

Scientific Program



Version 1.5 – 27 July 2021

Monday afternoon, 9 August 2021, 14:00-15:30 EDT

| | 1 | 2 | 3 | 4 |
|------------------|--|---|---|--|
| Session | Contributed papers: Conservation 1 | Contributed papers: Phylogenetics 1 | Contributed papers: Physiology | Contributed papers: Ecology 1 |
| 14:00 EDT | *Urbanization influences Wood Thrush abundance and nest success: A 25-year before-and-after study in 70 forest fragments Heide KT, Friesen LE, Norris DR et al. PA: Karl Heide | Phylogeography, hybridization, and eye color variation of the Boat-tailed Grackle (<i>Quiscalus major</i>) Corbett EC, Faircloth BC, Brumfield RT PA: Eamon C. Corbett | *Seasonal plasticity in mitochondrial function of Yellow-rumped Warblers (<i>Setophaga coronata</i>) Coulson SZ, Staples JF, Guglielmo CG PA: Soren Coulson | *Resource and rainfall thresholds structure reproductive phenology of tropical montane bird communities Newell FL, Ausprey IJ, Robinson SK PA: Felicity Newell |
| 14:13 | Metabarcoding of Eastern Whip-poor-will fecal samples suggests strong reliance on moths: Implications for conservation Benson TJ, Souza-Cole IF, Skinner AA et al. PA: Thomas Benson | Systematics and evolution of the tyrant-flycatcher tribe Contopini (Tyrannidae) Chesser RT, Tello JG, Harvey MG et al. PA: Terry Chesser | A torpor spectrum in hummingbirds: Can metabolism and body temperature be decoupled? Shankar A, Vitousek MN, Powers DR PA: Anusha Shankar | *Natural and anthropogenic effects on Pacific Swallow (<i>Hirundo tahitica</i>) populations Ramirez B, Hund AK, Zellmer A et al. PA: Brenda Ramirez |
| 14:26 | Describing the diet of Eastern Whip-poor-wills and estimating the effect of food availability and landscape composition on their abundance during the breeding season Souza-Cole I, Ward MP, Benson TJ et al. PA: Ian Souza-Cole | Origin and evolutionary history of the endemic Galapagos Rail: Museum specimens, genomes, and conservation Chaves JA, Martinez-Torres PJ, Depino EA et al. PA: Jaime Chaves | The role of testosterone in regulating the movement behaviours of juvenile migrant songbirds Casbourn GW, Posliff CD, Henry C et al. PA: Garth Casbourn | *Multi-scale landscape effects on breeding scoter (<i>Melanitta</i> spp.) and scaup (<i>Aythya</i> spp.) occurrence on ponds in the northwestern boreal forest of North America Tanguay MS, Gurney KEB, Reed ET PA: Moriah Tanguay |
| 14:39 | Mercury in Neotropical birds: A collaborative approach to overcome current challenges Sayers CJ II, Ruiz-Gutierrez V, Evers DC et al. PA: Christopher Sayers | A molecular phylogeny and biogeographic analysis of Accipitridae: A test of the monophyly of the genus <i>Accipiter</i> Catanach TA, Hejmadi S, Weckstein JD PA: Therese Catanach | A comparative species approach to determine gonadal testosterone asymmetry in male birds Starkey JM, Pradhan DS, Delehanty DJ PA: Jeremy Starkey | *Raptor foraging ecology and ecosystem services in agricultural landscapes Utley OJ, Lindell CA PA: Olivia Utley |
| 14:52 | *Metal contaminant quantification of tissues from Red-shouldered Hawks (<i>Buteo lineatus</i>) reveals the blood feather for non-lethal sampling Bouchenet JT, Beazley MJ, Mason CM et al. PA: Jennifer Bouchenet | Diversification and biogeography of the 'true brilliants' clade of Andean hummingbirds Castro-Farias M, Arbeláez-Cortéz E, Witt CC et al. PA: Marialejandra Castro-Farias | How does digestive physiology mediate the relationship between diet and color in New World warblers? Webb EA, McGraw KJ PA: Emily Webb | *Avian community structure across an urbanizing county: The effects of noise, light, and landscape composition Sanchez KA, Kennedy C, Benedict L PA: Karina Sanchez |
| 15:05 | A retrospective analysis of methylmercury in the feathers of Indonesian avifauna Dzielski SA, Shakya SB, Prawiradilaga DM et al. PA: Sarah Dzielski | Questions and discussion | *Migratory physiology of the nomadic, irruptive Pine Siskin in captivity and the field DeSimone JG, Tobalske BW, Fylling MA et al. PA: Joely DeSimone | *DNA metabarcoding reveals predictors of diet quality variation in Tree Swallows (<i>Tachycineta bicolor</i>) Uehling JJ, Taff CC, Houtz JL et al. PA: Jennifer Uehling |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Monday afternoon, 9 August 2021 (continued)

| | 5 | 6 | 7 | 8 |
|------------------|--|---|---|--|
| Session | Contributed papers: Migration and stopover 1 | Contributed papers: Models and methods 1 | Contributed papers: Song and vocalizations 1 | Contributed papers: Evolution and genomics 1 |
| 14:00 EDT | Decreased migration distances in North American geese linked to climate change Curley SR, Ramirez-Garofalo JR PA: Shannon Curley | Developing aVOICE: An interactive tool for comparative bioacoustics Rodriguez-Saltos CA, Bilger HT, Eliason CM et al. PA: Carlos Rodriguez-Saltos | Do form and function predict the acoustic transmission properties of male and female bird songs? Benedict L, Hardt B, Dargis L PA: Lauryn Benedict | *Does ecological specificity impact differentiation across a barrier? Insights from an avian pine-oak assemblage Hruska JP, Manthey JD PA: Jack Hruska |
| 14:13 | Spatio-temporal changes in fall waterfowl migration in the context of a rapidly changing world Frei B, Gutowsky S, Baldwin F et al. PA: Barbara Frei | Big-data bioacoustics, biogeography, and biases in birds Provost KP, Yang J, Carstens BC PA: Kaiya Provost | A test of the acoustic adaptation hypothesis explaining range expansion in songbirds with large vocal repertoires: Enhancing our understanding of the Great-tailed Grackle (<i>Quiscalus mexicanus</i>) alarm call Bowser S, MacPherson M PA: Samantha Bowser | Evaluating the effectiveness of dispersal barriers in the Negro River Basin for white sand associated passerines Wadleigh R, Ribas CC, Knowles LL PA: Rachel Wadleigh |
| 14:26 | Detecting potential nocturnal pre-migratory roost sites in Canada by Canadian weather radars Cyr M-A, Cheskey E, Bencke A et al. PA: Marc-André Cyr | Determining bird colors from digital images for high-throughput analyses of color evolution Tsai WLE, Schwartz ST, Karan EA et al. PA: Whitney Tsai | *Does vegetation structure shape the acoustic features of Lincoln's Sparrow songs in Alberta? Sánchez NV, Hilje B, Bayne EM PA: Natalie V. Sánchez | *Understanding the effects of sampling on inferred population histories in two North American songbirds Minor NR, Carling MD PA: Nicholas Minor |
| 14:39 | Near-term ecological forecasting for dynamic aeroconservation of migratory birds Horton KG, Van Doren BM, Albers HJ et al. PA: Kyle Horton | Making bird specimen data more consistent, accessible, and informative Bates JM, Cicero C, Peterson AT et al. PA: A. Townsend Peterson | Acoustic, genetic, and morphological adaptations in song: A study of male and female tropical wren song Graham BA, Sandoval LA, Mennill DJ PA: Brendan Graham | Genomic species delimitation of the Scrub-Jays DeRaad DA, Peterson AT, Moyle RG PA: Devon DeRaad |
| 14:52 | Movement patterns of the Orinoco Goose (<i>Oressochen jubatus</i>) on the Rio Branco, northern Amazonia Costa BMS, Devenport L, Simões PI et al. PA: Bruna Costa | Systematic map effort of using small Unmanned Aircraft Systems (sUAS) to monitor birds Elmore JA, Evans KO, Samiappan S et al. PA: Jared Elmore | *Vocal coordination between male and female Carolina Wrens (<i>Thryothorus ludovicianus</i>) Pare RW, Price JJ PA: Rustin Pare | Population genomics and hybrid detections between King and Clapper Rail populations in the eastern United States Elizondo EC, Clark JD, McRae SB et al. PA: Elisa Elizondo |
| 15:05 | An evaluation of the importance of Delaware Bay near-shore habitats to migratory songbirds Pickett A, Heckscher CM PA: Aya Pickett | Questions and discussion | Drab males, sweet talkers: Larger song repertoires in males with less conspicuous plumage patterns Sandoval L, Ocampo D PA: Luis Sandoval | Comparative genomic analysis of population history and inbreeding in the Neotropical falcons <i>Falco deiroleucus</i> and <i>Falco rufigularis</i> Martin AM, Berry RB, Byerly PA et al. PA: Audrey Martin |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Tuesday morning, 10 August 2021, 10:00-11:30 EDT

| | 1 | 2 | 3 | 4 | 5 |
|-----------|--|---|--|--|--|
| Session | Symposium: A bird's-eye view of the microbiome – 1 | Symposium: What is next in Amazonian biogeography research? – 1 | Symposium: Addressing aerial insectivore declines in the Western Hemisphere – 1 | Contributed papers: Evolution 1 | Contributed papers: Life history |
| 10:00 EDT | Introduction to avian microbiome research Videvall E PA: Elin Videvall | Amazonian biogeography from a historical perspective Aleixo, A PA: Alexandre Aleixo | *Full annual cycle insights on Common Nighthawk population trend Knight EC, Harrison A-L, Scarpignato A et al. PA: Elly Knight | *Do the major histocompatibility complex and the microbiome explain variation in fitness correlates in Dark-eyed Juncos (<i>Junco hyemalis</i>)? Denis JD, Van Laar TA, Slade JWG PA: Joee Denis | Life-history traits of alpine breeding songbirds predict early-life resilience to severe weather events de Zwaan DR, Drake A, Greenwood JL et al. PA: Devin de Zwaan |
| 10:13 | What does an avian host want from its intestinal microbiome and how does it encourage that outcome? Klasing KC, DeRogatis AM PA: Kirk Klasing | Idiosyncratic patterns and recent dynamics revealed by demographic modelling in seven Amazonian white-sand ecosystems birds Capurro JMG et al. PA: João Marcos Guimarães Capurro | *Implications of multiple brooding for Barn Swallow (<i>Hirundo rustica</i>) conservation strategies Mann HAR, Imlay TL, Leonard ML PA: Hilary Mann | *Degree of habitat heterogeneity correlates with the evolution of plumage colorfulness in both males and females (Cardinalidae) Scott BF, Shultz AJ, Burns KJ PA: Benjamin Scott | Migration distance is a fundamental axis of the slow-fast continuum of life history in boreal birds Winger BM, Pegan TM PA: Benjamin Winger |
| 10:26 | Patterns of initial microbiome assembly in Neotropical birds Campos-Cerda F, Bohannan BJM PA: Felipe Campos-Cerda | Riverscape dynamics shape microevolutionary processes across Amazonian floodplains Thom G, Shultz E, Aleixo A et al. PA: Gregory Thom | Post-fledging movement and habitat associations of an at-risk aerial insectivore: A Motus Wildlife Tracking System study Mitchell GW, Evans DR, Kusack JW et al. PA: Greg Mitchell | *Color insights in mixed-species flocks from Costa Rican highlands: Revisiting the social mimicry hypothesis Muñoz P, Bitton PP, Sandoval L PA: Pablo Muñoz | Life-history attributes of Arctic-breeding birds may yield uneven responses to environmental variability across different phases of the reproductive cycle Ruthrauff DR, Vijay PP, Hupp JW et al. PA: Daniel Ruthrauff |
| 10:39 | Migratory microbiota: Remodeling of the Blackpoll Warbler gut microbiome over fall migration Trevelline BK PA: Brian Trevelline | A chromosomal inversion in the hybrid zone between <i>Rhegmatorhina hoffmannsi</i> and <i>berlepschi</i> Del-Rio G et al. PA: Glaucia Del-Rio | Ecology of near-threatened Sickle-winged Nightjar in grasslands of northern Argentina Cockle KL, Fariña N, Pietrek A et al. PA: Kristina Cockle | *Elevation and niche divergence in Mexican Yellow Grosbeaks (<i>Phœucticus chrysopheplus</i>) Secor MB, McCormack JE PA: Maeve Secor | *The costs of playing catchup: Songbirds with delayed spring departure migrate faster but pay the consequences Dossman BC, Rodewald AD, Marra PP et al. PA: Bryant Dossman |
| 10:52 | Summer-winter variation in the gut microbiota composition of homing pigeons Dietz MW, Matson KD, Versteegh MA et al. PA: Maurine Dietz | Rethinking rivers: Reticulate and micro-endemic histories of diversification in upland forest birds Musher LJ PA: Lukas Musher | Habitat use and stable isotopes inform winter ecology in the Eastern Whip-poor-will Skinner AA, Ward MP, Souza-Cole I et al. PA: Aaron A. Skinner | The role of molt phenology divergence in maintaining reproductive isolation between taxa that hybridize in the Great Plains Dougherty PJ, Carling MD PA: Paul Dougherty | *Long-distance migrants experience slower molecular evolution Pegan TM, Berv JS, Gulson-Castillo ER et al. PA: Teresa Pegan |
| 11:05 | Experimental manipulation of dietary carotenoids alters the cloacal microbiome in a colorful bird Hutton P, Giraudeau M, McGraw KJ PA: Pierce Hutton | Genetic diversity and the lack of consistency in taxonomy hinder biogeographic interpretation: A case study with Galbuliformes Ferreira M, Cracraft J, Bates J et al. PA: Mateus Ferreira | Migration and winter ecology of Eastern Whip-poor-will Bakermans MH, Vitz AC PA: Marja Bakermans | Speciation and color evolution in hummingbirds Beltrán DF, Shultz AJ, Parra JL PA: Diego Beltrán | Investigating a trade-off between the quality of nest-grown feathers and pace of development in an altricial bird Taff CC, Johnson BA, Anker AT et al. PA: Brianna Johnson |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Tuesday morning, 10 August 2021 (continued)

| | 6 | 7 | 8 |
|-----------|--|---|---|
| Session | Contributed papers: Conservation 2 | Contributed papers: Ecology 2 | Symposium: Great R packages for ornithologists |
| 10:00 EDT | <p>*Searching for gold: Using a novel land cover classification to identify multi-scale drivers of site occupancy by a flagship species for early-successional habitat conservation Lin BH, Bulluck LP PA: Baron Lin</p> | <p>Fire and ice increase nest success in a mountain-endemic South African bird Oswald KN, Diener EF, Diener JP et al. PA: Krista Oswald</p> | <p>How can ornithologists find R packages?, LaZerte SE, PA: Stefanie LaZerte</p> <hr/> <p>dplyr: A useful toolbox for manipulating data, Aguillon SM, PA: Stephanie Aguillon</p> <hr/> <p>sf, raster, and tmap: The spatial data trinity, Dyson M, PA: Matt Dyson</p> |
| 10:13 | <p>Forest fragmentation in the Amazon reduces the attendance of ant-following birds at army-ant swarms Rodrigues PF, Stouffer PC PA: Patricia Rodrigues</p> | <p>Birds of many microbes flock together: Genetic and environmental drivers of microbial colonization in a wild sparrow Rohrer SD et al. PA: Sage Rohrer</p> | <p>osmdata: Roadless areas and avian diversity, Padgham M, PA: Mark Padgham</p> <hr/> <p>seewave and tuneR: Sound analysis in ornithology, Tseng Y-C, PA: Yi-Chin Tseng</p> <hr/> <p>warbler and Raven: Bioacoustics in R, Benítez Saldívar MJ, PA: María Juliana Benítez Saldívar</p> |
| 10:26 | <p>*Habitat factors influencing avian community richness on Wetland Reserve Program easements vary across seasons Podoliak J, Hicks D, Webb L PA: Jon Podoliak</p> | <p>Levels of predation at two Leach's Storm Petrel (<i>Hydrobates leucorhous</i>) breeding colonies Hoeg R, Shutler D, Pollet IL PA: Dave Shutler</p> | <p>soundecology: Using acoustic indices for landscape assessment and monitoring, Quinn JE, PA: John Quinn</p> <hr/> <p>naturecounts: Millions of bird occurrence records at your fingertips, Ethier DM, Lepage D, LaZerte S, PA: Danielle Ethier</p> <hr/> <p>bbsAssistant: An R package for downloading and handling data and information from the North American Breeding Bird Survey, Burnett JL, PA: Jessica Burnett</p> |
| 10:39 | <p>Not singing in the rain: Linking migratory songbird declines with increasing precipitation and brood parasitism vulnerability Rosamond KM, Goded S, Soultan A et al. PA: Kristen Rosamond</p> | <p>Nest boxes vary in effectiveness as a tool to increase presence of American Kestrels (<i>Falco sparverius</i>) in agriculture Hannay MB, Shave ME, Lindell CA et al. PA: Melissa Hannay</p> | <p>motus: Managing motus data in R, Gow EA, MacDonald A, PA: Amie MacDonald</p> <hr/> <p>track2KBA: An R package for identifying important sites for biodiversity from tracking data, Beal M, Oppel S, Handley J et al., PA: Martin Beal</p> <hr/> <p>MixSIAR: An R package for avian diet analysis, West EH, PA: Elena West</p> |
| 10:52 | <p>*Origins of harvested American Black Duck (<i>Anas rubripes</i>): Testing the flyover hypothesis Kusack JW, Tozer DC, Hobson KA PA: Jackson Kusack</p> | <p>On the importance of Department of Energy lands as habitat for birds Burger J, Gochfeld M PA: Joanna Burger</p> | <p>INLA: A way for ecologists to overcome their worst impulses, Adams EM, PA: Evan Adams</p> <hr/> <p>pavo: Color analysis in birds, Campillo LC, PA: Luke Campillo</p> <hr/> <p>moult and moultmcmc: Inference for moult phenology models, Boersch-Supan PH, PA: Philipp Boersch-Supan</p> |
| 11:05 | <p>*How common ravens (<i>Corvus corax</i>) exploit anthropogenic food sources through time and space in a semi-transformed, alpine environment Jain V, Sumasgutner P, Cunningham SJ et al. PA: Varalika Jain</p> | Questions and discussion | <p>Putting it all together: Ornithometrics — a task view for ornithology, Beausoleil M-O, PA: Marc-Olivier Beausoleil</p> <hr/> <p>Questions and discussion</p> <hr/> <p>Questions and discussion</p> |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion |

