



ABSTRACT BOOK

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distributions for bird communities, or guilds. This method has largely been used in occupancy estimation, but here we illustrate the usefulness of this approach in generating estimates of daily survival rates for songbird nests. We analyzed nest data from a designed experiment to test for differences in habitat use for songbirds in forest plots managed for biofuel feedstock production using switchgrass (*Panicum virgatum*) intercropping within a loblolly pine (*Pinus taeda*) plantation in Mississippi, USA on land owned and managed by Weyerhaeuser Company. We applied a hyperprior-based approach to nest survival modeling within a Bayesian framework for 555 nest of 17 species of open cup-nesting bird species. We found intercropping did not reduce nest survivorship for any guild. In smaller guilds, insufficient data are available to generate a sufficiently informative hyperprior to generate nests survival estimates for rare species. In guilds with large numbers of nests, we found our method allows estimating nest survival for guild members with as few as two nests. However, a tradeoff exists between ability to generate survival estimates for rare species by including them in guilds with many nests, and having survival estimates unduly influenced by large guilds (whose members may exhibit varying survivorship responses to similar ecological conditions). Therefore this method is a viable alternative method for estimating nest survivorship incorporating limited data for rare, or rarely detected songbird species to inform a community or guild response.

Avian interactions with energy infrastructure in the context of other manmade mortality sources

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The global expansion in the development of renewable and non-renewable energy and its associated infrastructure is ongoing and will continue in the coming decades. The effects of this rapidly expanding energy infrastructure on bird populations and communities has become a major focus of research, management, and policy attention. To place the known effects of energy development in context, I draw upon several quantitative reviews that have produced large-scale estimates of bird mortality for manmade mortality sources. These studies illustrate a vast range of variation in the amount of overall mortality caused by different threats. Comparisons between mortality sources are useful in the context of energy development for attracting public, scientific, and policy attention, for highlighting major research gaps, for providing scientific evidence to inform resource allocation decisions, and for developing mitigation schemes whereby mortality from one threat is offset by reducing mortality from another threat. However, I contend that these estimates and comparisons have some limitations and should not be used to: (1) draw conclusions about population-level effects of manmade threats in the absence of detailed avian demographic data, (2) conclude that a small amount of total mortality or a paucity of information for a threat precludes biologically significant effects or the need for management and policy concern, and (3) develop mortality trading schemes when little species-specific mortality data is available to inform equivalent trades. Additional data collection on species-, location-, and season-specific mortality is needed to improve the understanding of energy infrastructure's impacts on birds, and therefore, for informing an optimal tradeoff between energy development and bird conservation.

Out on their own: Brown-headed Cowbirds and the avoidance of mis-imprinting on the host

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Sexually imprinting on the host species is considered one of the greatest constraints to the evolution of interspecific avian brood parasitism. While non-parasitic juvenile birds learn the behaviors and mate choice preferences of their parents, brood parasites must avoid mis-imprinting on their host's phenotype and recognize conspecifics. Here we test the 'first contact' hypothesis, where juvenile cowbirds are predicted to avoid mis-imprinting on the host by following female cowbirds to conspecific foraging flocks. Using an automated radio telemetry system, we determined the presence or absence (every 1-2 minutes for 3 breeding seasons; 516,315 search occasions) of radio-tagged juvenile cowbirds and their genetic mothers within a nest box study site. Contrary to our predictions, we found no support for facilitation by adult female cowbirds of juvenile cowbirds dispersing from their hosts. Juvenile cowbirds typically are not located within their mother's home range when departing the forest and, likewise, juvenile departure events rarely (< 2%) temporally overlapped with the departure of the genetically assigned mother or any radio-tagged female cowbird. We also found no statistical differences between natal and experimentally transplanted juveniles' behaviors in this study, implying a lack of direct kin recognition in parasitic cowbird mothers. Surprisingly, we demonstrate that juvenile cowbirds primarily depart from the host at sunset and roost solitarily. Our results suggest that juvenile cowbirds use an innate roosting preference that facilitates independence from their host, thus minimizing the risk of mis-imprinting on the host. This strategy may also indirectly promote conspecific interactions, providing further evidence for the importance of inherited preferences within the evolution of brood parasitism.

Association of Rufous-winged Sparrow nest success to climate, vegetation, and land use in the Sonoran Desert of Mexico

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Global circulation models predict an increase in aridity over northern Mexico and southwestern United States. Bird species specialized in arid ecosystems are then potential indicators of climate change in the region, such as the Rufous-winged Sparrow (*Peucaea carpalis*), whose timing of breeding is closely associated to the onset of monsoon rains. In this regard, we explored the association of the seasonal changes in vegetation density due to summer rainfall distribution on nest survival of *P. carpalis* in central Sonora, Mexico, as well as the effect of the exotic buffelgrass and habitat structure in a region under intense grazing by domestic cattle. We monitored 217 nests in the breeding seasons (July-September) of 2013 and 2014. We analyzed nest survival data implementing logistic-exposure models in program WinBUGS, with the normalized difference

vegetation index (NDVI), measures of habitat structure (density and cover of woody plants), buffelgrass cover, Julian date, and factors YEAR (2013 and 2014) and STAGE (incubation, nestling, fledgling) as explanatory variables. We found that differences in habitat structure, buffelgrass cover, and vegetation density (NDVI) among nests did not explain variation in nest daily survival probability. Our analysis identified no temporal trends in nest success within and between years. Nest success was higher during the incubation stage. The intercept-only model yielded a mean nest daily survival probability of 94.79% (95% Credible Confidence Interval: 90.54-97.19%). Given that nest survival seemed unaffected by the habitat alteration in pastures at Sonoran Desert scrublands and buffelgrass prairies, we conclude that the Rufous-winged Sparrow may be resilient to habitat transformation in the center of its distribution.

