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2014 JOINT MEETING

*Estes Park, Colorado • USA
23-28 September 2014*

ABSTRACT BOOK

Ornithologists from around the world ascend to the majestic Rocky Mountains for a meeting like no other. This joint meeting will feature six days of intellectually stimulating workshops, plenary talks, scientific sessions, and field trips that will facilitate the exchange of ideas and strengthen the science of avian biology.

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The **American Ornithologists' Union**, the **Cooper Ornithological Society**, and the **Society of Canadian Ornithologists/Société des Ornithologistes du Canada**

Co-Chairs

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synthesis of observational and experimental research is needed to determine how life history traits interact with habitat and landscape factors to generate patterns of bird occupancy. (ID 16095)

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INDIRECT EFFECTS OF AGRICULTURAL INTENSIFICATION ON COMPONENTS OF TREE SWALLOW (*TACHYGINETA BICOLOR*) STRESS PHYSIOLOGY

In several regions of North America, aerial insectivorous birds have exhibited sharp declines, with tree swallows (*Tachycineta bicolor*) experiencing a 2.8% annual decline in Canada over the past few decades. The timing of these declines coincides with major changes in agriculture, which may signal a potential causal link. Agricultural intensification (AI) could reduce the abundance and diversity of the aerial insects that comprise the majority of a swallow's diet, resulting in increased foraging effort and potential effects on adult and nestling physiology. Physiological effects were determined through measurements of oxidative damage (OD) and total antioxidant counts (OXY) in both adults and nestlings to determine overall oxidative stress in swallows nesting in artificial nest-boxes at multiple sites with varying levels of AI in south-central Saskatchewan, 2012- 2014. Feather corticosterone was also quantified in nestlings. In both years, males had higher levels of OD ($p < 0.001$), while OD in nestlings was found to decrease with date ($p = 0.008$). OXY in adults also decreased with date ($p < 0.001$) in 2012, as would be expected with declining preferred insect abundance near the end of the season, while in 2013 OXY was higher on reference sites ($p = 0.02$). In nestlings, it was found that OXY was higher on sites with higher AI ($p = 0.007$) in both years, while oxidative stress was higher on the reference site ($p = 0.004$) and in older nestlings ($p < 0.001$), but decreased with date ($p = 0.04$). Nestling feather corticosterone was unrelated to AI, but showed strong box-type effects in 2012 ($p = 0.004$), while in 2013 it was primarily influenced by nestling age, increasing in older nestlings ($p = 0.03$). The results of this study may provide information on the impact of AI on swallow stress physiology. (ID 15907)

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INDIRECT EFFECTS OF AGRICULTURAL INTENSIFICATION ON TREE SWALLOW (*TACHYGINETA BICOLOR*) FORAGING AND DISPERSAL BEHAVIOURS

In several regions of North America, aerial insectivorous birds have exhibited sharp declines, with tree swallows (*Tachycineta bicolor*) experiencing a 2.8% annual decline in Canada over the past few decades. The timing of these declines coincides with major changes in agriculture, which may signal a potential causal link. Agricultural intensification (AI) could reduce the abundance and diversity of the aerial insects which make up the majority of a swallow's diet, resulting in altered parental foraging strategies, higher foraging times and costs, and hence increased absences from the nest-box. Costs associated with increased foraging can include nestling starvation, reduced brood size, and reduced overwinter survival for both adults and nestlings. Previous work has indicated that birds on sites with higher AI exhibit shorter parental feeding durations to the nest-box per visit. My objectives are to determine how aerial insect abundance and biomass vary with AI, and relate differences to tree swallow (i) body condition, (ii) dispersal rates, and

(iii) foraging behavior. Responses in individually-marked tree swallows were measured through morphological measurements, mark-recapture and use of radio-frequency identification (RFID) for determining foraging effort in swallows nesting in artificial nest-boxes at multiple sites with varying levels of AI in south-central Saskatchewan, 2012-2014. Preliminary results indicate that adult mass was significantly lower on sites with higher AI for both sexes in 2012 and 2013 ($p < 0.05$), and the number of previously banded individuals was higher on the reference site compared to sites characterized by higher levels of AI. The results of this study may provide information on the impact of AI on swallow foraging and dispersal behaviours. (ID 15908 | Poster 74)