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Tuesday afternoon, 10 August 2021, 14:00-15:30 EDT

| | 1 | 2 | 3 |
|-----------|--|--|--|
| Session | Symposium: A bird's-eye view of the microbiome – 2 | Symposium: What is next in Amazonian biogeography research? – 2 | Symposium: Addressing aerial insectivore declines in the Western Hemisphere – 2 |
| 14:00 EDT | Gastrointestinal processes and pathways that mediate interactions between avian hosts and their microbes Karasov WH PA: William Karasov | Bridging shortfalls in Amazonian avian biogeography Lees AC, Aleixo A PA: Alexander Lees | Prairie ponds fuel aerial insectivores: Tales of Tree Swallows in agro-ecosystems Berzins LL, Morrissey CA, Mazer AK et al. PA: Lisha Berzins |
| 14:13 | Assessing the phylogenetic signal of the avian microbiome Hird SM PA: Sarah Hird | *Elevational differentiation is associated with rapid trait evolution but not faster speciation of Amazonian birds Luzuriaga-Aveiga VE, Weir J PA: Vanessa Luzuriaga | Interacting effects of poor weather and agricultural landscapes on the fledging success of a declining aerial insectivore Garrett DR, Pelletier F, Garant D et al. PA: Daniel Garrett |
| 14:26 | Host phylogeny influences gut microbiome structure in breeding wood-warblers Baiz MD, Miller ET, Wood AW et al. PA: Marcella Baiz | Disentangling water type from geographic region in determining Amazonian floodplain forest avifaunas Laranjeiras TO, Rowedder ANP, Gilmore B et al. PA: Thiago Laranjeiras | Influence of land use, foraging habitat, and diet effects on swallow neonicotinoid exposure in prairie agroecosystems, Harris ME, Morrissey CA, Hobson KA, PA: Mercy Harris <hr/> Field characteristics affect swallow foraging in the Little Campbell River Watershed, British Columbia, Jackson MM, Summers KR, Juteau C, PA: Michelle Jackson <hr/> Light-mediated flexibility in foraging tactics of a crepuscular insectivore, Evens R, Lathouwers M, Liechti F et al., PA: Ruben Evens |
| 14:39 | Honeycreeper hosts: Testing the effects of diet, environment, and evolutionary history on the gut microbiome using a classic example of adaptive radiation in Hawaii Costantini MS, Videvall E, Campana MG et al. PA: Maria Costantini | *Amazonian suture zones Rego M et al. PA: Marco Rego | Foraging range and habitat use of the Purple Martin (<i>Progne subis</i>), Lalla K, Frei B, Fraser K et al., PA: Kristen Lalla <hr/> Effects of agriculture on nestling diet, quality and post-fledging survival: A comparative study between two sympatric species of aerial insectivores in Saskatchewan, Diaz AM, Morrissey C, Hobson KA, PA: Ana Maria Diaz <hr/> Minor interspecies differences in breeding phenology and productivity between two co-existing aerial insectivores, Boynton CK, Lansdorp OC, Mahony NA et al., PA: Chloe Boynton |
| 14:52 | Gut microbiota as a potential mediator of phenotypic plasticity in birds Houtz JL, Taff CC, MN Vitousek PA: Jennifer Houtz | Biogeography in a changing Amazonia: The past as a key to a challenging future Ribas CC PA: Camila Ribas | Factors influencing apparent annual survival in two sympatric breeding swallow species, Imlay TL, Mann H, Ding A et al., PA: Tara Imlay <hr/> Spatial variation in aerial insectivore declines, Shutler D, PA: Dave Shutler <hr/> Spatial-temporally explicit modelling of changes in aerial insectivore abundance and anthropogenic effects in Canada, Donkersteeg C, Smith AC, Dakin R, PA: Courtney Donkersteeg |
| 15:05 | Finch in a pinch: Effects of urbanization on the gut microbiota and parasite resistance of Darwin's finches in the Galapagos Islands Knutie SA, Vaziri GJ PA: Sarah Knutie | Questions and discussion | Anthropogenic light at night influences fledge dates, migration timing, and migratory routes in aerial insectivores, Fraser KC, Davy CM, Bani Assadi S et al., PA: Kevin Fraser <hr/> Nesting habitat of a northern population of Chimney Swifts (<i>Chaetura pelagica</i>) in forested landscape using the Motus arrays, Tixier J, Tremblay JA, Devost I et al., PA: Jérémie Tixier <hr/> Chimney Swift use of a large migratory roost in Northern Ontario, Foote JR, Pearce J, PA: Jennifer Foote |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion |

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Tuesday afternoon, 10 August 2021 (continued)

| | 4 | 5 | 6 | 7 | 8 |
|------------------|---|---|--|--|---|
| Session | Contributed papers: Ecology 3 | Contributed papers: Conservation 3 | Contributed papers: Diseases and parasites | Contributed papers: Breeding biology 1 | Contributed papers: Genomics 1 |
| 14:00 EDT | Origins and diversification of endemic birds in the Caatinga dry forest Lima H, Bravo GA, Astúa D et al. <i>PA: Hevana Lima</i> | Ecosystem restoration and partnerships: Reintroduction of Brown-headed Nuthatch (<i>Sitta pusilla</i>) to Missouri pine woodlands Kendrick SW, Bonnot TW, Thompson III FR et al. <i>PA: Sarah Kendrick</i> | Influenza prevalence in wild waterfowl inhabiting the continental United States throughout the annual cycle Kent CM, Mullinax JM, Prosser DJ et al. <i>PA: Cody Kent</i> | Birds in the city: The use of artificial materials for nesting decreases nest daily survival Corrales-Moya J, Barrantes G, Chacón-Madrigal E et al. <i>PA: Josué Corrales-Moya</i> | Similar genes underlie the honesty of different ornaments in two populations of a warbler Sly ND, Henschen AE, Freeman-Gallant CR et al. <i>PA: Nicholas Sly</i> |
| 14:13 | *Assortative mating for between-patch dispersal status in a wild bird population: Exploring the role of direct and indirect underlying mechanisms Tamin T, Doligez B <i>PA: Thibault Tamin</i> | Translocation methods and post-release monitoring of reintroduced Brown-headed Nuthatch (<i>Sitta pusilla</i>) in Missouri pine woodlands Heath-Acre KM, Kendrick SW, Thompson III FR et al. <i>PA: Kristen Heath-Acre</i> | Epizootic of beak deformities worldwide: A review of avian keratin disorder in wild birds Gerik DE, Van Hemert C, Handel CM et al. <i>PA: Danielle Gerik</i> | Sex-specific contributions to nest building in birds Mainwaring MC, Nagy J, Hauber ME <i>PA: Mark Hauber</i> | Evolutionary history of the Chotoy Spinetail (<i>Schoeniophylax phryganophilus</i> , Aves: Furnariidae): A species with two allopatric populations in seasonally dry forests Silva-Neto PJV, Lucas LAS, Freitas LV et al. <i>PA: Paulo Silva-Neto</i> |
| 14:26 | *The influence of pine management on grassland-nesting birds overwintering in central Louisiana, USA Raginski NM, Long AM <i>PA: Nancy Raginski</i> | Bison restoration to mixed-grass prairie is associated with increases in avian diversity and mammal occupancy in riparian areas via effects on vegetation Boyce AJ, Shamon H, McShea WJ <i>PA: Andy Boyce</i> | Does the abundance of ectoparasites in the nest affect nestling condition and fledging success? Apienti TAO, Barber CT <i>PA: Tracy Alice Apienti</i> | Thermal ecology of Trumpeter Swan incubation Miller PC, Delehanty DJ <i>PA: Paige Miller</i> | Introgression and cryptic speciation in a North American passerine Askelson KK, Spellman GM, Irwin DE <i>PA: Kenneth Askelson</i> |
| 14:39 | *An integrated resource selection model to predict avian habitat use from grassland vegetation structure Silber KM, Hefley TJ, Boyle WA <i>PA: Katy Silber</i> | Purple Martin diet is associated with habitat type but not foraging range Dunoyer J, Lalla K, Fraser K et al. <i>PA: Julia Dunoyer</i> | *The range expansion of an invasive avian malaria parasite and its potential impacts on two North American songbird species Theodosopoulos AN, Grabenstein KC, Taylor SA <i>PA: Angela Theodosopoulos</i> | Reproductive performance increases with age in European Starlings Obodai NT, Barber CA <i>PA: Colleen Barber</i> | Toward an understanding of the relationship between environment and genetic divergence in White-tailed Ptarmigan Zimmerman SJ, Aldridge CL, Langin KM et al. <i>PA: Shawna Zimmerman</i> |
| 14:52 | *Assessing the long-term effects of two expanding gap silvicultural systems on the forest avian assemblage in central Maine Pohlman CK <i>PA: Carl Pohlman</i> | Time trends in Ugandan birds vary by habitat and land protection status Burner RC et al. <i>PA: Ryan Burner</i> | *Malaria parasites of the Saltmarsh Sparrow (<i>Ammodramus caudacutus</i>) and patterns of infection with mercury exposure Neuhaus AP, Martinsen E, Lane O et al. <i>PA: Alyssa Neuhaus</i> | Socio-ecological factors and phenotype relative to neighbors shape the opportunity for polygyny in a migratory songbird Canal C, Schlicht L, Potti J. et al. <i>PA: David Canal</i> | *Evaluating if human land disturbances break species barriers at continent-wide and regional scales Grabenstein KC, Burg TM, Otter KA et al. <i>PA: Kathryn Grabenstein</i> |
| 15:05 | Temporal niche partitioning of a plant-hummingbird network in the Atlantic forest of southeastern Brazil Nieto AV, Graham CH, Varassin IG et al. <i>PA: Andrea Nieto</i> | Accelerating declines of North America's shorebirds signal the need for urgent action Smith PA, Smith AC et al. <i>PA: Paul Smith</i> | *Investigating the role of the gut microbiome in susceptibility to avian malaria in Hawaiian honeycreepers Navine AK, Videvall E et al. <i>PA: Amanda Navine</i> | Translocated Lesser Prairie-Chicken lek dynamics and female space use Aulicky C, Haukos D et al. <i>PA: Carly Aulicky</i> | *Patterns of genetic variation in the endangered yellow-nosed albatrosses revealed by high-throughput sequencing data Abeyrama DK, Ryan PG, Burg TM <i>PA: Dilini Abeyrama</i> |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Virtual Poster Session: Tuesday Evening, 10 August 2021

17:30 – 19:00 EDT

| Annual cycle and breeding biology |
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| Metabolic health and physical development of Barn Swallow (<i>Hirundo rustica</i>) chicks under natural photoperiod and artificial light at night Burgess ML, Cooper CB, Voss MA – PA: Murry Burgess |
| Do Eastern Bluebirds guard nest boxes during the fall and winter? Rollfinke M, Kipnis F, Stanback M et al. – PA: Maxwell Rollfinke |
| *Maternal adjustment of offspring sex allocation in Greater Sage-Grouse Smith KL, Tymstra EF, Mathews SR et al. – PA: Katie Smith |
| Insights into the nest site characteristics of pueo (Hawaiian Short-eared Owl; <i>Asio flammeus sandwichensis</i>) on O'ahu Wang O, Wilhite CJ, Garcia-Heras MS et al. – PA: Olivia Wang |
| Assessing Black Tern colony occurrence and habitat associations in the Canadian prairie pothole region using aerial imagery Shephard N, McKellar A, Reudink M – PA: Nicholas Shephard |
| Behavior |
| Worth the risk? Female House Wrens (<i>Troglodytes aedon aedon</i>) defend similarly against two simulated nest predators Eggleston CR, Davis KM, Reichard DG – PA: Ross Eggleston |
| Effects of oil well drilling noise on breeding behavior of Chestnut-collared Longspurs (<i>Calcarius ornatus</i>) Sutcliffe L – PA: Lee Sutcliffe |
| To mixed flock or not to mixed flock: Foraging ecology of the Brown-headed Nuthatch (<i>Sitta pusilla</i>) McNeill N, Walters JR – PA: Noah McNeill |
| The effect of moonlight on the diel activity patterns and reproduction of a crepuscular bird Souza-Cole I, Ward MP, Benson TJ – PA: Ian Souza-Cole |
| A review and guide for describing the vocal behavior in birds Ku-Peralta W, González-Bernal E, Santos-Moreno A et al. – PA: William Ku-Peralta |
| *Differential community response to threat: Using a novel soundscape approach to understand community signaling changes Marion PT, Gill SA – PA: Parks Marion |
| Conservation and climate change |
| The influence of local conditions on the arrival-breeding interval in a long-distance migrant Smith LHN, Fraser KC – PA: Lakesha Smith |
| *Potential effects of climate and land cover change on forest songbirds of the Appalachian Mountains Clipp HL, Rota CT, Wood PB – PA: Hannah Clipp |
| Decline of North American avian populations as a function of land use, land cover and migration period Faraco-Hadlock NF, Miller CR, Vitousek MN – PA: Nicholas Faraco-Hadlock |
| Temporal and spatial patterns of neonicotinoid and butenolide insecticide residues in flowers, hummingbirds and honey bee nectar and honey in the Fraser Valley, BC, Canada (2018, 2019) Bishop CA, Hick KG, Elliott JE et al. – PA: Christine Bishop |
| *Combining population genomics and demographic modeling to inform conservation of a threatened migratory bird, the Canada Warbler (<i>Cardellina canadensis</i>) Miller CV, Bossu CM, Haché S et al. – PA: Caitlin Miller |
| Are early successional birds declining because of lack of early successional forests or loss of fire-dependent open forests in the eastern United States? Hanberry BB, Thompson FR – PA: Brice Hanberry |