Evaluation of intercropping switchgrass (*Panicum virgatum*) in southeastern loblolly pine (*Pinus taeda*) forests on avian communities

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Intercropping switchgrass (*Panicum virgatum*) between beds of newly planted pines serves as a potential method to cultivate herbaceous biofuel feedstocks within intensively managed loblolly pine (*Pinus taeda*) forests. Intensively managed loblolly pine forests support a diverse assemblage of avian communities potentially affected by the establishment and maintenance of intercropped switchgrass via alterations to the structural complexity and diversity of the vegetative community. Structurally complex and taxonomically diverse vegetative communities are considered to support greater biological diversity. We assessed early successional scrub-shrub avian community response to within stand alterations to heterogeneity due to intercropping switchgrass in intensively managed loblolly pine forests. We posited that a reduction in structural complexity of the vegetative community would result from intercropping switchgrass, ultimately altering early successional scrub-shrub avian communities. We predicted that intercropping switchgrass would reduce the density of early successional scrub-shrub species and alter the overall species composition of intercropped stands as compared to traditionally managed pine stands. Avian abundances and species composition were assessed using point counts conducted from May–July 2014 coinciding with the avian breeding season. Preliminary results indicate that early-successional scrub-shrub avian density and overall species composition did not differ between intercropped and traditionally managed pine stands. These data provide forest managers a better understanding of early successional scrub-shrub avian community response to intercropping switchgrass in intensively managed loblolly pine forests. However, it is unclear how avian community assemblages will respond as stands age.

Bird conservation experiences in Mexico

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The Socorro Dove (*Zenaidura macroura*), endemic to Socorro Island, became extinct in the wild between 1972 and 1978. The

species survived because Edward Gifford, a member of the California Academy of Sciences expedition of 1925, brought several doves to Oakland. Doves were bred in the United States and soon were sent to Herbert Bright in the United Kingdom. Later, Nicolai Jurgen organized breeding efforts in Germany. In 1995, Stefan Stadler began the institutional coordinated efforts of the European Association of Zoos and Aquaria (EAZA/EEP) providing a solid basis to maintain a viable population under human care. In 2008, Peter Shannon at the Albuquerque Zoo received 12 birds from the United Kingdom and continued conservation efforts in North America with 4 additional institutions. In 2013, Frank Carlos Camacho at Africam Safari in Mexico received six individuals from the Albuquerque Zoo thus achieving the return of the species to its home country. In 2014, the first chicks hatched in Mexico almost 40 years after its disappearance from Socorro Island. Currently, about 30 zoos in Europe, the US and Mexico participate in the ex situ conservation efforts for the species. The in situ conservation strategy contemplates the restoration of critical ecological interactions for Socorro Dove and includes a habitat restoration program in areas where birds might be released. Selected plant species are endemic to Socorro Island and will provide food, shelter and nesting sites as well as a place where native herbaceous species and shrubs will facilitate recolonization of arthropod species present at undisturbed sites. The international reintroduction team already identified critical components of the overall reintroduction project. Both an experimental and establishment release stages will be implemented. Given current demographic conditions in the ex situ conservation program there will be a window of opportunity for a reintroduction attempt in 2017.

Evolutionary rate heterogeneity of learned and innate vocal displays among two prominent clades of Neotropical passerines (Thraupidae and Furnariidae)

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Sexually selected traits play an important role in species recognition and as prezygotic barriers to gene flow during speciation. At deeper evolutionary time scales, however, it is unclear if evolutionary rates of sexually selected traits are coupled with speciation rates. Additionally, certain sexually selected traits, such as avian vocal displays, vary in the degree to which they are innate or learned. Learning is a form of cognitive phenotypic plasticity that may accelerate trait evolution, and consequently, speciation rates. Here, we examine patterns of evolutionary rate heterogeneity among speciation rates, avian vocalizations, and body mass across two prominent Neotropical lineages of passerines: tanagers (Thraupidae) and ovenbirds (Furnariidae). Importantly, tanagers learn their songs, whereas ovenbirds' songs are innate. We compare the prevalence, directionality, and magnitude of evolutionary rate shifts among 321 species of tanagers and 276 species of ovenbirds. We infer substantial variation in the prevalence of evolutionary rate heterogeneity among characters and find limited evidence that oscine songs evolve at faster rates than suboscine songs. Finally, speciation rates are positively correlated with evolutionary rates of multiple vocal characters and body mass, suggesting rates of