 20-yr period. The overall trends mask differences among the four habitats. Capture rates in the remnant riparian woodland and overflow channel increased due to an increase in recapture rates while capture rates for new birds remained relatively constant over the 20 years in those habitats. Total capture rates in the 1987 and 1993 revegetation areas declined largely due to a decline in new captures. Overall, capture rates were higher in the 1993 revegetation and overflow channel areas (about 50 birds/100 net-hours) than in the remnant riparian and 1987 revegetation areas (about 25 birds/100 net-hours). These trends suggest a decrease in previously abundant species, perhaps as a result of habitat changes on site, as well as a decline in fall migrants. The differences in capture rates between the two revegetated areas reveal important lessons for future riparian restoration efforts.

1130-1145: Birds of a feather don't always flock together: Migration patterns of San Francisco Bay Area Hermit Thrushes differ across a fine spatial scale. *Allison Nelson, Foothills Avian Monitoring & Education Program; Nathaniel Seavy, Point Blue Conservation Science; Josh Scullen, San Francisco Bay Bird Observatory; Diana Humple, PBCS; Renee Cormier, PBCS; Ravinder Sehgal, San Francisco State University*

Effective conservation of short-distance migrants requires an understanding of intraspecific variation in migratory patterns across small spatial scales. Until the advent of ultra-light geolocation devices, our knowledge of the migratory connectivity of songbirds was limited. For the Hermit Thrush (*Catharus guttatus*), subspecies delineations and connectivity patterns have been particularly unclear in the portion of their range spanning from the San Francisco Bay in California to southeastern Alaska, USA. To determine breeding locations of the San Francisco Bay Area's wintering Hermit Thrushes, we deployed geolocators at sites located north and south of the Bay. We collected morphometrics to identify regional differences. Hermit Thrushes that wintered in the North Bay had a wider and more southerly breeding distribution from the British Columbia coast to northwestern Washington, whereas South Bay thrushes migrated to southeastern Alaska and the British Columbia coast. Regional morphology differed only in bill length. In a separate study, we deployed geolocators on Hermit Thrushes breeding in the Santa Cruz Mountains of coastal California, approximately 40 km southwest of our wintering-bird deployment site in the South Bay. Preliminary results indicate that Hermit Thrushes breeding in the Santa Cruz Mountains winter in western Mexico, and their morphology differs substantially from Hermit Thrushes that winter in the Bay Area.

1145-1200: BBL update for 2016. *Bruce Peterjohn, USGS Bird Banding Lab*

An update of BBL activities during recent years will be presented. Important activities include pending changes to data management systems, the release of the new version of the BANDIT software and plans for changing the submission process for banding data, web access to BBL data sources, and related topics. Other changes include the use of a new inscription on bird bands that will begin to be sent to banders during 2018-2019. Staffing changes at the BBL and the effects of these changes on BBL operations will also be discussed. The BBL will be undertaking some major changes to its operations during the next few years which may be of interest to the bird banding community.

1200-1215: Teaching molt to beginner banders using "Joe Bird": a diagrammatic approach to teaching molts and plumages. *Danielle Kaschube, The Institute for Bird Populations; Peter Pyle, IBP*

Knowledge of molt patterns is essential to accurately assessing plumages and precisely ageing passerines. Unfortunately, many banders, especially beginners and/or citizen scientists, are intimidated by the detailed and specific terminology necessary to describe molt in *The Identification Guide to North American Birds, Volume 1* by Peter Pyle. This creates a "molt is too hard for me" attitude which hinders

the learning process. To reduce the confusion and apprehension students feel when first reading the species-specific terminology, we utilize color block drawings to familiarize students with basic molt patterns and introduce molt terminology. Colored pencils and abstract drawings seem "childishly simple" but we have found that they allow students to learn the molt patterns with reduced anxiety. Once students are familiar with the basic patterns and, in the process, have been introduced to molt terminology, species-specific diagrams are tackled. Pyle's ID Guide is utilized at this stage to familiarize students with the format and terminology of the guide. After drawing two to three species with similar molt strategies, it becomes more apparent to the students that most North American species follow only a few basic patterns and that only the details differ. Also, because the "Joe Bird" diagrams include each of the major plumage stages, it is helpful in clarifying molt-cycle ("WRP") ageing terminology as well.