Virtual Poster Session: Tuesday Evening, 10 August 2021

| Diseases and parasites |
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| *Effects of a hematophagous ectoparasite on nestling European Starlings (<i>Sturnus vulgaris</i>) Poirier JC, Barber CA – PA: Jessica Poirier |
| A high prevalence of malaria parasites in Great-tailed Grackles (<i>Quiscalus mexicanus</i>) in Arizona, USA Pacheco MA, Ferreira FC, Logan CJ et al. – PA: M. Andreina Pacheco |
| *Spatial relationship between avian host communal roosts and West Nile virus infected mosquitos in Maricopa County, Arizona Bol S, Motyka P, Hepp C – PA: Skyler Bol |
| Ecology |
| Divergent trophic responses of sympatric penguin species to shared historic environmental change Michelson CI, Polito MJ, McMahon KW – PA: Chantel Michelson |
| Do nice jays finish last: Diagnosing the causes of undermatching in a synanthropic species Brunk KM, West EH, Pidgeon AM et al. – PA: Kristin Brunk |
| *Nature versus nurture: Structural equation modeling indicates that parental care does not mitigate consequences of poor environmental conditions Sudnick M, Brodie BS, Williams K – PA: Madeline Sudnick |
| Avian diversity and foraging behavior in a heterogeneous urban-agroecosystem Bockrath RE, Wood EM, Still DW et al. – PA: Rachel Bockrath |
| The effects of environmental conditions on eggshell thickness of Western Bluebirds and Ash-throated Flycatchers Romero AT, Bartlow AW, Hathcock CD et al. – PA: Alicia Romero |
| *Birds' eggshell colors conform to Bogert's rule Cooper SH, Hanley D – PA: Sela Cooper |
| Occupancy and detection probability for resident tropical birds in a working landscape in Nicaragua McGowan CP – PA: Conor McGowan |
| Geographic variation in morphology of Northern Cardinals (<i>Cardinalis cardinalis</i>): Possible application of Bergmann's rule? DeVries MS, Waraczynski M, Baldassarre DT et al. – PA: Susan DeVries |
| Evolution, genomics, and phylogenetics |
| *Major histocompatibility complex (MHC) variation among boreal breeding passerines that differ in migration distance Campbell SK, Cortés-Ortiz L, Winger BM – PA: Susanna Campbell |
| Turning induced plasticity into refined adaptations during range expansion Potticary AL, Morrison ES, Badyaev AV – PA: Ahva Potticary |
| Genetic basis for the population differentiation and local adaptation of White-crowned Sparrow (<i>Zonotrichia leucophrys</i>) to different forest habitats Oguntuase-Osagie BG, Burg TM – PA: Bukola Oguntuase-Osagie |
| Global patterns of phenotypic macroevolution in parrots Lee E, Merwin JT, Terrill R et al. – PA: Elliot Lee |
| Geographic variation in vocalizations and morphology of Cactus Wrens (<i>Campylorhynchus brunneicapillus</i>) Andrade-González VM, Vázquez-Miranda H, Sosa-López JR – PA: Violeta Andrade |
| *Hybridization and speciation of an Amazonian manakin Mikkelsen EK, Weir JT – PA: Else Mikkelsen |
| Migration genomics of Golden-crowned Kinglets (<i>Regulus satrapa</i>) and Red-breasted Nuthatches (<i>Sitta canadensis</i>) Schramm DJ, Burg TM, Spellman GM et al. – PA: Danika Schramm |

Virtual Poster Session: Tuesday Evening, 10 August 2021

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| Morphology, vocalizations, and mitochondrial DNA suggest that the Graceful Prinia is 2 species Alström P , Rasmussen PC , Xia C et al. – PA: Pamela C. Rasmussen |
| Migration and stopover |
| First satellite-tracked migration of an Eurasian Thick-knee (<i>Burhinus oedicnemus</i>) in the Middle East ends in human-caused mortality Kittelberger KD , Buechley ER , Sekercioglu ÇH et al. – PA: Kyle Kittelberger |
| Use of stopover sites by four raptor species and assessment of their migratory connectivity Pérez-Cadavid A , Ruelas-Inzunza E – PA: Adelaida Pérez Cadavid |
| Two new records of the Tufted Flycatcher (<i>Mitrephanes phaeocercus</i>) in the coast of Veracruz, Mexico Ciprés-Chávez A , Córdoba-Cuevas EA , Toto-Cobix J – PA: Adrián Ciprés |
| Avian use of agricultural areas as migration stopover sites: A review of crop management practices and ecological correlates Blount JD et al. – PA: David Blount |
| Investigating the plasticity of migration timing to environmental variability in a songbird Turcotte-van de Rydt C , Muthukumarana S , Fraser KC – PA: Christophe Turcotte-van de Rydt |
| Physiological condition of migrating thrushes at a Great Lakes stopover site Bros A , Hoh R , Pagano SS – PA: Alexandra Bros |
| Models and methods |
| Inferring successful breeding of a precocial bird with tracking data Duggan M , Wilde LR , Verhoeven MA et al. – PA: Matthew Duggan |
| Using Unmanned Aircraft Systems (UAS) to monitor endangered California Least Terns Pan JJ , Jaeger A , van Epps T et al. – PA: Jean Pan |
| An open-source tool for data fusion of GPS tracking and geomagnetic data: A case study of bird migration Iyer A , Benitez-Paez F , Brum-Bastos V et al. – PA: Aranya Iyer |
| The not-so-Common Eider (<i>Somateria mollissima</i>): Using demographic data synthesis, meta-analysis and matrix population modelling to reveal a mismatch between data availability and needs for seaducks Nicol-Harper A , Doncaster CP , Hilton GM et al. – PA: Alex Nicol-Harper |
| Song and vocalizations |
| *Seasonal song variation in Carolina Wrens (<i>Thryothorus ludovicianus</i>) Keating HR , Reichard DG – PA: Holly Keating |
| Female song is acoustically similar to male song in a temperate species with delayed plumage maturation Moyer MJ , Omland KE , Lohr BS et al. – PA: Michelle Moyer |
| Evaluation of nocturnal birds using acoustic records in the Chirikyacu native community Alva-Caballero LX , Sanchez-Cabrera VE , Mena-Alvarez JL – PA: Lucía Ximena Alva-Caballero |
| Testing the acoustic adaptation hypothesis in songs of <i>Artisornis</i> tailorbirds Palmer SM , McEntee JP , Blankenship T et al. – PA: Shelby Palmer |

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Wednesday morning, 11 August 2021, 10:00-11:30 EDT

| | 1 | 2 | 3 | 4 |
|------------------|--|--|---|---|
| Session | Symposium: A bird's-eye view of the microbiome – 3 | Symposium: Resilient Caribbean birds: Surviving and thriving in a challenging world – 1 | Symposium: Addressing aerial insectivore declines in the Western Hemisphere – 3 | Symposium: Advances in the study of reproductive isolation in birds – 1 |
| 10:00 EDT | When does the gut microbiota affect bird behaviour? Davidson GL PA: Gabrielle Davidson | When capacity building comes home to roost: How small teams protect the Black-capped Petrel in Haiti Brown A, Jean A PA: Adam Brown | Aerial insectivores on the brink: Vulnerability to projected climate change Michel NL, Bateman BL, Wilsey CB PA: Nicole Michel | Introduction: The relative importance and onset of different mechanisms of reproductive isolation Campagna L, Uy JAC PA: Leonardo Campagna |
| 10:13 | Exploring the avian microbiota-gut-brain axis in captive and wild songbirds Slevin MC., Houtz JL, Vitousek MN et al. PA: Morgan Slevin | Perseverance during a pandemic: Implementation of a mainland non-native predator management program as a conservation tool for the endangered White-breasted Thrasher Mortensen J et al. PA: Jennifer Mortensen | Climate-driven changes in insect phenology shift timing of nutrient availability for declining aerial insectivores Twining CW, Shipley JR, Matthews B et al. PA: Cornelia Twining | How do assortative mating and low hybrid fitness influence “reproductive isolation”? Irwin D PA: Darren Irwin |
| 10:26 | Experimental exposure to noise alters gut microbiota in a songbird Berlow M, Wada H, Derryberry EP et al. PA: Mae Berlow | The Ridgway's Hawk (<i>Buteo ridgwayi</i>): Returning from the brink of extinction Curti M, Hayes TI, Thorstrom R et al. PA: Marta Curti | Tracking the importance of aquatic-emergent insects in the diets of aerial insectivores in southern Ontario, Canada: Towards an understanding of nutritional landscapes Hobson KA, Genier C, Bumelis K et al. PA: Keith Hobson | Cognitive adaptation, reduced movement, and female choice along a montane gradient in a food-caching bird Branch CL et al. PA: Carrie Branch |
| 10:39 | Can kiwi trust their gut? Captive rearing alters the Brown Kiwi (<i>Apteryx mantelli</i>) microbiome San Juan PA, Castro I, Dhami MK PA: Priscilla San Juan | Pre- and post-hurricane population assessment of Bridled Quail-Dove (<i>Geotrygon mystacea</i>) on St. Eustatius, Caribbean Netherlands Madden HM, Rivera-Milán FF, Verdel K PA: Hannah Madden | Forging collaborative networks to address aerial insectivore research priorities across the Americas Morrissey C, Berzins L, Norris R PA: Christy Morrissey | Unveiling the costs of bearing a novel trait: Experiments on male-male competition in Neotropical brushfinches Avenidaño JE, Cadena CD PA: Jorge Avenidaño |
| 10:52 | Impact of artificial rearing on the microbiota and health of endangered Whooping Crane chicks Kohl KD, Trevelline BK, Duckworth C et al. PA: Kevin Kohl | Fluctuations in bird populations in a coastal forest in Puerto Rico show resiliency after natural events Tossas AG PA: Adrienne Tossas | Questions and discussion | *Rapid speciation via the evolution of pre-mating isolation in the Iberá Seedeater Turbek SP, Taylor SA, Campagna L et al. PA: Sheela Turbek |
| 11:05 | Reproductive microbiomes: Intra- and inter-specific variation in avian ejaculate microbiomes Rowe M PA: Melissah Rowe | The role of cacao agroforests and secondary forests as reservoirs of bird diversity in Trinidad Arnold H, Deacon AE, Hulme MF et al. PA: Haley Arnold | Questions and discussion | Genomewide data reveal the role of natural and sexual selection in driving intra-island diversification in a Reunion songbird (<i>Zosterops borbonicus</i>) Milá B, Gabrielli M, Bourgeois Y et al. PA: Borja Milá |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Wednesday morning, 11 August 2021 (continued)

| | 5 | 6 | 7 | 8 | 9 |
|------------------|---|--|---|---|---|
| Session | Contributed papers: Migration and stopover 2 | Contributed papers: Models and methods 2 | Contributed papers: Population biology and evolution | Contributed papers: Song and vocalizations 2 | Contributed papers: Evolution 2 |
| 10:00 EDT | *Prey DNA on talons and beaks reveals what a migrating raptor eats Bourbour RP et al. PA: Ryan Bourbour | *Trends in bird abundance differ among protected forests but not bird guilds Doser JW, Weed AS, Zipkin EF et al. PA: Jeffrey Doser | Is a river barrier hindering introgression of a sexually selected trait? Bennett KFP et al. PA: Kevin Bennett | *On geographic vocal variation and its neuroethological implications in a Neotropical songbird Fernández-Gómez RA, Morales-Mávil JE, Sosa-López JR PA: Ron Fernández-Gómez | Contrasting macroevolutionary trends between mountains and lowlands underlying diversification in Neotropical avian clades Tenorio EA, Smith BT PA: Elkin Tenorio |
| 10:13 | *Geomagnetic disturbance associated with vagrancy in migrating landbirds Tonelli BA, Youngflesh C, Tingley MW PA: Benjamin Tonelli | *grinnell: A package for dispersal simulations across geography and time to estimate calibration areas for niche and distribution models Machado-Stredel F, Cobos ME, Peterson AT PA: Fernando Machado-Stredel | Combining genetic, morphometric and ecological-niche modeling methods to assess the evolutionary origins of the Black-throated Gray Warbler (<i>Setophaga nigrescens</i>) Tofflemire MA, Klicka J, Epperly K PA: Michael Tofflemire | To the beat of their own drum: Temporal and environmental factors influence drumming display activity in the Ruffed Grouse (<i>Bonasa umbellus</i>) Martin MJ, Déaux, EC, Iwaniuk AN PA: Michelle Martin | The role of ecological divergence on time to sympatry in subsocial passerines Johnson O, Brumfield RT et al. PA: Oscar Johnson |
| 10:26 | *Reduced habitat suitability and landscape connectivity in a migratory divide Justen H, Lee-Yaw J, Delmore K PA: Hannah Justen | *Point count offsets for population sizes of North American landbirds Edwards BPM, Smith AC, Docherty T et al. PA: Brandon Edwards | Population genetic differentiation and hybridization of Glaucous Gull (<i>Larus hyperboreus</i>) Lachance Linklater E, Robertson G, Sonsthagen S et al. PA: Emma Lachance Linklater | Higher minimum song frequency of urban Dark-eyed Juncos (<i>Junco hyemalis</i>) persists in a common garden experiment Reichard, DG, Atwell, JW, Pandit MM et al. PA: Dustin Reichard | *The origin of the avian inner ear and its correspondence to flight and vocalization Hanson M, Hoffman EA, Bhullar B-AS et al. PA: Michael Hanson |
| 10:39 | Integrating data types to quantify multi-species migratory connectivity Saunders SP, DeLuca WV, Meehan TD et al. PA: Sarah Saunders | Guidance for analytical methods to cumulative effects assessment for terrestrial bird species Mahon CL, Pelech S PA: C. Lisa Mahon | *Early- and late-breeding Tree Swallows experience different trade-offs between immune and reproductive investment Chang van Oordt DA, Taff CC, Ryan TA et al. PA: David Chang van Oordt | Geographical variation and evolution of the vocalizations of the White-throated Magpie-Jay (<i>Calocitta formosa</i>) Vázquez-Calvillo PR, Sánchez-González LA, Sosa-López JR PA: Paulina Rebeca Vázquez-Calvillo | *Concerted variation in melanogenesis genes underlies plumage patterning in capuchino seedeaters Estalles C, Turbek SP, Rodríguez-Cajarville MJ et al. PA: Cecilia Estalles |
| 10:52 | Geolocators reveal diversity of molt and migration strategies within a single population of Lazuli Bunting Savides K, Rushing C PA: Kim Savides | What is trend? Link W, Sauer JR PA: William Link | *Exploring parasite-mediated selection and MHC diversity of two seasonally sympatric subspecies of Dark-eyed Juncos (<i>Junco hyemalis</i>) Fernandez EM, Whittaker D, Slade JWG PA: Esther Fernandez | *The loss of female vocal complexity and duetting behavior in the ancestors of Carolina Wrens (<i>Thryothorus ludovicianus</i>) Willson M, Price JJ PA: Mira Willson | Examining the patterns and drivers of bill shape evolution in Asian and African barbets Chhaya V, Reddy S, Krishnan A PA: Vaibhav Chhaya |
| 11:05 | *Using genomic data to model migratory timing: A Common Yellowthroat case study Bobowski T, Bossu C, Schweizer T et al. PA: Taylor Bobowski | Questions and discussion | Questions and discussion | Putting the speciation puzzle together: Looking at vocalizations between raven species Eastham VM, Cortes-Rodriguez N, Sturge R PA: Victoria Eastham | The energetic “pace of life” of tropical birds: Generally slow or widely diverse? Forrester TR, Martin TE PA: Timothy Forrester |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Wednesday afternoon, 11 August 2021, 14:00-15:30 EDT

