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ABSTRACTS OF STUDENT PRESENTATIONS AND POSTERS AT THE FALL 2019 MEETING OF THE FLORIDA ORNITHOLOGICAL SOCIETY

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The fall 2018 meeting of the Florida Ornithological Society featured a special set of oral presentations and posters prepared primarily by students associated with Florida universities. Many of the presentations will likely lead to full-length articles, but Abstracts submitted by participants are provided here for members of the Florida Ornithological Society who could not attend the meeting and to serve as a record of the breadth of research underway by the next generation of Florida scientists.

The oral presentations and posters sessions were organized by Peter Monte (Department of Wildlife Ecology and Conservation, University of Florida). Thanks to Peter for bringing the presentations together and to Shelley Gentile and Stetson University for their help organizing the meeting. The Abstracts are listed alphabetically based on the last name of the presenter (who is also listed as the email contact). All authors' affiliated institutions are in Florida unless otherwise noted.

Habitat selection and quality in Southeastern American Kestrels in Florida scrub

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Habitat selection theory often focuses on relationships between preference and its fitness outcomes, where theory has made a wide

array of predictions. Theory often assumes that individuals should behave adaptively by selecting the highest quality habitat. Conversely, human-induced environmental change that attempts to mimic natural processes may sometimes lead to maladaptive habitat selection behaviors where selection is decoupled from fitness. These behaviors may lead to an ecological trap, where individuals prefer poor-quality habitats, or undervalued resources, where individuals avoid high-quality habitats. The Southeastern American Kestrel (*Falco sparverius paulus*) is a species of conservation concern that uses intensively managed scrub maintained by prescribed burns and clearcutting, but the relationship of habitat selection and breeding fitness outcomes remains poorly understood. Our objectives were to 1) determine factors explaining kestrel occupancy (a proxy for habitat selection) and 2) assess the relationship between kestrel occupancy and fitness. We conducted point counts and nest searching and monitoring during the 2018–2019 breeding seasons in scrub habitat in Ocala National Forest, Florida. We used single-species occupancy models to determine habitat variables influencing kestrel occupancy. We used generalized linear models to determine factors influencing daily nest survival and productivity. Stand age (i.e., time since clearcutting or burning) and snag availability were the best predictors of kestrel occupancy. Probability of occupancy decreased as stands got older. Apparent nest success was high (69% of nests produced at least one fledgling), but daily survival was not related to stand age, even though kestrels are more likely to occur in younger stands. Consequently, kestrel occupancy did not correlate with daily nest survival or productivity. We discuss this pattern in the context of predictions from habitat selection theory, undervalued resources, and the challenges of interpreting whether fitness and habitat selection are decoupled.

The Grasshopper Sparrow genome

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Reference genomes are powerful tools in the field of conservation genomics because they enable researchers to link patterns and processes to specific traits within the genome. They can be applied to a host of questions not limited to evolutionary biology, disease, and population dynamics. For my master's research, I am assembling a first-generation

annotated reference genome of the eastern Grasshopper Sparrow (*Ammodramus savannarum pratensis*) and investigating the timing and extent of reproductive isolation between the eastern Grasshopper Sparrow and the Florida Grasshopper Sparrow (*A. s. floridanus*). Specifically, I am interested in how their differing migratory behaviors are involved in their divergent evolution and whether we can detect the timing and level of gene flow between populations. We sequenced a near-complete genome of *A. s. pratensis* and the transcriptome, which represents the sequences of expressed genes within the genome. Presently, I am producing a structural and functional annotation to identify genes and their functions via bioinformatics. In addition to the annotated reference, I am currently generating reduced-representation sequencing libraries of both sparrow populations that will be aligned to the reference. The combination of these data will provide insights into the specific traits and evolutionary processes involved in the divergence of the eastern and Florida Grasshopper Sparrow.