1215-1330: LUNCH BREAK (lunch served at 12:30)

1330-1345: Community ecology of ground-nesting passerines on the shortgrass steppe. Amber Carver, *University of Colorado Denver*; David Augustine, *USDA Agricultural Research Service*; Susan Skagen, *USGS Fort Collins Science Center*; Diana Tomback, *UC Denver*; Michael Wunder, *UC Denver*

Several species of ground-nesting Passerine breed primarily or exclusively on the North American shortgrass steppe. Success of efforts to conserve this bird community hinges on understanding their differential response to environmental variability. In 2014-2016, we monitored nests of all passerine species at the Central Plains Experimental Range in Weld County, Colorado. The goal of this ongoing project is to measure the demographic response of individual species to an experimental livestock grazing regime. This regime is designed to elevate habitat heterogeneity, catering to a wide range of breeding bird species while also meeting economic objectives. We conducted mark-recapture on McCown's Longspur (*Rhynchophanes mccownii*), a species of conservation concern in Colorado and Nebraska. Our aim was to investigate philopatry in this species. We found that nest survival varies significantly among species. McCown's Longspur shows high site fidelity and has the lowest nest survival. This suggests low distributional plasticity in this species and therefore weak ability to respond to abrupt changes in the environment. This has implications for community stability, as populations may become extirpated rather than tracking optimal habitat. Conserving the shortgrass steppe bird community requires not only providing diverse habitat, but managing land in a way that is sensitive to the behavioral plasticity in each species.

1345-1400: A preliminary approach to molt patterns and ageing of tropical birds in an Atlantic Forest area of Southern Brazil. Luiza Figuera, *Klamath Bird Observatory*; Pedro V. Martins, *KBO*

Molt patterns are essential for a full understanding of a bird's full life cycle. But this fundamental life cycle event is often overlooked with particularly little known about it for many Neotropical resident species. In Brazil, best-understood molts patterns are from Central Amazonian birds, of which there are detailed and substantial studies. However, there is scant birds life history information including molt cycles for the rest of the country. The apparent complexity of molts might be one reason why there are still so few studies about them on Neotropical resident birds. The "Molt Analysis and Bird Banding Workshop" is an effort that has been underway for the past five years to surmount this problem. This workshop, a co-organization of Dr. Gonçalo Ferraz (UFRGS, BR) and Dr. Jared Wolfe (USDA Forest Service), is an initiative which unites participants of different countries, especially those from Latin America. It takes place in the Central Amazon and in the Southern Atlantic Forest, two latitudinal extremes of the country. As there are virtually no references about molt patterns for the bird species of the Southern Atlantic Forest, much new knowledge has already been accumulated over the course of the workshop. During the 2014 workshop 532 birds were banded, representing 75 different species and

24 families. Each bird was analyzed for presence of molts, molt limits, characteristics of plumage, skull ossification, and soft parts helpful for ageing (presence of cloaca protuberance, brood patch, iris color, etc.). The ageing system used was the cycle-based system (Wolfe-Ryder-Pyle), and 19 different age classes were used to classify captured birds. The data collected is still under analysis, and combining it with what is already documented about molts, we expect to increase our understanding about molt patterns of these species. Preliminary results will be shared at the meeting.

1400-1415: One size does not fit all: How band size affects recapture and survival rates of hummingbirds. *Kira Monroe, Hummingbird Monitoring Network; Susan Wethington, HMN*

Tarsus size can vary greatly within a hummingbird species among populations and also depending on nesting and migration status. Thus, measuring a bird's tarsus is essential to selecting the most appropriate band size, which may or may not correspond with NABC recommended band sizes. In addition, a preliminary examination of tarsus measurements indicated that recommended band sizes often did not correspond to the most commonly recorded tarsus measurements for a species. We hypothesize that recapture rates and potentially survivorship of hummingbirds are impacted by band size. To investigate this question, we analyzed mark-recapture data from 8 species of hummingbirds captured at Hummingbird Monitoring Network banding stations in Arizona, Colorado, Idaho, Nevada, and Utah from 2008 – 2015 using Cormack-Jolly-Seber models in the R package RMark. For Anna's, Broad-tailed, Magnificent, and Costa's Hummingbirds there were no trends or statistically significant differences among band sizes for estimated survival or recapture rates. Weak and varying trends occurred for Broad-billed, Blue-throated, and Calliope Hummingbirds. However, both male and female Black-chinned Hummingbirds had the greatest survival rate estimates for the most common band size (D and F, respectively; also NABC recommended sizes in these cases). For females, recapture rates were slightly greater for band size G (43.2%) than F (42.1%), but differences increased as band size decreased (31.5% for E and 19.5% for D). For males, recapture rates were similar for band sizes C (26.4%) and E (26.1%) and slightly less for F (23.1%), but survival estimates were next greatest for E (36.8%), C (33%), and F (32.7%). Our results are may be helpful for banders in determining which band size is most appropriate for each hummingbird.