| | 1 | 2 | 3 | 4 |
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| Session | Symposium: Lessons learned in lockdown: Impacts of the COVID-19 pandemic on birds | Symposium: Resilient Caribbean birds: Surviving and thriving in a challenging world – 2 | Contributed papers: Migration and stopover 3 | Symposium: Advances in the study of reproductive isolation in birds – 2 |
| 14:00 EDT | Effects of COVID-19 lockdowns on migratory and backyard birds: A review of research approaches and comparative results <i>Sanderfoot OV, Schrimpf M, Koper N et al.</i> PA: Olivia Sanderfoot | The Bahama Oriole Project — hopeful news from a Caribbean Island endemic <i>Omland KE, Cant S, Antalfy JM et al.</i> PA: Kevin Omland | *Do migrating songbirds track the “green wave” of emerging vegetation in spring? <i>Nemes C, Guinn S, Collins S, et al.</i> PA: Claire Nemes | Faster evolution of song discrimination leads to faster diversification in New World passerine birds <i>Freeman BG, Rolland J, Montgomery G et al.</i> PA: Benjamin Freeman |
| 14:13 | Singing in a silent spring: Birds respond to a half-century soundscape reversion during the Anthropause <i>Derryberry EP, Phillips JN, Simberloff R et al.</i> PA: Elizabeth Derryberry | Pine forest nesting in the critically endangered Bahama Oriole: New habitat recommendations to ensure population resilience <i>Yancy BM, Antalfy JM, Omland KE et al.</i> PA: Briana Yancy | *Sex-ratio bias influences spring migration traits of male Yellow-rumped Warblers (<i>Setophaga coronata</i>) <i>Deakin JE, Guglielmo CG, Morbey YE</i> PA: Jessica Deakin | *When female mating preferences do, and do not, lead to reproductive isolation: Behavioral and genomic insights from Red-backed Fairywrens <i>Khalil S, Karubian J, Webster MS</i> PA: Sarah Khalil |
| 14:26 | Sudden and dramatic decrease of humans in outdoor spaces: Effects on urban Dark-eyed Juncos <i>Diamant E et al.</i> PA: Pamela Yeh | Monitoring disturbance and fragmentation of the endemic Caribbean pine forests of Andros, home of the critically endangered Bahama Oriole <i>Antalfy JM, Omland KE, Fagan ME et al.</i> PA: Janine Antalfy | *Effects of experimental malaria infection on migration of Yellow-rumped Warblers (<i>Setophaga coronata</i>) <i>Howe R, Guglielmo C, Soares L et al.</i> PA: Rebecca Howe | Evolution of species recognition when ecology and sexual selection favor signal stasis <i>Price TD, Singh P</i> PA: Trevor Price |
| 14:39 | COVID-19 lockdown reveals tourists as seabird guardians <i>Hentati-Sundberg J, Berglund P-A, Hejdstrom A et al.</i> PA: Per-Arvid Berglund | Avian foraging and species richness in the Retreat Gardens: A national park in urban Nassau, The Bahamas <i>Johnson S, Johnson J</i> PA: Scott Johnson | *Soras over Illinois: Nocturnal settlement patterns in <i>Porzana carolina</i> are site-specific but show no evidence of visual or acoustic cues <i>Goldberg DL, Tauber AM, Ward MP et al.</i> PA: Daniel Goldberg | Genomic regions underlying divergent plumage and migratory traits relevant to speciation in Barn Swallows <i>Schild DR, Carter JC, Scordato ESC et al.</i> PA: Drew Schild |
| 14:52 | Understanding the observation filter: Impacts on volunteer data collection caused by the COVID-19 pandemic <i>Hochachka WM, Alonso H, Gutiérrez-Expósito C et al.</i> PA: Wesley Hochachka | The birds Dorian left behind <i>Watson BL, Johnson SB et al.</i> PA: Bradley Watson | *A weather surveillance radar view of Alaskan avian migration <i>Sivakumar AH, Sheldon D, Horton KG et al.</i> PA: Ashwin Sivakumar | The genomic architecture of reproductive isolation in a hybrid zone between Bullock’s and Baltimore Orioles <i>Walsh J, Billerman SM, Butcher BG et al.</i> PA: Jennifer Walsh |
| 15:05 | Questions and discussion | Questions and discussion | Questions and discussion | Using replicate hybrid zone transects to examine the genetic architecture of reproductive barriers <i>Semenov G, Rice A, Robbins M et al.</i> PA: Georgy Semenov |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Wednesday afternoon, 11 August 2021 (continued)

| | 5 | 6 | 7 | 8 |
|------------------|---|--|---|---|
| Session | Contributed papers: Breeding biology 2 | Contributed papers: Behavior 1 | Contributed papers: Conservation 4 | Contributed papers: Phylogenetics 2 |
| 14:00 EDT | *Exploring how different suites of nest predators (birds, mammals, and reptiles) respond to the playback of the begging calls of bird nestlings Liu S, Xie Q, Goodale E et al. PA: Shilong Liu | *Smells like home: Bird-scented nests as a mechanism for olfactory homing in a burrow-nesting seabird Jennings SL, Ebeler SE PA: Sarah Jennings | *Impacts of conifer removal on sagebrush songbirds Zarri EC, Martin TE PA: Elise Zarri | The evolutionary history of the troupials unveils hidden diversity within the <i>Icterus icterus</i> species complex Lucas LAS, Pii MW, Luna LW et al. PA: Layse Lucas |
| 14:13 | *The anatomy of a phenological mismatch: Interacting consumer demands and resource availability determine the consequences of mismatching Wilde LR, Simmons JE, Swift RJ et al. PA: Luke Wilde | Slight differences, dramatic consequences: Contrasting patterns of sociality along an environmental gradient in two cooperatively breeding species Johnson AE, Welklin J, Hoppe IR et al. PA: Allison Johnson | Validating the performance of citizen science establishes novel evidence base for conservation decision-making Stuber EF, Robinson O, Ruiz-Gutierrez V et al. PA: Erica Stuber | Evolutionary history of the Variable Seedeater (<i>Sporophila corvina</i>) Ocampo D, Winker K, Miller M et al. PA: Diego Ocampo |
| 14:26 | *Do female-specific social interactions influence timing of egg-laying in European starlings? Leonard KM, Williams TD PA: Kathryn Leonard | You are what you eat: Connecting foraging and breeding behavior in lekking Greater Sage-Grouse Tymstra EF, Forbey J, Patricelli GL PA: Eric Tymstra | Changes in bird abundance and phenology in the world's southernmost forest Sandvig EM, Quilodrán CS, Rivero de Aguilar J et al. PA: Erik Sandvig | Island endemic or recent introduction? Genomic data from historical specimens reveal the complex origin of Cuban bobwhites (<i>Colinus virginianus cubanensis</i>) Salter JF, Brumfield RT, Faircloth BC PA: Jessie Salter |
| 14:39 | *Hybridization dynamics of a manakin hybrid zone Long KM, Braun MJ, Brawn JD PA: Kira Long | Anthropogenic effects on European Starling nestlings' growth and cholesterol Linkous CL, Guindre-Parker S PA: Courtney Linkous | Avian morphological change driven by abiotic variation over time and space Youngflesh C, Saracco JF, Siegel RB et al. PA: Casey Youngflesh | Dorsal color variation among subspecies of the "Oregon" Dark-eyed Junco complex Yang ET, Unitt P, Mason NA PA: Elisa Yang |
| 14:52 | *Hatching failure dissected: Examining factors that lead to embryonic mortality across altricial bird species Di Giovanni AJ, Miller MJ, Jones TM et al. PA: Alexander Di Giovanni | A review of wood-warbler (Parulidae) predation of vertebrates and accounts of two new observations Akresh ME, Lamonde S, Stokes L et al. PA: Michael Akresh | Harmful algal blooms and Alaska seabirds: Saxitoxin associated with recent die-off events Van Hemert C, Smith MM, Dusek RJ et al. PA: Caroline Van Hemert | Analyzing the population structure of the Pacific Swallow, a highly dispersive island-inhabiting species Broyles G, Myers B, Scordato E PA: Grant Broyles |
| 15:05 | Songbird parents modify their behavior in open but not enclosed nests to mitigate energetic effects of rain on nestlings Mitchell AE, Wolf BO, Martin TE PA: Adam Mitchell | Questions and discussion | Management and conservation strategies for the Scarlet Macaw in Reforma Agraria, Chiapas, Mexico Ucan-Puc DE, Enríquez PL, Baltazar EB et al. PA: David Ucan-Puc | Questions and discussion |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Virtual Poster Session: Wednesday Evening, 11 August 2021

17:30 – 19:00 EDT

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| Annual cycle and breeding biology |
| Exploring over-wintering avian diversity and parasite prevalence in a private working forest Bracken RD , Greene DU , Miller DA , et al. – PA: Rebecca Bracken |
| Investigating the genetic mechanisms of bill color plasticity and its environmental drivers across time and space Demery A-JC , Houtz J , Lovette IJ et al. – PA: Amelia-Juliette Demery |
| Nest success and nest site characterization in Gray Catbirds: How does the prevalence of invasive shrubs impact their nest success and breeding biology? Hollenbush BE , Redmond LJ – PA: Bethany Hollenbush |
| Factors affecting breeding productivity of Common Nighthawks nesting on south Louisiana beaches Bolinger SM , Johnson EI , Leberg PL – PA: Sarah Bolinger |
| Nest placement decisions in Grey Fantails (<i>Rhipidura albiscapa</i>) relative to neighboring conspecific nest proximity and stage Sotnychuk NM , Ng JW , and Beckmann C – PA: Nadya Sotnychuk |
| Behavior |
| Neither sex appears to benefit from divorce within migratory Northern Flickers consistent with accidental loss and bet-hedging Wiebe KL – PA: Karen Wiebe |
| Long-term camera trap monitoring of understory birds in the Peruvian Amazon reveals rarely registered behaviors Arana A , Esteves JF et al. – PA: Alejandra Arana |
| *Sex ratios and the city: Investment in offspring sex ratios and parental care in urban versus rural European Starlings Kilgour D , Pierson T , Carey R et al. – PA: Denyelle Kilgour |
| Natural behavior in a songbird shows accurate interval timing with no increase in error Rodriguez-Saltos CA , Duque FG , Clarke JA – PA: Carlos Rodriguez-Saltos |
| Brood parasitism |
| What can the ejection of foreign objects from Eastern Bluebird nests reveal about selection on bluebirds to eject the parasitic eggs of Brown-headed Cowbirds? Gelman AW , Diamant E , Stanback M – PA: Adam Gelman |
| Hosts select for the eggshell color of the Brown-headed Cowbird Hanley D , Rutledge S , Moghaddame-Jafari B – PA: Beheshteh Moghaddame-Jafari |
| Ejection of Brown-headed Cowbird (<i>Molothrus ater</i>) eggs by Eastern Bluebirds (<i>Sialia sialis</i>) influenced by timing of parasitism in relation to bluebird laying Saucier MW , Stanback MT et al. – PA: Maxwell Saucier |
| Conservation and climate change |
| Linking climate change to foraging effort in a pagophilic seabird, the Mandt's Black Guillemot Leicester TJ , Elliott KH , Divoky GJ – PA: Thomas Leicester |
| *Have North American birds been shrinking over time? A test of Bergmann's rule in the context of climate change De Bellis CR , Campbell SP , Beaudry F et al. – PA: Caitlin De Bellis |
| Habitat characteristics of breeding Black Rails in vulnerable coastal locations Larson M , Butler C – PA: Matthew Larson |
| Effects of habitat alteration due to logging on migratory songbird abundance in Canadian boreal forest Cupiche VJ , McLaren B – PA: Vianney Cupiche |
| Prioritizing Midwest regional landscapes to conserve habitats for grassland birds Al-Saffar MA et al. – PA: Mohammed Al-Saffar |

Virtual Poster Session: Wednesday Evening, 11 August 2021

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| <p>Conserving Alberta Greater Sage-Grouse (<i>Centrocercus urophasianus</i>) populations: An assessment of translocation recovery using genetic markers Graham BA, Nicholson J, Klem M et al. – PA: Brendan Graham</p> |
| <p>Ecology</p> |
| <p>The effects of variation in temperature and parental behavior on embryonic period length, chick body size and telomere length in House Sparrows (<i>Passer domesticus</i>) Dennis AJ, Young RC, Heidinger BJ et al. – PA: Abigail Dennis</p> |
| <p>What factors influence the light environment in burrows of Atlantic Puffins? O'Brien N, Bitton P-P – PA: Noah O'Brien</p> |
| <p>Are ecosystem engineers keystone habitat providers for secondary cavity nesters in temperate forests of South America? Cuatianquiz-Lima C, Altamirano TA, Novoa F et al. – PA: Cecilia Cuatianquiz-Lima</p> |
| <p>Comparison of breeding bird diversity in urban vs. rural areas in an intensive agricultural landscape in Illinois, USA Bieniak L, Schoenecker R, Harper RG et al. – PA: Leah Bieniak</p> |
| <p>Monitoreo de aves en dos fincas agrícolas de café y cacao de sombra considerando la distancia entre disturbios antropogénicos y bosques naturales León Morales G – PA: Gabriel León Morales</p> |
| <p>Are House Wrens responsible for the decline of Bewick's Wrens? Using models to assess the impacts of interspecific competition over space and time Vickers ZH, McEntee JP – PA: Zach Vickers</p> |
| <p>Did the Flint Water Crisis impact urban wildlife? A look at bird blood lead levels Zahor DL, Glynn KJ, Cornelius JM – PA: Dorothy Zahor</p> |
| <p>Evolution, genomics, and phylogenetics</p> |
| <p>Patterns of cranial evolution in an adaptive radiation of Malagasy birds (Vangidae) Auerbach AL, Reddy S – PA: Anya Auerbach</p> |
| <p>3D morphometrics on shorebird skulls suggest semi-independent evolution of beak and braincase Xu X, Natale R – PA: Xiaoni Xu</p> |
| <p>*Tail shape classification of <i>Tyrannus</i> species based on geometric morphometrics Fasanelli MN, Milla Carmona PS, Tuero DT et al. – PA: Martin Fasanelli</p> |
| <p>Recent history the Ecuadorian Hillstar: An example of divergence with gene flow? Bonaccorso E, Rodríguez-Saltos CA, Freile JF et al. – PA: Elisa Bonaccorso</p> |
| <p>Assessing changes in population size through time in California Gnatcatcher Martínez-Avila C, Vázquez Miranda H – PA: Camila Martínez-Avila</p> |
| <p>*Genomic differentiation between three subspecies of Orange-crowned Warblers Fogarty F, Askelson K, Irwin D et al. – PA: Finola Fogarty</p> |
| <p>High-efficiency genomic typing of historic oriole specimens Vila-Coury V, Billerman SM, Walsh J et al. – PA: Vicens Vila-Coury</p> |
| <p>A draft avian tree of life Ahmad MR, OpenWings Consortium, Thom G – PA: Mariem Ahmad</p> |
| <p>A resolved phylogeny of Cardinalidae based on ultraconserved elements Scott BF, Burns KJ – PA: Benjamin Scott</p> |

Virtual Poster Session: Wednesday Evening, 11 August 2021

| Migration and stopover |
|--|
| Distribution and abundance of Neotropical migrant swallows in Western Cuba during the winter period 2020-2021 Rodríguez-Ochoa A, Ventura del Puerto D, Mugica Valdés L et al. – PA: Alejandro Rodríguez-Ochoa |
| Nest box occupancy by four local species prior to anthropogenic modification Harris JA, Hope RJ, Drumtra DE – PA: Jordan Harris |
| *Phenology shift of Purple Martin roosting behaviors in the Great Lakes region Deng Y, Belotti MCTD, Horton K et al. – PA: Yuting Deng |
| *Long-term analysis of the spatial distribution and habitat associations of Purple Martin (<i>Progne subis</i>) and Tree Swallow (<i>Tachycineta bicolor</i>) roosts in the US Great Lakes Belotti MCTD, Deng Y, Horton KG et al. – PA: Maria Carolina Tiburcio Dias Belotti |
| Assessing breeding origin and migratory pathways in a declining aerial insectivore (Tree Swallow) Gingras RM, Taylor AR, Causey D – PA: Rachel Gingras |
| Nutrition of non-native fruits for migratory songbirds in the Northeastern U.S. Loi C, Kwasinski V, Rosete J et al. – PA: Cynthia Loi |
| Models and methods |
| *Testing the utility of condition indices in nestling swallows: A quantitative magnetic resonance (QMR) approach Beauchamp AT, Kusack JW, Hobson KA et al. – PA: Andrew Beauchamp |
| Linking species distribution models to landscape simulation scenarios and conservation planning approaches to support the identification of critical habitat for Species At Risk: Wood Thrush (<i>Hylocichla mustelina</i>) Leston L, St. Laurent K, Weeber R et al. – PA: Lionel Leston |
| Use of Data Mule UAS to remotely download camera trap data to support bird species monitoring on military lands Pan JJ, Delaney DA, Mountcastle Z et al. – PA: Jean Pan |
| Molt and plumage |
| Physiological condition during molt differs between songbirds with contrasting molt strategies Butler LK, Hope SF, Stabile FA et al. – PA: Luke Butler |
| Song and vocalizations |
| Characterization of Hermit Thrush (<i>Catharus guttatus</i>) song overlapping during simulated territorial intrusions and natural countersinging Demerchant K, Jessulat J, Roach SP – PA: Kendra DeMerchant |
| Relating song to morphology, ecology, and phylogeny in the genus <i>Vireo</i> Schaefer LN, Cicero C, Benham PM et al. – PA: Linnea Schaefer |
| Sources of geographic variation in songs within the genus <i>Patagioenas</i> , and an assessment of reproductive character displacement between two closely related species Zapata D – PA: Dan Zapata |
| Variation in two types of <i>Setophaga townsendi</i> song and a test of association with mtDNA phylogeography Ore MJ, Wang S, Irwin DE – PA: Madelyn Ore |