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CLIMATIC IMPACTS ON THE HABITAT RELATIONSHIPS AND DISTRIBUTION PATTERNS OF MIGRATING SHOREBIRDS IN THE PRAIRIE POTHOLE REGION

The Prairie Pothole Region (PPR) in mid-continental North America contains extensive, diverse wetlands necessary to sustain the populations of many shorebird species. During migration, ~7.3 million shorebirds find essential food resources and habitat in the U.S. Prairie Potholes. Suitable habitats, including shallow water, mudflats, and shoreline areas, are abundant in wet years but may be limiting in dry years. Wetland availability in any given year is uncertain, a result of the highly variable climate of this temperate region. Climate change is adding to this uncertainty, but current climate projections suggest increased drying of wetlands, which would restrict habitats to the more permanent but less common large, deep wetlands. As a proxy for future climate change conditions, we evaluated the dynamics of broad-scale, historic distribution patterns and local and landscape scale patterns of habitat use by comparing years that ranged from wet to dry. We found pronounced shifts in distributional and habitat use patterns between climatically different years—however, we did not detect significant declines in abundance for most species comparing wet to dry years. We believe our retrospective analyses will provide useful insights to help guide conservation decisions to mitigate the impacts of climate change on migrating shorebirds. (ID 16284)

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INFLUENCE AND CONSEQUENCES OF HABITAT CHARACTERISTICS ON SPACE USE STRATEGIES AND BODY CONDITION IN WINTERING BAIRD'S AND GRASSHOPPER SPARROWS

Grassland birds are declining at a greater rate than any other guild of North American birds yet there is little information on their winter movements and habitat preferences. An understanding of relationships among spatial and temporal patterns of space use and habitat attributes as well as implications for body condition are needed to assess how grassland birds will respond to changing conditions on the wintering grounds. We used radio-telemetry to characterize home ranges, movement patterns, and habitat selection for two declining grassland birds, Baird's ($n = 24$) and Grasshopper Sparrows ($n = 75$) on the wintering grounds in northern Chihuahua, Mexico. We used kernel density estimators of the utilization distribution to estimate home range size and overlap over two winters (2012-13 and 2013-14). We compared habitat characteristics between foraging sites and systematically placed points throughout core use areas and examined temporal changes in habitat preferences. Grasshopper Sparrow home range size was larger in 2013-14 than 2012-13 (115.76 ± 46.43 ha vs. 52.65 ± 22.11 ha). Sparrow space use

was highly variable between individuals. For both seasons, most birds (72.7% and 58.2% for 2012-13 and 2013-14 respectively) were sedentary and used a contiguous area over the winter. Fewer birds made home range shifts from one disjunct location to another in 2012-13 than 2013-14 (27.2% and 41.8%) and results suggest that increased pre-winter precipitation in 2013 played a role. We discuss how vegetation structure and composition influence sparrow space use strategies, examine seasonal changes in body condition, and provide insightful visualizations of movement patterns. (ID 16060)

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CRYPTIC DIVERSIFICATION ON WIDESPREAD SPECIES IN MADAGASCAR

Madagascar is known for its rich biodiversity and high level of endemic species that are found nowhere else. Despite the overall species diversity, there are fewer bird species than one would predict on Madagascar given the size of the island. Cryptic diversification, when genetically distinct species are hard to detect because they are morphologically undifferentiated, has been hypothesized to occur in some groups on Madagascar. Currently it is unclear to what extent this occurs in birds because only a few studies have been conducted. This study aims to understand the phylogenetic and phylogeographic patterns within members of a Madagascar endemic songbird genus, *Newtonia*. We conducted a phylogenetic analysis using multiple molecular markers in order to examine the evolutionary relationships and diversification patterns among these species. We further examined phylogeographic structure within two widespread species to assess the potential for cryptic species. Preliminary evidence shows substantial genetic differentiation both within and among species of *Newtonia*. We conducted additional analyses to determine whether distinct lineages are associated with habitat type or geographic area. Our study shows the importance of phylogenetic analyses for uncovering the hidden diversity of Madagascar. (ID 16052)