1415-1445: COFFEE BREAK

1445-1500: Diversity and function of inserted molts in landbirds: a tropical-temperate comparison.

Jared D. Wolfe, USFS Pacific Southwest Research Station & Humboldt State University; Erik I. Johnson, Louisiana Audubon; Ryan S. Terrill, Louisiana State University; Glenn Seeholzer, LSU; Philip Stouffer, LSU

Cyclical periods of feather replacement occurring outside the annual prebasic molt are often referred to as inserted molts. The frequency, extent, intensity, and duration of inserted molts varies greatly across taxa and presumably represents varying evolutionary adaptations. Published descriptions of inserted molts suggest a diversity of selective pressures gave rise to such molts, such as crypsis, replacement of worn feathers, honest signals, species recognition, and social hierarchies. In this study, we reviewed literature pertaining to two inserted molts – the preformative and prealternate – across Neotropical and Nearctic latitudes to identify associations between life-history variation and the prevalence, extent, and speed of inserted molts within landbirds. We found that prealternate molts were uncommon in obligate-resident birds, irrespective of latitude, while migratory birds exhibit extensive variation in prealternate molt extent. Within tropical latitudes, we found striking examples of interactions between preformative molt duration, allometry, and foraging guild. For example, obligate ant-following birds in the Amazon exhibited correlations between larger home range size, smaller mass, and slower duration of the preformative molt; we believe these relationships represent tradeoffs between speed of feather

replacement and flight integrity. Our results suggest that landbirds usurped and modified inserted molts to successfully occupy a diversity of habitats and niches throughout temperate and tropical regions.

1500-1515: A direct investigation of the role of competition in Hawaiian forest birds. *C. John Ralph, USFS, Redwood Sciences Laboratory; Jared Wolfe, USFS Pacific Southwest Research Station & Humboldt State University*

Individual bird species numbers and community composition are regulated through several processes, and while the primary role that competition for seasonal resources played has been long been acknowledged and investigated direct measures have been relatively few. When faced with limited resources, in effect, a species has few choices. It can decrease in numbers, it can exclude other species from these resources, or it can shift to other resources. While the literature has many indirect studies involving correlational analyses, direct measurements of trophic linkages and role of competition in bird communities to demonstrate these processes are exceedingly rare.

Hawaiian bird communities are excellent to study these processes because they are relatively species poor, and have easily measurable trophic linkages (including obligate nectarivores and frugivores, endangered specialists, and generalists), as well as introduced and native species. We collected intensive data on 15 bird species in the 1970s and 1980s at several study sites where the population and behavioral dynamics and associated food resources, were assessed at monthly intervals. With analytical power unavailable when these data were gathered, we have investigated the direct and indirect effects of exogenous and endogenous variables on these species. We have found that they use different life history strategies to structure their life-cycle events around climatically-induced food availability, as well as trophic interspecies interactions.

1515-Conclusion: Permit Must-knows and Discussion! *Katie Wade-Matthews, Southwest Region 2 USFWS; Bruce Peterjohn, Chief, BBL, USGS Patuxent Wildlife Research Center; Chrissy Kondrat-Smith, Arizona Game & Fish Department.*

This presentation is to benefit both the current and future US bird bander and/or wildlife researcher. Federal and State representatives will cover important information that is either overlooked or misunderstood about permit requirements, procedures and processes. The presentation will be followed by an open forum discussion USFWS, BBL and State representatives will provide agency insight on pressing permitting issues for the US banding community, then open the floor for participants to openly discuss. Discussions will begin with, but aren't limited to: the use of migratory birds for fund raising purposes (When is it appropriate, why types of activities are prohibited); public bird banding demonstrations (which activities are covered under a BBL permit, when would a USFWS Migratory Birds permit be required, and what guidelines should be followed when conducting these activities); And how do you know what you need to be permitted for? If time allows, the floor will be opened to additional discussions suggested by individual participants.