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Thursday morning, 12 August 2021, 10:00-11:30 EDT

| | 1 | 2 | 3 | 4 |
|-----------|--|---|--|---|
| Session | Symposium: Juveniles on the move: Advancing our understanding of dispersal ecology and the mechanisms and outcomes of natal dispersal in birds – 1 | Symposium: Resilient Caribbean birds: Surviving and thriving in a challenging world – 3 | Symposium: Multi-species conservation planning in the face of widespread declines of North American avifauna: Exploring opportunities and avoiding pitfalls – 1 | Symposium: Advances in the study of reproductive isolation in birds – 3 |
| 10:00 EDT | *Patterns and consequences of natal dispersal in a declining population of Canada Jays at the southern edge of their range Fuirst M, Strickland D, Norris DR PA: Matthew Fuirst | Resilient Caribbean birds and people: Science, outreach, and conservation in a challenging time Sorenson LG PA: Lisa Sorenson | Multi-species conservation planning in theory and practice – is a bird in hand worth two in the bush? Schmiegelow FKA PA: Fiona Schmiegelow | Near complete postzygotic isolation in three cryptic pairs of Amazonian antbirds Weir JT PA: Jason Weir |
| 10:13 | *Orphaned refugees or opportunistic queuers: Variation in natal dispersal in the cooperatively breeding Florida Scrub-Jay Suh Y, Bowman R, Fitzpatrick JW PA: Young Ha Suh | The Caribbean Motus Collaboration: Informing and promoting conservation of Caribbean birds through monitoring Wilson M, Garrod H, Gerbracht J et al. PA: Maya Wilson | Shifting From single species to multi-species and ecosystem-based approaches to conservation in Canada Camfield AF PA: Elaine Camfield | Patterns of reproductive isolation in recently sympatric <i>Myzomela</i> honeyeaters with neo-sex chromosomes Shogren EH, Uy JAC PA: Elsie Shogren |
| 10:26 | Habitat fragmentation shapes natal dispersal and genetic structure in the Placid Greenbul, an Afrotropical cooperative breeder Cousseau L, Hammers M, Van de Look D et al. PA: Laurence Cousseau | Post-hurricane mangrove restoration in the British Virgin Islands: Practical lessons in building coastal resilience Zaluski S PA: Susan Zaluski | Single versus multi-species planning and management: A false dichotomy in bird conservation Rosenberg KV, Will TC, Easton WE et al. PA: Kenneth Rosenberg | Sperm as a reproductive barrier between species Cramer ERA PA: Emily Cramer |
| 10:39 | Early-life environmental drivers of movement in fledgling pelagic seabirds Frankish CK, Manica A, Clay TA et al. PA: Caitlin Frankish | Life cycle phenology and seasonal diet variation of Grenadian Birds in agroforests, and the contribution of diverse agricultural systems to the ecological resilience of tropical island bird communities De Ruyck CC, Koper N PA: Chris De Ruyck | Identifying full-annual-cycle groups of North American landbirds to facilitate multi-species conservation and study design Joos CJ, Camfield A, Toms T et al. PA: Cara Joos | Genomics of hybridization and isolation in extant and extinct <i>Vermivora</i> warblers Toews DPL, Baiz MD, Wood AW et al. PA: David Toews |
| 10:52 | Prospecting and informed dispersal: Understanding and predicting their joint eco-evolutionary dynamics Ponchon A, Scarpa A, Bocedi G et al. PA: Aurore Ponchon | Minimizing potential Allee effects in Psittacine reintroductions: An example from Puerto Rico White TH et al. PA: Thomas White | Integrating migration data to build full annual cycle, single and multi-species conservation prioritizations for boreal birds DeLuca WV et al. PA: William DeLuca | Evaluating evidence of mitonuclear incompatibilities with the sex chromosomes in an avian hybrid zone Lopez KA, McDiarmid CS, Griffith SC et al. PA: Kelsie Lopez |
| 11:05 | Evolution of complex social structure in a cooperative breeder Shah SS, Rubenstein DR PA: Shailee Shah | Questions and discussion | Data-driven, multi-species planning for the conservation of grassland birds in the south-central United States Fitzgerald JA, Joos CJ, Matthews A et al. PA: Jane Fitzgerald | Signatures of mitonuclear coevolution shaping cryptic differentiation in a warbler species complex Wang S, Ore M, Mikklisen E et al. PA: Silu Wang |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Thursday morning, 12 August 2021 (continued)

| | 5 | 6 | 7 | 8 |
|------------------|--|--|---|--|
| Session | Contributed papers: Song and vocalizations 3 | Contributed papers: Brood parasitism and behavior | Contributed papers: Climate change | Contributed papers: Ecology 4 |
| 10:00 EDT | *Do male European Starlings advertise age through song? Dharmasiri ME, Barber CA PA: Maheshi Dharmasiri | *Brood engineering through a Goldilocks principle maximizes fitness for a nest-sharing brood parasite Antonson ND, Schelsky WM, Hauber ME et al. PA: Nicholas Antonson | *Morphological consequences of climate change for resident birds in intact Amazonia Jirinec V, Burner RC, Stouffer PC et al. PA: Vitek Jirinec | Evidence of niche conservatism among pairs of allopatric avian taxa in two seasonally dry Neotropical forests Freitas LV, Naka LN PA: Lays Viturino de Freitas |
| 10:13 | *A newly discovered song type in Connecticut Warblers (<i>Oporornis agilis</i>) is variable in versatility and diel song rate at both inter- and intra-individual levels Plastino KE, Hannah KC, Foote JR PA: Kaitlyn Plastino | Empirical evidence of different egg morphs that match host eggs in the Brush Cuckoo (<i>Cacomantis variolosus</i>) Abernathy VE, Liang W PA: Virginia Abernathy | *Local adaptation and gene flow across an alpine archipelago DeSaix MG, George TL, Seglund A et al. PA: Matt DeSaix | Richness, abundance and diversity of birds in the tropical dry forest of the Sierra de Vallejo (Nayarit, Mexico) under different disturbance conditions Villegas-Raygoza BY, Quintero-Rivero ME, Espinosa A PA: Brenda Yosuki Villegas Raygoza |
| 10:26 | *Constraints imposed by migrating warblers on breeding warbler signal space Sblendorio JM, Vohnhof MJ, Gill SA PA: Joanna Sblendorio | Battle for the nest: Interactions between an obligate brood parasite and its host during laying events O'Hara J, Page P, Peer BD PA: Brian Peer | A genus at risk: Predicted current and future distribution of all three <i>Lagopus</i> species reveal sensitivity to climate change and efficacy of protected areas Scridel D et al. PA: Davide Scridel | Limited evidence for distance decay across terra firme rainforest in Amazonia Luther D, Rutt C, Cooper J et al. PA: David Luther |
| 10:39 | *Call rate as an index of nest abundance and provisioning rates in wading bird colonies Larson RC, Gawlik DE PA: Rachel Larson | The role of color perception and opponent processes in avian egg recognition Hanley D, Rutledge S PA: Daniel Hanley | The role of climate in winter range shifts by eastern North American waterbirds Ramírez-Garofalo JR, Curley SR, Manne LL et al. PA: José Ramírez-Garofalo | Great Lakes Basin avian biodiversity and changes in species-area relationships with watershed position Julien A, Melles S PA: Adisa Julien |
| 10:52 | *Comparative analyses of vocalization and genomic divergence in Nashville Warblers Phung L, Toews DPL PA: Lan-Nhi Phung | Parental behavior differs by moonlight intensity in a diurnal bird species Miller CM, Taff CC, Uehling JJ et al. PA: Colleen Miller | *Elevational shifts of Great Basin birds over the past two decades Zillig MW, Fleishman E PA: Martha Zillig | A trait-based framework for predicting foodborne pathogen spillover from wild birds Smith OM, Olimpi EM, Karp DS et al. PA: Olivia Smith |
| 11:05 | Genetic constraint on song learning ability in songbirds Hooper DM, Issard C, Woolley SMN PA: Daniel Hooper | The mobbing behavior of the Brown-crested Flycatcher against a common bird of prey in a tropical dry forest Bonilla-Badilla K PA: Katherine Bonilla-Badilla | Evaluating the effects of climate change on Yellow Warblers (<i>Setophaga petechia</i>) using telomeres as a biomarker of fitness Rodriguez MD, Ruegg KC, Bay RA PA: Marina Rodriguez | Stable isotope evidence shows key farmland structure features driving Eastern Wild Turkey food selection Otieno NE, Frenette L PA: Nickson Otieno |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Thursday afternoon, 12 August 2021, 14:00-15:30 EDT

| | 1 | 2 | 3 | 4 | 5 |
|--------------|---|---|---|--|--|
| Session | Symposium: Juveniles on the move: Advancing our understanding of dispersal ecology and the mechanisms and outcomes of natal dispersal in birds – 2 | Contributed papers: Behavior 2 | Symposium: Multi-species conservation planning in the face of widespread declines of North American avifauna: Exploring opportunities and avoiding pitfalls – 2 | Contributed papers: Human dimensions | Contributed papers: Population biology 1 |
| 14:00 EDT | Automated telemetry reveals evidence of long-distance prospecting in Kirtland's Warblers Cooper NW, Marra PP PA: Nathan Cooper | Flock mates and foraging behavior in mixed-species flocks Vander Meiden LN, Johnson AE, Shizuka D PA: Laura Vander Meiden | Evaluating the umbrella potential of the boreal caribou to achieve multi-species conservation in the Canadian boreal forest Docherty T, Stralberg D, Stewart B et al. PA: Teegan Docherty | Solving a nearly 200-year mystery to identify the oldest avian nest specimen in the Natural History Museum London Russell DGD, Yoshino T et al. PA: Tomo Yoshino | *Demography and destination: Modeling summer survival and winter migration of Canada Warblers in the central Appalachian Mountains Augustine SH, Rota CT PA: Stephanie Augustine |
| 14:13 | Impacts of the early environment on post-fledging movement patterns of Snail Kites Poli CL, Fletcher RJR PA: Caroline Poli | The impacts of irruption on chickadee social stability Rowley MG, Curry RL et al. PA: Michael Rowley | Priority areas for conservation in the Northwest Territories: Do we need to choose between boreal birds and caribou? Micheletti T, Stewart FEC, Haché S et al. PA: Samuel Hache | The bird that laid the cosmic egg Taylor B PA: Bernie Taylor | *Staying stable with fluctuations: How environmental cycles and demography influence a Florida Scrub-Jay population Summers J, Bowman R, Fitzpatrick JW et al. PA: Jeremy Summers |
| 14:26 | Empirical tests of habitat selection theory reveal that conspecific density and patch quality, but not habitat amount, drive long-distance immigration in a wild bird Rushing CS, Ryder TS, Valente JJ et al. PA: Clark Rushing | Origin of novel population dynamics through behavioral feedbacks in a passerine bird Potticary AL, Aguilon SM, Duckworth RA PA: Ahva Potticary | Using multi-species data to establish indicators for adaptive management in the boreal forest Van Wilgenburg SL, Heisler L, Fisher R et al. PA: Steven Van Wilgenburg | So you want to write research-based fiction Niehaus AC PA: Amanda Niehaus | *Estimating population trends of gulls and aerials for coast-wide aerial imagery in Maine Lewis MA, Kline LR, Loftin CS et al. PA: Meredith Lewis |
| 14:39 | Using wing morphology to determine variation in natal dispersal distances in North American birds Chu JJ, Claramunt S PA: Jonathan Chu | Has artificial selection driven anatomical changes in the brain of the homing pigeon (<i>Columba livia</i>)? Guyonnet AEM et al. PA: Audrey Guyonnet | Prioritizing the conservation of migratory birds and resident vertebrates in the Neotropics under alternative planning strategies Wilson S, Lin H-Y, Schuster R et al. PA: Scott Wilson | Welfare-conscious approaches to handling and obtaining samples from hummingbirds Tell LA PA: Lisa Tell | *Local versus broad-scale drivers: A Bayesian state-space analysis of long-term waterbird colony dynamics Van Tatenhove AM, Rushing CS PA: Aimee Van Tatenhove |
| 14:52 | Questions and discussion | A songbird inhibits blinking behavior in flight Yorzinski JL PA: Jessica Yorzinski | A habitat-based approach to developing a Conservation Investment Strategy for three migratory birds that depend on Latin America's mid-elevation forests Stewart RLM, Bayly NJ, Dettmers R et al. PA: Becky Stewart | Questions and discussion | *Community characteristics of forest understory birds along an elevational gradient in the Horn of Africa: A multi-year baseline Kittelberger KD, Neate-Clegg MHC, Sekercioglu ÇH et al. PA: Kyle Kittelberger |
| 15:05 | Questions and discussion | A review of scientific evidence on the impact of frightening devices to protect crops from avian pests Enos JK, Ward MP, Hauber ME PA: Janice Enos | Multi-species conservation in Mesoamerica and Cuba: Lessons from the field Rossi NA, McNab R PA: Natalia Rossi | Questions and discussion | National population trends of Blackpoll Warbler: An integrated analysis of migration counts and stable isotopes Iles DT, Dunn EH, Van Wilgenburg SL et al. PA: David Iles |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Thursday afternoon, 12 August 2021 (continued)

| | 6 | 7 | 8 |
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| Session | Contributed papers: Conservation 5 | Contributed papers: Evolution and genomics 2 | Symposium: The evolutionary ecology and conservation of mega-diverse tropical montane avifaunas |
| 14:00 EDT | Repeated burning undermines the conservation value of restored cattle pastures in Guatemala for tropical resident birds Lello-Smith A, Rodewald AD, Ruiz-Gutierrez V et al. PA: Anna Lello-Smith | *A supergene underlies phenotypic variation in redpolls Funk ER, Mason NA, Taylor SA et al. PA: Erik Funk | What we can learn about evolution, ecology and conservation from studying tropical montane birds, Freeman BG , PA: Benjamin Freeman Drivers of avian richness and turnover in the Peruvian Andes, McNew SM, Barrow LN, Williamson JL et al. , PA: Sabrina McNew The role of gene flow in reducing biodiversity along elevational gradients, Luzuriaga-Aveiga VE, Ugarte M, Weir J , PA: Vanessa Luzuriaga |
| 14:13 | Rainforest bird communities partially recover in 35-year-old Amazonian secondary forest Stouffer PC, Rutt CL, Vargas CF PA: Philip Stouffer | *The importance of gene flow in archipelagos: Case study in a Pacific island flycatcher Gyllenhaal EF, Klicka LB, DeCicco LH et al. PA: Ethan Gyllenhaal | CANCELLED: Phylogenetic modeling of elevational range shifts as a way of understanding montane biodiversity hotspots Birds short-circuit the community assembly cycle: Testing Diamond's continuous speciation model, Reijenga BR, Murrell DJ, Pigot AL , PA: Bouwe Reijenga How phenotypic plasticity and natural selection shape blood-oxygen carrying capacity and elevational ranges in Andean birds, Linck EB, Williamson JL, Bautista E et al. , PA: Ethan Linck |
| 14:26 | Occupancy probability of bird species in relation to the structural vegetation complexity of a coffee landscape in Costa Rica Molina-Mora I, Ruiz-Gutierrez V, Sandoval L et al. PA: Ingrid Molina-Mora | *Few genomic regions underlie phenotypic differentiation in <i>Sporophila beltoni</i> , a recently described seedeater species from southern Brazil Nguyen TN, Repenning M, Fontana CS et al. PA: Tram Nguyen | Evolution of blood-oxygen carrying capacity in hummingbirds, Williamson JL, Linck EB, Bautista E et al. , PA: Jessie Williamson Thermal niche breadth and diet explain variation in elevational migration in Himalayan birds, Barve S, Menon T, Ramesh V , PA: Sahas Barve Estimating dietary niche width in a Neotropical highland endemic bird with multi-tissue stable isotope analysis, Besozzi EM, Garrot H, Elizondo P et al. , PA: Elizabeth Besozzi |
| 14:39 | Multi-scale drivers of restoration outcomes for an imperiled songbird McNeil DJ, Rodewald AD, Ruiz-Gutierrez V et al. PA: Darin McNeil | Is the passerine superradiation defined by a unique growth hormone gene duplication? Rasband S, Bolton PE, Fang Q et al. PA: Shauna Rasband | Changing patterns of nest predation and predator communities along a tropical elevation gradient, Londoño GA, Sánchez-Martínez MA, Gomez JP et al. , PA: Gustavo Londoño Are birds ever *really* limited by temperature?, Socolar JB , PA: Jacob Socolar 100-year resurvey of Mexico shows differential impact on montane vs. lowland avifaunas to climate change and land use, Terrill RS, Tingley MW, McCormack JE et al. , PA: Ryan Terrill |
| 14:52 | Initial evaluation of avian use of agricultural cover crops during the winter, migration stopover, and the breeding season in Tennessee Panos B, Buehler D, Harper C PA: Brittany Panos | Spatial variation in population genomic responses to anthropogenic change within tidal marsh populations of the Savannah Sparrow Benham PM, Walsh J, Bowie RCK PA: Phred Benham | Increasing temperatures are driving population declines in a biodiversity hotspot indicator species, the Cape Rockjumper (<i>Chaetops frenatus</i>), Oswald KN , PA: Krista Oswald The escalator race: Ecological correlates of elevational range shifts in tropical birds, Neate-Clegg MHC, Jones SEI, Tobias JA et al. , PA: Monte Neate-Clegg Questions and discussion |
| 15:05 | Balancing conservation priorities for grassland and forest specialist bird communities in an agriculture-dominated landscape Alavi N, de Zwaan DR, Mitchell G et al. PA: Nilofar Alavi | Questions and discussion | Questions and discussion |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion |

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Friday morning, 13 August 2021, 10:00-11:30 EDT

| | 1 | 2 | 3 | 4 |
|-----------|---|--|---|--|
| Session | Symposium: How birds sense the world – 1 | Symposium: Diversity, equity, inclusion, and justice: Research and practice in bird conservation | Symposium: Multi-species conservation planning in the face of widespread declines of North American avifauna: Exploring opportunities and avoiding pitfalls – 3 | Contributed papers: Molt and plumage |
| 10:00 EDT | Not only pigeons: Avian olfactory navigation studied by satellite telemetry Bonadonna F, Gagliardo A PA: Francesco Bonadonna | Bias in birdwatchers: Does neighborhood incomes affect estimates of bird richness? Perkins DJ, Cooper CB, Katti M PA: Deja Perkins | The Partners in Flight Focal Species Approach: Using multispecies indicators to inform oak woodland conservation planning and implementation in the Klamath Siskiyou Bioregion of southern Oregon and northern California Alexander JD, Gillespie CR, Halstead KE et al. PA: John Alexander | The cost of reproduction does not affect moult feather quality in Thick-billed Murres (<i>Uria lomvia</i>) MacDonald EC, Patterson A, Elliott KH PA: Emily MacDonald |
| 10:13 | *A global screen for magnetic field-driven neuronal activity in the pigeon brain Nordmann GC, Balay SD, Nimpf S et al. PA: Gregory Nordmann | Ethno-racial and social patterns in birdwatcher specialization Rutter JR, Dayer AA, Duberstein JN et al. PA: Jonathan Rutter | Multi-species conservation planning for declining grassland bird populations in Prairie Canada Robinson BG, Ball JR PA: Barry Robinson | *Climate variation influences the timing of the adult pre-basic molt among four passerine species in northern California Tattoni DJ, Hendershot JN PA: D. Julian Tattoni |
| 10:26 | Functional evolution of avian taste receptors Baldwin MW, Toda Y PA: Maude Baldwin | Moving beyond barriers to enacting DEI in conservation Morales N PA: Nia Morales | A habitat and biodiversity assessment tool to prioritize multi-species conservation actions on agricultural lands Blouin F, Wilmshurst JF, Harder J et al. PA: Francois Blouin | Does living in the city make Northern Cardinals change color? Baldassarre DT, Drzewiecki KM PA: Daniel Baldassarre |
| 10:39 | The form and function of avian rectal bristles Delaunay MG, Larsen C, Grant RA PA: Robyn Grant | "Life as a 'blirder" — how the intersectionality of motives, benefits, and values can help BIPOC birders exist in the field Newberry, III MG PA: Milton Newberry | Listen, Learn, Liaise: Replacing the three S's with the three L's for successful multispecies conservation programs Downey B et al. PA: Brad Downey | The mechanical design of woodpecker tails as an adaptation to scansorial habits Poledri BL, Lijtmaer DA, Tubaro PL PA: Brenda Poledri |
| 10:52 | Molecular analysis of mechanoreceptors in the domestic duck bill (<i>Anas platyrhynchos</i>) Hart TR, Flynn JA, Schneider ER PA: Eve Schneider | Representative public science: How two black grad students are making science accessible to all Burgess M, Pharr L, Cooper C PA: Lauren Pharr | Lessons from flyway-scale shorebird conservation planning Clay RP, Johnston S, Gates R et al. PA: Rob Clay | What do we really know about the water repellency of feathers? Muzio FM, Rubega MA PA: Frank Muzio |
| 11:05 | The avian lumbosacral organ and the potential for balance sensation in the spinal cord Stanchak KE, Miller KE, Lumsden EW et al. PA: Kathryn Stanchak | Addressing barriers to diversity in bird conservation Bonfield SB, Dorta D, Diaz-Mendez S et al. PA: Susan Bonfield | An overview of the Eastern Habitat Joint Venture multi-species conservation planning Hanson A, Morais T PA: Alan Hanson | Questions and discussion |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Friday morning, 13 August 2021 (continued)

| | 5 | 6 | 7 | 8 |
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| Session | Contributed papers: Behavior 3 | Contributed papers: Breeding biology 3 | Contributed papers: Conservation 6 | Contributed papers: Genomics 2 |
| 10:00 EDT | Working hard or hardly working: A review of diurnal and nocturnal activity budgets suggests inactivity is a common behavior in free-living birds Hodinka BL, Williams TD PA: Brett Hodinka | A call for fully accounting for effects of nest age when quantifying nest survival Weiser EL PA: Emily Weiser | Conspecific attraction for conservation and management of terrestrial breeding birds: Current knowledge and future research directions Valente JJ, LeGrande-Rolls CL, Rivers JW et al. PA: Jonathon Valente | Parallel genomic signatures of local adaptation across a continental-scale environmental gradient in two North American woodpeckers Moreira LR, Smith BT PA: Lucas Rocha Moreira |
| 10:13 | *Offspring provisioning effort in European Starlings (<i>Sturnus vulgaris</i>) during the nestling rearing period Ozbek S, Barber C PA: Sara Ozbek | Early environment and condition dependence in a lifelong sexual signal: Gene expression and melanin color in Barn Swallows Hund AK, Turbeck SP, Safran RJ et al. PA: Amanda Hund | Local grassland bird declines were not explained by long-term changes in reproductive output Smith DJ, Silber KM, Williams EJ et al. PA: Dylan Smith | *Variable hybridization across multiple Red-breasted x Red-naped Sapsucker hybrid zones Natola L, Irwin DE et al. PA: Libby Natola |
| 10:26 | Nestling provisioning of Gray Catbirds: Do males play a larger role than expected? Medica JJ, Redmond LJ PA: Lucas Redmond | *Body temperature and reproductive effort in a long-lived tropical songbird Jackson HR, Martin TE PA: Holly Jackson | Is hay for the birds? Investigating landowner willingness to time hay harvests for grassland bird conservation Gruntorad MP, Graham KA, Arcilla N et al. PA: Nico Arcilla | Sex-linked inversion underlies divergence between the Golden-crowned Sparrow (<i>Zonotrichia atricapilla</i>) and the White-crowned Sparrow (<i>Zonotrichia leucophrys</i>) McCallum Q, Askelson K, Fogarty F et al. PA: Quinn McCallum |
| 10:39 | Enhancing tropical avian behavioral ecology via ddRAD-seq: Genetic mating system of the Black Catbird (<i>Melanoptila glabrirostris</i>) as a case study LaPergola JB, Riehl CP, Roldán-Clarà B et al. PA: Joshua LaPergola | Egg-laying order, maternal effects, and embryonic growth in American Robins (<i>Turdus migratorius</i>) Winnicki SK, Benson TJ, Paitz RT et al. PA: Sarah Winnicki | Using citizen science to optimize spatial conservation planning for grassland birds Nunes LA, Ribic CA, Zuckerberg B PA: Christine A. Ribic | Variations in genomic architecture among Horned Larks (<i>Eremophila alpestris</i>) along an elevational gradient in western USA Shakya SB, Wang-Claypool CY, Cicero C et al. PA: Subir Shakya |
| 10:52 | Seeking shelter: Winter weather constrains the behavioral flexibility of a winter-adapted bird Shiplee AA, Zuckerberg B PA: Amy Shiplee | Variation in breeding timing and habitat drive age-specific reproductive success of the endangered Golden-cheeked Warbler (<i>Setophaga chrysoparia</i>) Jukkala GL, Sperry JH, Ward MP PA: Gabriella Jukkala | Drivers of fatal bird collisions in an urban center Van Doren BM, Willard D, Hennen M et al. PA: Benjamin Van Doren | Characterizing genomic patterns of divergence in non-model avian systems: Which sequencing method is best? Szarmach SJ, Toews DPL et al. PA: Stephanie Szarmach |
| 11:05 | Northern Bobwhite breeding movements, survival, and the cost of reproduction Behney AC PA: Adam Behney | Modeling breeding phenology from the North American Breeding Bird Survey Sauer JR, Link WA PA: John Sauer | Rethinking invasion theory and practice: A case study in the European Starling (<i>Sturnus vulgaris</i>) Hofmeister NR PA: Natalie Hofmeister | Questions and discussion |
| 11:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

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Friday afternoon, 13 August 2021, 14:00-15:30 EDT

| | 1 | 2 | 3 | 4 |
|-----------|---|---|---|---|
| Session | Symposium: How birds sense the world – 2 | Symposium: Using social science to understand and shape human behaviors related to birds and their conservation | Contributed papers: Annual cycle | Contributed papers: Ecology 5 |
| 14:00 EDT | Avian infrasonic sensitivity: Is this a niche ability, or pervasive sensory phenomenon? Hill EM PA: Evan Hill | Advancing scientific knowledge and conservation of birds through inclusion of conservation social sciences Dayer AA, Barnes JC, Dietsch AM et al. PA: Ashley Dayer | Evidence of nomadic behavior in Black-billed and Yellow-billed Cuckoos and implications for conservation strategies Johnson C, Benson TJ PA: Claire Johnson | A post-fledging perspective: Does parent-offspring conflict help mediate the age of fledging in songbirds? Jones TM, Ward MP et al. PA: Todd Jones |
| 14:13 | A private channel of communication: High-frequency vocalizations and hearing in hummingbirds Duque FG PA: Fernanda Duque | Understanding attitudes and norms of beach recreationists to reduce disturbances to shorebirds Comber CA, Dayer AA PA: Carolyn Comber | How the timing of long-distance migration in songbirds responds to an experimental manipulation of photoperiod in the wild Bani Assadi S, Fraser KC PA: Saeedeh Bani Assadi | Long-term capture data reveal temporal shifts in activity patterns of Amazonian birds Rutt CL, Cooper WJ, Luther DA PA: Cameron Rutt |
| 14:26 | Audition of Northern Saw-whet Owls (<i>Aegolius acadicus</i>) Gall MD, Proudfoot GA PA: Megan Gall | Supporting durable grassland habitat conservation through farm bill programs using social-ecological systems science Barnes JC, Dayer AA, Iovanna R et al. PA: Jessica Barnes | Arrival time and habitat use of migratory birds wintering in northern Ghana, West Africa Boakye Yiadom S, Goded S, Arcilla N et al. PA: Samuel Boakye Yiadom | Expansion and contraction of ecological niche space drives the disassembly of cloud forest bird communities in tropical montane countrysides Ausprey IJ, Newell FL, Robinson SK PA: Ian Ausprey |
| 14:39 | The neural encoding of optic flow differs among bird species with distinct flight modes Altshuler DL, Gaede AH, Wylie DR PA: Doug Altshuler | Stakeholder perceptions as an essential tool for Golden Eagle conservation in the American West McGough LM, Wallen KE, Bickford NA PA: Lauren McGough | Breeding habitats, phenology and size of a resident population of Two-banded Plover (<i>Charadrius falklandicus</i>) at the northern edge of its distribution Faria FA, Repenning M, Nunes GT et al. PA: Fernando Faria | Foraging and aggression of non-breeding shorebirds on a habitat mosaic — Bulls Island, South Carolina Jamieson EG, Sanders F, Nol E PA: Ellen Jamieson |
| 14:52 | Integrating visual and somatosensory information in the avian brain Wylie DR, Gutierrez-Ibanez C, Fernandez M et al. PA: Douglas Wylie | How participation in community science on private lands influences participants' conservation behaviors Green RE, Dayer AA, Johnson AEM PA: Rachael Green | Full annual cycle of a small migrating songbird species, the Golden-crowned Sparrow, tracked with GPS Iverson AR, Cormier RL, Humple DL PA: Autumn Iverson | Examining avian species richness, diversity, and turnover in a private working forest Bracken RD, Greene DU, Miller DA et al. PA: Rebecca Bracken |
| 15:05 | Estimating the sensory abilities of extinct species Iwaniuk AN PA: Andrew Iwaniuk | Questions and discussion | North American waterfowl migratory connectivity across flyways Scarpignato AL, Roberts AJ, Huysman A et al. PA: Amy Scarpignato | Changes in forest structure and nesting behavior of Hawai'i 'elepaio over 25 years Jaenecke KA, Banko PC PA: Kelly Jaenecke |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

* indicates student presenters eligible for a Student Presentation Award; "PA" indicates Presenting Author

Friday afternoon, 13 August 2021 (continued)

| | 5 | 6 | 7 | 8 |
|------------------|--|---|---|---|
| Session | Contributed papers: Evolution 3 | Contributed papers: Population biology 2 | Contributed papers: Models and methods 3 | Contributed papers: Migration and stopover 4 |
| 14:00 EDT | Ecomorphological data suggests variable impacts of adaptation, allometric change, and historical contingency during the evolution of skull shape in shorebirds (order: Charadriiformes) Natale RN, Slater GJ PA: Rosy Natale | Using integrated population models to understand drivers of population change over 55 years in two species of Finnish owls Francis CM, Saurola P PA: Charles Francis | eBird status and trends update: Distributions, abundances, and habitat associations for 800+ species Auer T, Fink D, Johnston A et al. PA: Tom Auer | Comparing migration timing, rate, and routes between populations of Canada Geese (<i>Branta canadensis</i>) and Cackling Geese (<i>Branta hutchinsii</i>) breeding at different latitudes Neufeld LR, Baldwin F, Fraser KC PA: Leanne Neufeld |
| 14:13 | Evolutionary implications of genetic variation around Amazonian rivers: A case study of the Blue-crowned Manakin Moncrieff AE, Faircloth BC, Brumfield RT PA: Andre Moncrieff | Landscape structure and habitat change affects the abundance and distribution of wintering Neotropical migratory shorebirds Herbert JA, Mizrahi D, Gunn G et al. PA: John Herbert | An update on the use of drones to study and conserve birds Bird DM PA: David Bird | The hormone ghrelin affects migratory behaviour in a migratory wood-warbler Lupi S, Morbey YE, Kaiya H et al. PA: Sara Lupi |
| 14:26 | The evolution of Darwin's finches: Whole-genome sequencing of an entire community of finches on Daphne Island Enbody ED, Sprehn CG, Andersson L et al. PA: Erik Enbody | Metapopulation dynamics of adult Northern Great Plains Piping Plovers Swift RJ, Anteau MJ, Ellis KS et al. PA: Rose Swift | Combining point counts and autonomous recording units improves avian survey efficacy in temperate mountain habitats of the Americas Drake A, de Zwaan DR, Altamirano TA et al. PA: Anna Drake | Irruption of White-breasted Nuthatches when mast yields are low in the northeast Heveran PH, Dreelin A, Dunn EH et al. PA: Paul Heveran |
| 14:39 | Genetic similarity of New Guinea parrotfinches suggests that they are not two species DeCicco LH, DeRaad DA, Hime PM et al. PA: Lucas DeCicco | Long-term demography of a reintroduced and isolated population of endangered falcons Rolek BW, Pauli B, McClure CJW et al. PA: Brian Rolek | Modeling the spatial patterns in trends, and covariates of trends, for North American bird populations Smith AC PA: Adam C. Smith | Nocturnal roost on South Carolina coast supports nearly half of Atlantic coast population of Hudsonian Whimbrel (<i>Numenius phaeopus</i>) during northward migration Sanders FJ, Handmaker MC et al. PA: Maina Handmaker |
| 14:52 | Using range edges to understand drivers of avifaunal divergence on the Thai-Malay Peninsula Oong Z, Reddy S PA: Zheng Oong | Social network structure in winter flocks involving chickadees and titmice in New York Boyle MN, Bonter DN, Curry RL PA: Margaret Boyle | Rate of avian telomere shortening across DNA sample types Mason NM PA: Noelle Mason | Effects of space weather on radar-detected bird migration Gulson-Castillo ER, Van Doren BM, Winger BM et al. PA: Eric Gulson-Castillo |
| 15:05 | Opposing dominance within a color gene block is associated with maladaptive hybrid signal discordance de Zwaan DR, Mackenzie J, Wang S et al. PA: Silu Wang | Demographic inference of commensal swallows in southeast Asia and Oceania Myers BM, Hund AK, Friedman N et al. PA: Brian Myers | Questions and discussion | Morphology of migration: Associations between wing shape, bill morphology, and migration in kingbirds (<i>Tyrannus</i>) MacPherson M, Jahn A, Mason N PA: Maggie MacPherson |
| 15:18 | Questions and discussion | Questions and discussion | Questions and discussion | Questions and discussion |