Red-cockaded Woodpecker cavities as potential ecological sinks for nesting avian kleptoparasites

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The endangered Red-cockaded Woodpecker (*Leuconotopicus borealis*) is a unique keystone excavator of live pines in mature southeastern forests. Cavities excavated by Red-cockaded Woodpeckers provide roost and nest sites for a suite of taxa in an otherwise cavity-poor environment, but cavity kleptoparasitism can threaten recovering Red-cockaded Woodpecker populations because of extended excavation time in live pines. We investigated conditions driving cavity kleptoparasitism in old-growth longleaf pine (*Pinus palustris*) forests of southwestern Georgia by considering two competing hypotheses: 1) limited local snag availability influences the frequency of cavity usurpation, or 2) nesting in Red-cockaded Woodpecker cavities promotes higher nest success than nesting in snags. We used linear regression models to relate snag densities to occurrences of cavity usurpation and logistic-exposure models to measure combined nest success of two common cavity

competitors, Red-headed Woodpeckers (*Melanerpes erythrocephalus*) and Red-bellied Woodpeckers (*M. carolinus*), nesting in snags and usurped Red-cockaded Woodpecker cavities. Snag densities and kleptoparasitism occurrences were not related (2018: $r^2 = 0.109$, $F_{1,6} = 0.736$, $P = 0.424$; 2019: $r^2 = 0.062$, $F_{1,6} = 0.394$, $P = 0.553$), though more cavities were usurped where snags were limiting. The most supported model was cavity height. Nest success significantly improved ($Z = 2.84$, $P < 0.005$) in higher cavities, presumably due to increased predation rates at lower heights. Red-cockaded Woodpecker cavities were slightly lower than cavities in snags and daily nest success was lower in Red-cockaded Woodpecker (0.31) cavities than in snags (0.51), though the difference was not statistically significant. We conclude that 1) snag retention may alleviate competition, but high-quality Red-cockaded Woodpecker habitat will eventually host a surplus of cavities, and 2) Red-cockaded Woodpecker cavities may be potential ecological sinks for nesting avian kleptoparasites due to differential predation. This preliminary study warrants future work aimed at investigating potential costs and benefits to cavity kleptoparasitism.

Do similar foragers flock together? Non-breeding foraging behavior and its impact on mixed-species flocking associations in a subtropical region

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Mixed-species flocks are ubiquitous in forest bird communities, yet the extent to which positive (facilitative) or negative (competitive) interactions structure these assemblages has been a subject of debate. We described the fine-scale foraging ecology and used network analysis to quantify mixed-species flocking interactions of an insectivorous bird community in hardwood forests of north-central Florida. Our goal was to determine if similarly foraging species were more (facilitation hypothesis) or less (competition hypothesis) likely to associate in flocks, and if foraging ecology could explain intraspecific abundance patterns within flocks. We quantified attack maneuvers, foraging substrate, and foraging microhabitat of all 17 common insectivorous species in these forests and characterized the composition of 92 flocks encountered. Flocking was important in our community; 14 of 17 species joined more than 5% of flocks, and 10 species had flocking propensities of over 0.80.

Our results supported both hypothesized mechanisms structuring flock composition. Species had distinct, well-defined foraging niches during the non-breeding season, but foraging niche overlap among flocking species was greater than expected by chance. Consistent with the facilitation hypothesis, we found that similarly foraging species were significantly more likely to associate in flocks, a result driven by lower association strengths in large-bodied woodpeckers. We found no evidence of assortment by foraging behavior, however, likely because foraging behavior and substrate use showed strong niche partitioning at the fine scale within our community. Intraspecific abundance patterns were significantly linked to foraging substrate use, with live leaf use correlated with high within-flock abundance and relative abundance at study sites. Species that specialized on comparatively less-abundant substrates (tree trunks, epiphytes, dead leaves) joined flocks as singletons, showed lower relative abundance, and may exhibit non-breeding territoriality. Our results highlight the importance of foraging substrate use and mixed-species flocks in structuring the non-breeding ecology of migratory birds.

Urban greenspace is for the birds: nest box selection by Eastern Bluebirds on an urbanizing university campus

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Eastern Bluebirds (*Sialia sialis*) are secondary cavity nesters that underwent a population decline in the late 1900s due to a loss of natural nest cavities, and subsequent recovery due to an increase in artificial nest boxes. As urban development spreads, it is important to understand how to increase urban land use by native wildlife. Attractive nest sites for bluebirds typically include open grassy areas for foraging. In an urban context, we hypothesized that anthropogenic noise could significantly discourage nest box occupancy even if adequate grass is available. We monitored 78 identical nest boxes (Gilbertson style) spread across the University of Florida campus throughout the 2019 breeding season and compared features of occupied and unoccupied nest boxes. We calculated noise levels by taking three-minute samples of sound (in dBA) at four random times at each nest box and then taking the overall average decibel level of the samples. Additionally (based on bluebird nest box literature), we recorded box orientation,