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ISLANDS OF DIVERGENCE IN AN EXTRAORDINARY RADIATION OF FINCHES (*LONCHURA* SPP.) FROM PAPUA NEW GUINEA*

Recent studies have shown that speciation can proceed in the face of significant gene flow, and that only small portions of the genome may be responsible for the phenotypic differences between closely related species. Recently evolved species and/or those with "porous" genomes provide the opportunity to identify and characterize genomic regions diverging early in the speciation process. Our research has revealed an extraordinary radiation of 12 estrildid finch species in the genus *Lonchura*. Eight of these species live in broad sympatry with one or two other members of the radiation in different parts of New Guinea and Australia. Analysis of 7,537 restriction-site associated DNA (RAD-seq) loci reveals broad similarity across the genome (mean pairwise $\Phi_{ST} = 0.185$). Mitochondrial and autosomal loci reveal significant population structure between some sympatric species, but not others, whereas Z-linked loci are the most successful at separating populations by species rather than geographic location. These results suggest that significant introgression has occurred. However, these species maintain their unique phenotypes, and current rates of hybridization appear to be low. Quantitative analysis of coloration reveals little evidence of character displacement in sympatric populations. Whole-genome sequencing of the two Australian species in the radiation reveals 14 highly differentiated regions on eight chromosomes, ranging in size from ~2,000 to ~1 million base pairs.

Two of these regions overlap the melanocortin-1 receptor (MC1R) and Agouti genes, and four are located on the Z-chromosome. We are currently obtaining whole-genome sequence data for several more populations. (ID 16031)

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STABLE-HYDROGEN ISOTOPE MEASURES OF NATAL DISPERSAL REFLECT OBSERVED POPULATION DECLINES IN A THREATENED MIGRATORY SONGBIRD

Measuring dispersal is crucial for estimating demographic rates that inform conservation plans for rare and threatened species. We evaluated natal dispersal patterns in Bicknell's thrush (*Catharus bicknelli*) across most of the breeding range by using a 10-year data set of stable-hydrogen isotope ratios in feathers ($\delta^2\text{HF}$) grown on the natal area and sampled one year later at the first breeding site. We used $\delta^2\text{HF}$ values of adult thrushes sampled at 25 breeding sites as prior information for assigning first-time breeders to their natal site. We calculated the minimum distance birds moved from their natal to first breeding site and fit these data to three statistical distributions for characterizing long-distance dispersal: the exponential, Weibull, and half-Cauchy. Finally, we assessed differences in the probability of dispersal across the breeding range and through time in order to understand spatio-temporal variation in demographic connectivity. The $\delta^2\text{HF}$ values of first-time breeders were lower compared to those of adults, a difference that was greater at the southern compared to northern breeding range extreme. Assignment tests accounting for age differences in $\delta^2\text{HF}$ suggested that most birds dispersed less than 200 km from their natal area and within the centre of the breeding range, whereas comparatively few individuals dispersed up to 700 km. A Weibull distribution provided the best fit to these data. Two of three corrections for age differences in $\delta^2\text{HF}$ indicated that natal dispersal probability declined by 30–38 % from 1996–2005. Our findings suggest that estimating natal dispersal with $\delta^2\text{HF}$ measurements may contribute to understanding resilience of geographically isolated Bicknell's thrush populations. Declining natal dispersal may be symptomatic of observed population declines and could compound this trend by limiting demographic exchange between habitat patches predicted to be increasingly isolated by natural and anthropogenic habitat changes. (ID 16200)

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PROJECT PASSENGER PIGEON: RESOURCES FOR INSTITUTIONS AND INDIVIDUALS THAT PROMOTE LEARNING FROM THE PAST FOR A SUSTAINABLE FUTURE^T

2014 is the centenary of the extinction of the Passenger Pigeon, a species that once darkened the skies with its billions yet was extinct due to a mere five decades of human persecution. Though the loss of this species awakened humanity to the impact of our actions, the story of the Passenger Pigeon continues in this era of the sixth great extinction as anthropogenic activity persists in unsustainable uses of habitats and species. Project Passenger Pigeon (P3) is an international effort to commemorate this centenary in a way that familiarizes people with the Passenger Pigeon and its story, then