* indicates student presenters eligible for a Student Presentation Award; "PA" indicates Presenting Author

Symposia

Addressing aerial insectivore declines in the Western Hemisphere

Organizers: Tara L. Imlay and Kevin Kardynal

Tuesday, 10 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Wednesday, 11 August 2021: 10:00 – 11:30 EDT

North America avian aerial insectivores have undergone steep population declines over the past half century. This symposium features a diverse group of speakers who will provide overviews of research examining evidence for the role of climate change, aerial insects, and agricultural intensification on population trends of aerial insectivores, population models that deliver insight into the limiting periods and demographic rates for aerial insectivores, and the threats to species during the breeding and non-breeding periods. This symposium also introduces a research group working collaboratively to address some of the key questions on aerial insectivore declines and their conservation. Through these presenters, we provide diverse perspectives on aerial insectivore declines to create a thought-provoking, inclusive, and focussed symposium that highlights the importance of working together on issues facing aerial insectivore populations.

Advances in the study of reproductive isolation in birds

Organizers: Leonardo Campagna and J. Albert C Uy

Wednesday, 11 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Thursday, 12 August 2021: 10:00 – 11:30 EDT

The biological species concept defines species based on the evolution of reproductive isolation. Therefore, to better understand the speciation process researchers need to study the evolution of barriers that prevent gene flow between divergent populations. This symposium will explore advances in our understanding of how barriers to gene flow are established. We will cover barriers that act before mating, or prezygotic barriers, such as behavioral changes that affect mating signals, changes in foraging or migration behavior, and reproductive timing. We will also focus on the postzygotic barriers that act after mating, such as selection against hybrids displaying intermediate phenotypes or the evolution of genetic incompatibilities, chromosomal rearrangements and neo-sex chromosomes. We will explore when in the speciation process these different barriers may arise, their relative strength and likely prevalence in nature. We also aim to include both empirical and theoretical examples, and taxa from different biogeographic regions of the world where different types of reproductive barriers may be at play. We expect the symposium to appeal widely to evolutionary biologists, but also to those interested in behavioral ecology, genetics and genomics.

A bird's eye view of the microbiome

Organizers: Brian K. Trevelline, Elin Videvall, and Kevin Kohl

Tuesday, 10 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Wednesday, 11 August 2021: 10:00 – 11:30 EDT

A recent surge in research has demonstrated that the microbiome—the archaeal, bacterial, fungal and viral communities residing on and inside organisms—profoundly influence host health and performance through their impacts on the immune system, digestion, development, and behavior. However, most of these investigations have focused on humans or model organisms. While research into roles that microbes play in the ecology and evolution of their hosts is a rapidly growing area, the importance of the gut microbiome in birds is poorly understood. This symposium brings together researchers that investigate avian host-microbe interactions in a variety of natural and experimental systems, addressing questions that span several areas of ornithological research. This symposium will expose attendees to a wide-breadth of theory, cutting-edge research, and applications of microbiome science as it

applies to birds, covering topics such as avian digestive physiology and immunity, phyllosymbiosis, microbiome assembly, developmental plasticity, environmental and nutritional effects, seasonal variation, correlates with host fitness, and applications to conservation practices.

Diversity, equity, inclusion, and justice: Research and practice in bird conservation

Organizers: Judith Scarl, Deja Perkins, Jonathan Rutter, Ashley A. Dayer, Jennie Duberstein, Dr. Nia Morales, Murry Burgess, Lauren D. Pharr, Caren B. Cooper, Susan Bonfield, Sheylda Diaz-Mendez, and Dalia Dorta

Friday, 13 August 2021: 10:00 – 11:30 EDT

The ornithological community, including amateur birdwatchers as well as professional scientists and conservationists, has historically not reflected the diversity of the demographics in the United States. Increasingly, outdoor recreation organizations are exploring barriers to participation in birdwatching and related outdoor activities for diverse constituencies, and conservation groups are seeking to improve representation and inclusion within the conservation field. This symposium will explore the relationship between race, ethnicity, and engagement in amateur and professional activities focused on birds. It will highlight research on factors influencing how different groups engage with birds and the outdoors, and it will showcase models of how individuals and organizations are using data-driven approaches to serve and include broader communities in conservation and outdoor recreation.

Great R packages for ornithologists (lightning symposium)

Organizer: Stefanie LaZerte

Tuesday, 10 August 2021: 10:00 – 11:30 EDT

R is powerful free and open-source software (FOSS) for statistical programming. Because R is FOSS it reduces financial barriers to conducting science and is therefore used by ornithologists all over the world with different backgrounds and experiences. R can be extended with “packages” developed by this community, but exploring the thousands of packages available can be overwhelming. In this lightning symposium speakers will introduce ornithologists to a range of useful R packages from general, to domain, to specialized. First, we introduce how to find packages in general, next we have 14 presentations featuring specific packages and their applications to avian studies. We end with an introduction to a new ornithology task view (a curated package collection). This will lead to a discussion of other packages ornithologists use or would like to see developed.

How birds sense the world

Organizer: Andrew N. Iwaniuk

Friday, 13 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Sensory systems dictate how birds experience and interact with the world around them. Determining the acuity and sensitivity of the senses and how different species use sensory information is therefore incredibly important for understanding the behavior and ecology of birds, including their conservation and management. In recent years, there has been an explosion of research into avian senses, but it is widely dispersed across disciplines and approaches. The aim of this symposium is to bring these diverse researchers together to showcase recent advances and the various methods used to study the sensory abilities of birds. In doing so, the symposium will provide a unique and integrative view of the sensitivity and acuity of the senses across all birds. The list of topics to be covered includes: vision in predatory species, motion detection, sound localization, ultrasonic and low frequency hearing, the sense of touch in the beak and facial bristles, olfactory navigation, magnetoreception, the senses of taste and balance, and the sensory abilities of extinct and endangered species. Within these topics, the speakers will cover molecular, physiological, anatomical, evolutionary, and behavioral approaches and discuss the implications of their research for understanding avian sensory abilities as well as avian evolution, ecology, management, and conservation.

Juveniles on the move: Advancing our understanding of dispersal ecology and the mechanisms and outcomes of natal dispersal in birds

Organizers: Matthew Furst and Young Ha Suh

Thursday, 12 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Natal dispersal, the movement of individuals from their birthplace to their breeding location, is a process that significantly influences individual survival and lifetime reproductive success, and serves as the main mechanism for gene flow within a population. Its ecological and evolutionary significance makes natal dispersal central to many questions in theoretical and applied ecology. Historically, dispersal has been understudied due to limitations with following individuals over time and space. However, due to recent advances in telemetry, molecular, and re-sighting techniques, studies on natal dispersal have been increasing in frequency and scope, shedding critical new light on the movements of young animals. In this symposium, individuals specializing in dispersal ecology will present cutting-edge research investigating causes and consequences of natal dispersal. Connecting individual movement to population processes, talks will explore a wide array of methods and applications for studying natal dispersal patterns in wild bird populations. Speakers will present research that examines the mechanisms and demographic consequences of avian natal dispersal strategies. The symposium will end with a half-hour discussion, in which panel speakers and other attendees can discuss approaches and considerations for field and analytical methods used to study natal dispersal.

Lessons learned in lockdown: Impacts of the COVID-19 pandemic on birds

Organizer: Michael B. Schrimpf

Wednesday, 11 August 2021: 14:00 – 15:30 EDT

During the first wave of the COVID-19 pandemic in the spring of 2020, a series of lockdowns upended day-to-day life and dramatically altered the global human footprint. This unprecedented moment in human history presented both challenges and opportunities for ornithologists around the world. While lockdowns forced many researchers to rethink plans to conduct field and laboratory studies, they also created a natural, global experiment—a once-in-a-lifetime chance to observe how birds respond to changes in human behavior. Ornithologists around the world leveraged the event to learn more about how travel, commerce, and other human activities impact birds and explored how lockdowns shaped community science. Together, they found creative ways to advance ornithology and avian conservation. In this session, speakers will discuss how COVID-19 lockdowns affected the distribution, behavior, and reproductive success of birds, compare and contrast responses among species and geographic locations, and highlight impacts of the pandemic on data collection. Speakers will explore how avian responses to COVID-19 lockdowns can inform future conservation efforts, especially in urban environments where impacts were felt the most. The session will include five invited talks followed by a 15-minute discussion period to facilitate planning future international, collaborative efforts to study the short- and long-term consequences of the pandemic on birds and lessons learned for avian conservation.

Multi-species conservation planning in the face of widespread declines of North American avifauna: Exploring opportunities and avoiding pitfalls

Organizer: Barry Robinson

Thursday, 12 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Friday, 13 August 2021: 10:00 – 11:30 EDT

The estimated loss of 3 billion birds in North America over the last 50 years represents a crisis. While some taxa have declined more significantly than others, most biomes across North America have had a net loss of birds over this time. As a result, there is an urgent need for broad-scale, multi-species conservation action now to stem further

losses. The objective of this symposium is to address the loss of 3 billion birds by improving the efficiency and efficacy of conservation delivery through multi-species planning. We will present and discuss real world examples of multi-species conservation action targeting bird populations in different biomes to share ideas, stimulate innovation and identify potential barriers to success. Presentations will cover (1) theory, best practices and policies related to multi-species conservation planning, (2) the development of multispecies plans from an objective statement to an actionable plan, and (3) real-world examples of implementation.

Resilient Caribbean birds: Surviving and thriving in a challenging world

Organizers: Lisa G. Sorenson and Adrienne G. Tossas

Wednesday, 11 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Thursday, 12 August 2021: 10:00 – 11:30 EDT

The insular Caribbean is recognized as one of the top five global biodiversity conservation hotspots, yet this important region's wildlife face numerous threats, from destruction of habitats for development to more frequent and extreme weather events exacerbated by climate change. The region is of exceptional importance to birds, hosting 171 endemic species and serving as a key migratory route for more than 100 migrants whose journeys between the North and South American mainlands depend on quality habitat throughout the islands. BirdsCaribbean and its large network of partners across the Caribbean have recognized that in order for birds and their habitats to survive and thrive during these times of rapid change, conservationists and communities must share resources, collaborate, and flock together to stem the tides of avian loss. During our symposia, members of the BirdsCaribbean community—scientists, conservationists, students, and volunteers—will share their work and lessons learned on building resilience for the region's resident and migratory bird species. The diversity of research and accomplishments showcased in this symposium is a testament to the region's tenacious spirit, comradery, resourcefulness, and inherent passion for their natural world. It is also a testament to the resilience of birds—that many species of birds can survive if we give them the chance to do so, by alleviating threats, protecting habitats, and engaging communities in conservation.

The evolutionary ecology and conservation of mega-diverse tropical montane avifaunas (lightning symposium)

Organizer: Benjamin Freeman

Thursday, 12 August 2021: 14:00 – 15:30 EDT

This symposium showcases research on montane birds in the tropics and subtropics around the globe. Tropical mountains are Earth's hottest biodiversity hotspots; this spectacular diversity is the result of species living within relatively narrow elevational distributions. A focus on elevational distributions - how they evolve, and the factors that limit species to restricted elevational zones - thus helps us understand major patterns in biodiversity. Moreover, these fundamental ideas have taken on renewed relevance in the climate change era, as warming temperatures are predicted to cause species to shift their elevational distributions upslope, potentially setting in motion an "escalator to extinction" that threatens the persistence of high elevation populations and species. In sum, this symposium will examine the evolution, ecology and conservation of the most species-rich avifaunas on Earth, addressing how this diversity – birds of many feathers – originated and how it is faring in the Anthropocene.

Using social science to understand and shape human behaviors related to birds and their conservation

Organizers: Jessica Cavin Barnes and Ashley A. Dayer

Friday, 13 August 2021: 14:00 – 15:30 EDT

Across ecological landscapes and bird guilds, bird conservation is heavily influenced by cultural, legal, political, economic, and social factors. Ornithologists, ecologists, and conservation practitioners increasingly recognize the need to flock together with social scientists to effectively address many of the most significant threats to birds, including habitat loss, overharvesting, and invasive species. In 2020, the American Ornithological Society (AOS) issued an explicit invitation for social science submissions to Ornithological Applications, building from recommendations by Dayer et al. (2020) to increase inclusion of the social sciences in AOS. This symposium maintains momentum behind the inclusion of social sciences in AOS activities by drawing attention to the value of social science theories, methods, and insights for understanding and shaping human behaviors that impact bird conservation on private and public lands. The studies presented in this session use a variety of social science lenses and methods and span diverse North American landscapes, including the American West, southern Great Plains, Atlantic Flyway, and working lands of Virginia. This symposium provides insights for engaging birders, beach users, private landowners, and community scientists as key stakeholders in the conservation of rare and common birds, and highlights ways in which inclusion of social scientists in the bird conservation flock can support data-driven and innovative conservation.

What is next in Amazonian biogeography research?

Organizers: João Marcos Guimarães Capurucho and Gregory Thom

Tuesday, 10 August 2021: 10:00 – 11:30 and 14:00 – 15:30 EDT

Amazonia is the most biodiverse region on the planet, and around 13% of all bird species can be found there. For centuries, the high number of species and intricate patterns of distribution have served as a laboratory for the development of many diversification hypotheses that shaped historical biogeography. However, Amazonian biogeography is changing, catalyzed by the increased availability of environmental data, detailed geological models, and the development of large molecular datasets. We present recent advances in Amazonian biogeography, focusing on new approaches and the application of recently developed tools to understand the patterns of avian diversity and processes that generate them. The symposium highlights the importance of exploring overlooked environments such as floodplains and open vegetation habitats and shows how genomic tools are being used to establish new hypotheses about the drivers of species formation. Finally, we discuss the current gaps in taxonomic and biogeographic knowledge. Amazonia is facing record high deforestation, pressure from illegal mining, and political negligence. To preserve the future of the forest we need to improve our knowledge about its biodiversity through increased incentives for research in the region and formation of local and international collaboration networks.