POSTER SESSION

Effects of mercury contamination on individual quality and condition of common yellowthroats (*Geothlypis trichas*). *Deanna de Castro, Garcia & Associates; Josh Scullen, San Francisco Bay Bird Observatory; Danika LeDuc; Erica Wildy, CA State University, East Bay; Caron Inouye, CSU, East Bay.*

Historic mines in New Almaden, CA such as the New Almaden Quicksilver Mine (NAQM), are a source of mercury contamination throughout South San Francisco Bay, California. Mines in this area drain into the Coyote Creek (CC) and Guadalupe River (GR). Water quality and sediment assessments for mercury show increasing levels with increasing proximity to the New Almaden. Tellingly, birds captured at upper GR and CC had some of the highest reported concentrations of mercury in the feathers and blood within

the United States. Thus, organisms living within the riparian habitats along the CC, GR, and their tributaries may be affected by local environmental mercury. This study investigates of the feather mercury from common yellowthroats (*Geothlypis trichas*) caught at varying distances from NAQM and the relationship between feather mercury and of body condition and individual quality. Birds in upper GR and CC and at Llagas Creek had higher mass, primary wear, and rectrice wear compared to birds in lower CC and GR. Bib size and fluctuating asymmetry of barbule density in rectrices was greater in birds located in CC and GR. Hue of bib feathers was significantly greater in birds caught at lower GR and CC and upper CC. Total mercury concentrations in rectrices were highest in birds caught in upper GR. All comparisons were significant with a p-value of less than or equal to 0.05.

Molt Patterns in Relation to Phenology for a Tropical Species, the Hispaniolan Woodpecker (*Melanerpes striatus*). Holly Garrod, Villanova University; Josh LaPergola, Cornell University

Molt patterns, often useful for determining age of individuals and hence demographic structure of a population, are generally poorly known for resident Neotropical birds. Neotropical woodpeckers are no exception to this latitudinal bias. Our present study has two objectives: (1) to provide the first description of the Hispaniolan Woodpecker's (*Melanerpes striatus*) molt pattern, and (2) to determine how molt fits into breeding phenology for this species. For five consecutive breeding seasons (March - July) beginning in 2012, we monitored a color-banded population of the island endemic Hispaniolan Woodpeckers in mid-elevation (~600 m above sea level) landscape of mixed fragmented wet forest and cattle pastures outside Jarabacoa, La Vega province, Dominican Republic. For this study, we analyzed standardized photos taken during banding sessions to characterize patterns of retained and replaced feathers. We included an analysis of breeding characteristics to see if molt-breeding overlap was present. Our findings show that the Hispaniolan Woodpecker exhibits some similarities to molt in temperate *Melanerpes* sp. We anticipate being able to use these results in the future to compare patterns of temperate and tropical picids to better understand the evolution of molt patterns in the family.

1100-1115: Analysis of between-year passerine stopover site fidelity in the Klamath-Siskiyou Bioregion. Pedro Martins, Klamath Bird Observatory

Although some bird species can cover thousands of miles nonstop during migration, most passerines require strategic stops along their migratory flight. It has been suggested that most of the time and energy expended during migration occurs at stopover sites. Even though stopover sites are of the utmost importance for successful migration, the between-year fidelity of passerine species to stopover sites has rarely been reported. For a number of reasons stopover fidelity would not be expected for passerines, such as widespread food availability along the migratory route, influence of weather conditions on flight capacity, a large number of prospective stopover sites, and lack of pair bonds away from breeding grounds. Also, rareness of documentation of stopover sites might result from the difficulty in detecting such events. Observed fidelity is a function of survival rate, actual fidelity, time spent on site, detectability, sampling effort, and habitat selection. To help elucidate patterns of passerine stopover fidelity, we use 32 years of banding data from the Klamath Landbird Monitoring Network to build a Comarck-Jollie-Seber model for estimating fidelity rate of long-distance migrants to stopover sites. We detected returning individuals to the same stopover site between years during fall migration for ten passerine species. If the advantages of stopping at an already known high quality site during migration are greater than the difficulties in finding the same site in subsequent years, then stopover site fidelity would be a favorable behavior.