percent grass (in a 300-m buffer), visibility from nest, distance to high perch, distance to fresh-water source, human activity level, distance to road, distance to nearest grassy open area, and distance to occupied building. To screen variables for analysis, we ran pairwise correlations followed by principal components analysis to combine, center, and scale collinear metrics. Finally, we used generalized linear models with binomial distribution and logit link function to assess the relationships between predictor variables and nest box occupancy. We found that nest boxes were significantly more likely to be occupied where percent grass was higher, noise was lower, and distance to buildings, roads, and water was greater. We conclude that within the urbanizing matrix, areas of quieter greenspace will be necessary to attract breeding populations; therefore, successful nesting habitat for the Eastern Bluebird can be integrated with greenspace planning.

Freshwater microplastic dissemination in retention ponds

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Urban retention ponds receive water input from rain and surface input from local areas. This study tests if microplastics, a product of chemical weathering and human pollution, rise in pollutant levels before and after a large rainfall event. Statistical quantification of microplastics in an environment usually takes place in marine environments, where chemical processes result in rapid dissimilation of human waste into the environment, and where the results are more extreme. However, few studies have been conducted on the total pollution of urban wastewater ditches, where plastics are more likely to have a total impact on the environment because of higher concentrations of waste and fluctuating water levels. This project focused on extracting microplastics from weekly water samples from the ponds, to determine if rapid rainwater input results in rapid pollution. We took four weeks of water samples from three separate ponds that shared a drainage basin, processed them with a dissecting microscope, and identified 350 plastics.

Ant presence on Red-cockaded Woodpecker (*Dryobates borealis*) selected trees in two southeastern forest types

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The Red-cockaded Woodpecker (*Leuconotopicus borealis*) is an endangered species native to the southeastern United States. We sought to create a species presence profile of the acrobat ant (*Crematogaster pinicola*), a species believed to be important as forage for the Red-cockaded Woodpecker. Two different, yet common, forest types that contain Red-cockaded Woodpeckers include old field and longleaf pine. We collected old field ant samples from Tall Timbers Research Station in north Florida with forests composed of loblolly (*Pinus taeda*) and shortleaf (*P. echinata*) pines with occasional longleaf pine (*P. palustris*). We collected longleaf ant samples from two different plantations located in south Georgia that were composed of predominantly longleaf pine. We baited trees foraged on by Red-cockaded Woodpeckers and a random control tree nearby with a cat food slurry. If Red-cockaded Woodpeckers prefer trees with more acrobat ants, then we expect to find a higher likelihood of acrobat ants on those trees that woodpeckers select. We also recorded the time Red-cockaded Woodpeckers spent on the trees relative to the presence of the acrobat ant as another metric of Red-cockaded Woodpecker preference. We counted all ant species on the bait and identified ants to the lowest possible taxonomic level. To date, we have observed the red imported fire ant (*Solenopsis invicta*), the acrobat ant, and four other ant species.

Linking bird community composition, diversity, and Northern Mockingbird song complexity along urbanization gradients in Florida

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Urbanization is one of the greatest threats to biodiversity around the world. By the end of this century, the proportion of urban land area is projected to increase by 185%, with the greatest expansions occurring in tropical ecosystems. Despite these current trends, only a few studies have investigated the impacts of urbanization on tropical species diversity. In addition, our understanding of the drivers and consequences of these changes in tropical diversity remains limited. Some evidence suggests that patterns of community structure along urbanization gradients are largely determined by the interaction between land use and species life-history traits, with species loss occurring predictably in species that share certain traits (environmental filtering). Changes in the composition of urban bird communities can also change the behaviors species use when they interact with other species. One such example is vocal mimicry, where species copy heterospecific vocalizations in their surrounding community. Previous studies have shown that vocal mimicry diversity and song complexity play an important role in male performance for multiple species. Because urbanization changes the species in the community available to mimic, urbanization may negatively affect the effectiveness of their communication. My research investigates the effects of urbanization on avian species diversity and life-history trait diversity in Florida, and vocal mimicry diversity and song complexity in the Northern Mockingbird. We predict that as urban land area and background noise levels increase, species richness, abundance, and life-history trait diversity will decline. We also predict that Northern Mockingbird vocal mimicry richness and song complexity will decline as a result of increased urbanization levels.