Roundtable Discussions

A mixed flock: LGBTQIA+ narratives within ornithology

Tuesday, 10 August 2021: 16:00 – 17:00 EDT

What unique barriers and considerations are there for LGBTQIA+ identified ornithologists? We propose a LGBTQIA+ identified panel to discuss their work, experiences, and personal stories and how the intersection of their personal identities influences their career. Featured panelists will briefly share their unique experiences, then cover key discussion points such as how their LGBTQIA+ identity has influenced their relationship with their profession and/or research, how to effectively increase inclusion of diverse narratives within ornithology, and what effective allyship means for underrepresented individuals. Following the formal discussion, the panel will shift to open audience questions and discussion with the panelists for the remaining duration of the roundtable. It is our intention to establish an inclusive and welcoming space to discuss sometimes difficult topics related to personal identity within our profession. A panelist discussion will lead to increased awareness of the work conducted and the issues faced by queer ornithologists, which represent a hidden diversity of the ornithological community. The results from our conversation will be used to inform efforts to increase the inclusion and visibility of LGBTQIA+ ornithologists.

Panelists

- Dr. Carly Aulicky, Native Prairies Association of Texas
- Chad Wilhite, University of Hawaii at Manoa
- Scott Alan Taylor, University of Colorado
- Kristen Covino, Loyola Marymount University

Birds of the World: Contribute your expertise!

Tuesday, 10 August 2021: 16:00 – 17:00 EDT

Birds of the World (BOW) is the most comprehensive reference for the life histories of the World's 10,700+ bird species and the web's premiere resource for digital natural history. This roundtable seeks to engage ornithologists to contribute their information and expertise to species accounts. We will demonstrate recent advances of BOW species accounts, including new multimedia capabilities and integration of data products. A discussion will follow the demonstration with topics to include: the process of species account revisions and updates, contributions and authorship, community engagement, and suggestions for future developments.

Panelists

- Brooke Keeney, Cornell Lab of Ornithology
- Paul Rodewald, Cornell Lab of Ornithology
- Shawn Billerman, Cornell Lab of Ornithology
- Laura Kammermeier, Cornell Lab of Ornithology

Drone applications for ornithology

Thursday, 12 August 2021: 16:00 – 17:00 EDT

Ornithologists are relying on an ever-increasing suite of tools to answer questions and solve problems related to avian ecology. The use of unmanned aerial vehicles, or drones, has exploded in popularity in ecological studies in general, and in ornithology in particular. Drones have many advantages over traditional research techniques. They eliminate safety risks associated with fixed-wing and helicopter surveys, reduce cost and disturbance, increase accuracy, and allow the collection of high-resolution data over large or otherwise inaccessible areas. Some of the major areas of application of drones that have emerged in avian ecology include, but are not limited to: 1) population

surveys, including breeding colonies and non-breeding aggregations and the use of different types of sensors (e.g. visible, thermal IR); 2) individual nest inspections; 3) radio-tracking surveys involving the use of radio telemetry sensors; (4) acoustic surveys, involving the use of song-recording sensors; 5) avian habitat research and monitoring involving high-resolution 2D and 3D mapping and multi- and hyperspectral imaging; and 6) bird dispersal, either for nuisance birds or to deter birds from hazards. This Roundtable Discussion provides highlights of the use of drones in avian ecology and a forum for discussion among both experts and potential users of drones that may result in future research collaborations between ornithologists in academic, government, and private sectors.

Panelists

- Dr. David Bird, McGill University: Drones Becoming a Popular Tool for Ornithologists
- Rick Spaulding, ManTech International: The Wildlife Society Drone Working Group
- Dr. Susan Ellis-Felege, University of North Dakota: Breeding Waterfowl Responses to Drone Surveys
- Dr. Lindsay Young, Pacific Rim Conservation: Using Thermal-imaging Drones to Survey Cryptic Burrow-nesting Seabirds
- Craig Gibson, The Crow Patrol: Using a Drone to Monitor a Winter Crow Roost
- Dr. Page E. Klug, USDAAPHIS WS NWRC: Drones as a Tool for Managing Birds in Conflict with Agriculture
- Dr. Jared Elmore, Mississippi State & USDA: Systematic Map Effort of Using Drones to Monitor Birds
- Dr. Elston Dzus: Conventional vs. Drone-assisted Nest Checks of Bald Eagles in Northern Saskatchewan, Canada

Identifying and overcoming the challenges that hinder avian microbiome research

Wednesday, 11 August 2021: 16:00 – 17:00 EDT

A recent surge in research has demonstrated that the microbiome—the archaeal, bacterial, fungal and viral communities residing on and inside organisms—profoundly influence host health and performance through their impacts on the immune system, digestion, development, and behavior. However, most of these investigations have focused on humans or model organisms. While research into roles that microbes play in the ecology and evolution of their hosts is a rapidly growing area, the importance of gut microbiome in birds is poorly understood. Therefore, we propose a roundtable discussion that brings together researchers that investigate avian host-microbe interactions, with the aim of identifying and addressing the challenges that impede research on the avian microbiome.

Panelists. Speakers in the companion microbiome symposium will be participating in this roundtable:

- Elin Videvall, Postdoc, Brown University
- Bill Karasov, Professor, University of Wisconsin-Madison
- Kirk Klasing, Professor, University of California Davis
- Sarah Hird, Assistant Professor, University of Connecticut
- Marcella Baiz, Postdoc, Pennsylvania State University
- Felipe Campos-Cerda, Postdoc, Instituto de Ecología-UNAM
- Jennifer Houtz, PhD Student, Cornell University
- Brian Trevelline, Postdoc, Cornell Lab of Ornithology
- Maurine Dietz, Research Associate, University of Groningen
- Morgan Slevin, PhD Student, Florida Atlantic University
- Sarah Knutie, Assistant Professor, University of Connecticut
- Gabrielle Davidson, Postdoc, University of Cambridge
- Pierce Hutton, PhD Student, Arizona State University
- Priscilla San Juan, PhD Student, Stanford University
- Maria Costantini, Postdoc, Smithsonian Institution
- Kevin Kohl, Assistant Professor, University of Pittsburgh

Meet the editors

Tuesday, 10 August 2021: 16:00 – 17:00 EDT

Everyone is welcome to this session to meet the Editors-in-Chief, Senior Editors, and Managing Editor for the AOS journals, *Ornithology* and *Ornithological Applications*. This session will be particularly helpful for students and early career professionals. The editors will discuss what they are looking for in submitted manuscripts and how to increase the chances a manuscript will be reviewed favorably. After comments by the editors, the session will be devoted to questions from the audience.

Panelists

- Catherine Lindell, *Ornithological Applications* Editor
 - Scott Sillett, *Ornithology* Editor
 - Mark Penrose, Managing Editor, AOS journals
 - Special Features Editor Kate Huyvaert and Senior Editors Wesley Hochachka, Christy Pruett, and Paul Doherty will also likely be in attendance.
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Professional ethics town hall

Wednesday, 11 August 2021: 16:00 – 17:00 EDT

The professional ethics town hall event is an annual “listening session” on the topics of professional ethics and professional responsibility relevant to ornithologists. All attendees are invited to participate to express their perspectives, discuss emerging topics, and voice their questions, concerns and suggestions about issues relevant to professional ethics. The town hall is organized by the AOS Professional Ethics Committee.

Panelists

- Jeff Brawn - University of Illinois at Urbana-Champaign
 - Jeanne Fair - Los Alamos National Laboratory
 - Katie Dugger- Oregon State University
 - Corey Tarwater - University of Wyoming
 - Rob Fleischer - Smithsonian
 - Kristen Covino - Loyola Marymount University
 - Reed Bowman - Archbold Biological Station
 - Jen Walsh - Cornell University
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What "Open Science" means for publishing now and in the future

Thursday, 12 August 2021: 16:00 – 17:00 EDT

The editors-in-chief and managing editor of the AOS journals *Ornithology* and *Ornithological Applications*, and the publisher from Oxford University Press, will engage with conference attendees in this session. We will explore the implications of the advent of open science for publication of manuscripts, data, code, and other facets of the publishing process like preprint servers. We will discuss the benefits, costs, and potential ways to manage the costs, of open science.

Panelists

- Ayesha Saldanha, Oxford University Press (publisher for AOS journals)
 - Catherine Lindell, EIC *Ornithological Applications*
 - Scott Sillett, EIC *Ornithology*
 - Mark Penrose, Managing Editor of AOS journals
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Workshops and Training Opportunities

All workshops and training opportunities will take place 2–6 August 2021 — the week preceding the AOS & SCO-SOC 2021 Virtual Meeting.

eBird Status: Working with modeled products in R

2 August 2021; 1:00–2:15 p.m. EDT; 3 August 2021; 1:00–1:45 p.m. EDT

Fee: \$0

Maximum Number of Participants: 250

Presenters: Tom Auer, Cornell Lab of Ornithology; Matt Strimas-Mackey, Cornell Lab of Ornithology

The citizen science project eBird has generated a database of almost 1 billion bird observations, with broad spatial and taxonomic coverage. The eBird Status and Trends project uses full-annual cycle machine-learning models with these eBird data and remote-sensing data to account for variation in observer behavior and effort to produce value-added high resolution, weekly estimates of range boundaries, occurrence rate, and relative abundance. In December 2020, the Cornell Lab of Ornithology released visualizations for over 800 species, including over 100 species outside of the Western Hemisphere. In July 2020, the data behind these products will be made publicly available along with the updated ‘ebirdst’ R package developed specifically for analyzing this data.

This workshop will introduce attendees to the modeling process behind the generation of eBird Status products, the where and how of accessing the data, and a demonstration of how to analyze the modeled products using the ‘ebirdst’ R package. There will be two portions: a) a 1.25 hour Zoom webinar on the first day, consisting of a one-hour lecture and a 15-minute Q&A period for conceptual questions; and b) a 45-minute Q&A Zoom session on the second day for software-related questions and troubleshooting.

Introduction to statistical inference with count data in R

5–6 August 2021; 1:00–4:00 p.m. EDT

Fee: \$10 Professional/\$5 Student (region-dependent discounts available)

Maximum Number of Participants: 50

Presenters: Evan Adams, Biodiversity Research Institute; Beth Ross, U.S. Fish and Wildlife Service, Science Applications

Understanding how to think about and analyze count data is a core skill for ornithologists and ecologists. Bird surveys are a common producer of count data. These data are used to conduct species status assessments, build population models, track population trends, and understand spatial variation in density, among many other applications. But count data can be challenging to analyze, and there can be many skills to learn before ecologists effectively use count data to test hypotheses. In this workshop, we propose to show participants how to generate count data then use it to make inferences with linear models, spatial models, and hierarchical models. Participants will learn how to make statistical inferences in R by building statistical models, evaluating model fit, determining parameter performance, and reporting results from a wide range of count-based modeling approaches. The goal of the course is to provide statistical guidance and extensive R code to the participants so they can apply these examples to their work.

This workshop’s target audience is ecologists familiar with R and data analysis but inexperienced with using R to analyze count data effectively and learn new statistical techniques. All course materials will be available on GitHub for access before and after the workshop.

Joint species distribution models: an introduction to the Bayesian Hierarchical Modeling of Species Communities (HMSC) package in R

2–3 August 2021; 11:00 a.m.–1:00 p.m. EDT; 2:00–4:00 p.m. EDT

Fee: \$10 Professional/\$5 Student (region-dependent discounts available)

Maximum Number of Participants: 15

Presenters: Ryan C. Burner, Norwegian University of Life Sciences; Luke L. Powell, CiBio

Joint species distribution models (JSDMs) are a powerful way to use trait and phylogenetic information to better estimate species' response to the environment. They can also be used to estimate species associations, giving insights into community ecology and improving model predictions. The Hierarchical Modeling of Species Communities (HMSC) package in R does this in a spatially explicit and Bayesian hierarchical framework, allowing for statistically sound analyses of data from diverse study designs. After a brief lecture to learn the theoretical basis behind JSDMs (along with a brief introduction to Bayesian methods), participants will start simulating data to analyze and make predictions, becoming comfortable with the workings of the HMSC package. We will then discuss some creative ways the HMSC framework has been used to answer different questions. Finally, participants will have the opportunity to build their own models to explore some real data (or their own). We will do this through a combination of group sessions and smaller breakout rooms where participants can help each other and get more personal feedback from the instructors. For those who want to bring their own data, we will send out some formatting instructions and trial code prior to the workshop, and we will be available to answer formatting questions by email.

This workshop will be suitable for anyone from early-career ecologists to more experienced folks who would like to learn about a versatile and relatively new set of methods. We will provide example code for all exercises, but participants should have at least a basic ability to run code in R. JSDMs are most useful for those working with datasets that include multiple species.

Taking flight: A workshop for ornithologists exploring careers outside academia

4 August 2021; 2:00 –4:00 p.m. EDT

Fee: \$10 Professional/\$5 Student (region-dependent discounts available)

Maximum Number of Participants: 150

Presenters: Danielle Ethier, Birds Canada; Jennifer Houtz, Cornell University; Colleen Miller, Cornell University; Evan Adams, Biodiversity Research Institute; Ellen Jamieson, High School Educator; Jen Walsh, Cornell University; Nandadevi Cortes, Ithaca College – Smithsonian Institution; Nick Mason, Louisiana State University

A large percentage of ornithologists will work outside of academia, but many are not exposed to the range of jobs available during their education, nor are they prepared to successfully apply to such positions. This workshop will create a forum where attendees can solicit advice on pressing topics relevant to their early-career stage. Our workshop focuses on exposing participants to a diverse range of professional opportunities outside of academia, by pairing early career professionals with a diverse panel of mentors from the following career types: research, education/outreach, communications, policy/advocacy, and resource management.

Using interactive breakout sessions, we hope to facilitate discussions on professional development topics that may be less transparent to early-career members looking at opportunities outside academics. Specifically, by the end of this workshop, participants will:

1. Have a broader understanding of career paths available outside academia.
2. Understand what different job titles really mean, and what to expect on a day-to-day basis.
3. Identify their transferable skills and how they benefit different job sectors.
4. Develop an understanding of how to market their skills during the job application process (e.g., resume writing, job interviews).

Each breakout group will build a mock resume with the panelists, which will help participants identify their transferable skills needed for various career types in ornithology. Discussion of different components of the document will also demonstrate the relative importance of different skills and experiences. The organizing committee will synthesize these into a single reference document to be shared with all workshop participants. Translations will also be made available upon request.

Understanding molt and ageing of passerines using the Howell-Humphrey Parkes and the Wolfe-Ryder-Pyle systems

4 August 2021; 11:00 a.m.–1:00 p.m. EDT

Fee: \$10 Professional/\$5 Student (region-dependent discounts available)

Maximum Number of Participants: 50

Presenters: Andrea Patterson, Braddock Bay Bird Observatory; Emily Patterson, University of New Hampshire; Sarah Harper Díaz, Sullivan's Island Bird Banding Station

We will begin by reviewing molts and molt strategies followed by a discussion of the traditional calendar-based Howell-Humphrey-Parkes (HHP) ageing and molt classification system. We will then introduce the cycle-based Wolfe-Ryder-Pyle (WRP) system and compare it to the HHP system. Participants will learn about typical patterns of feather replacement in the pre-formative and pre-basic molts, and about consistent patterns of feather replacement within families and genera. Using a combination of whole-group and small-group hands-on work, students will put these principles into action as they practice locating, documenting, and interpreting molt limits using carefully curated photo arrays.

Customized BBS trends, trajectories, graphs, and maps using the bbsBayes R package

6 August 2021; 11:00 a.m.–1:00 p.m. EDT

Fee: \$10 Professional/\$5 Student (region-dependent discounts available)

Maximum Number of Participants: 50

Presenters: Brandon Edwards, Carleton University; Adam C. Smith, Environment and Climate Change Canada

This is a 2-hour introductory workshop/demonstration of the R package bbsBayes. This package allows anyone to apply the hierarchical Bayesian models used to estimate status and trends from the North American Breeding Bird Survey. The package also lets the user generate a suite of alternative metrics using the existing model output from the annual CWS analyses.

Participants will be supplied with the necessary materials to follow along with the live coding, getting hands-on experience manipulating model output from the 2019 CWS analysis.

A full outline will come closer to the date, but the participants will learn how to: 1) download the raw data (including raw data from previous years); 2) stratify the raw data according to stratification methods used by the CWS and choose which species to model; 3) choose from a suite of pre-written hierarchical Bayesian models and run that model (we will not cover formal model-selection, just explore the different model-options); 4) estimate trends for any time period (1970–2019, 2005–2015, 1980–2000, etc.) and graph population trajectories; 5) generate heat maps of population trends; 6) create geofaceted trajectory plots; and 7) estimate trends for customized regions (e.g., all of the eastern Boreal, Great Plains versus eastern populations of grassland birds).
