

GENOMICS OF DIVERGENCE IN NEW MEXICO'S SANDHILL CRANES (*ANTIGONE CANADENSIS*)

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Body size is a complex trait that varies extensively within and among species. Many bird species show strong geographic variation in body size and shape both within and across taxonomic boundaries. This raises the question of whether the same genes that drive body size variation within taxa are also tied to divergence between taxa. A prime candidate for studying this pattern is the Sandhill Crane (*Antigone canadensis*) complex, specifically two forms that winter in New Mexico (Lesser and Greater). These taxa, currently considered subspecies, exhibit up to a two-fold difference in body size. We performed a genotyping-by-sequencing study to assess genome-wide variation in the cranes of New Mexico and across North America. We first determined the level of genomic divergence between the two main forms that winter in New Mexico but breed in geographic isolation. Second, we identified the genes related to size divergence within forms. We found modest levels of divergence between the forms concentrated in few genomic regions. We used genome-wide association to identify regions that predicted within-species body size, including a 30 Mbp inversion. Strikingly, the inversion was nearly fixed in Lessers and appeared to have introgressed into the Rocky Mountain Greaters, in which it proliferated to about 75% frequency. Cranes that carried the inversion haplotype had smaller body sizes. While it is not possible to infer whether smaller body size or another linked trait was the basis for natural selection favoring the inversion, the taxon-defining gap in body size has reduced over time.

EPILEPSY, LOVE POTIONS, AND HUMMINGBIRDS: FROM LEAPS OF LOGIC IN THE 16TH CENTURY TO MARKETING STRATEGIES IN THE 21ST

A. Gomez, University of New Mexico, Albuquerque, NM, 87131

The 11th book of the Florentine Codex, written by Bernadino de Sahagún, a Franciscan missionary sent from Spain to Mexico in 1529, contains information on plants and animals indigenous to the New World. My presentation will show how hummingbirds were perceived by the clergy, and as they were reimagined as a cure for epilepsy by Francisco Hernández, physician and explorer in the New World in 1577. My update will show that while Bernadino's interpretation of hummingbird activity appears improbable, thanks to recent hummingbird research from the University of New Mexico, it was not as far-fetched as it would seem. I will also show how Dr Hernández' hummingbird epilepsy treatment has evolved into a lucrative cottage industry in Mexico as a cure-all for broken hearted lovers.

CITIZEN SCIENCE AS A TOOL FOR MONITORING BREEDING BIRD COMMUNITIES
IN THE ISLETA REACH

T. Davidson, Audubon Southwest, Albuquerque, NM 87102

Effective monitoring of riparian bird communities is critical for understanding how habitat conditions influence breeding populations in regulated river systems. In the Isleta Reach of the Rio Grande, skilled volunteers from the Bird Alliance of Central New Mexico conduct standardized walking transect surveys and spot-mapping of riparian obligate species at select outfall sites. These citizen-science efforts generate repeatable data that Audubon Southwest uses to evaluate long-term patterns in bird habitat use across a mosaic of bosque conditions. By pairing community-based data collection with applied management needs, this program provides land and water managers with actionable insight into how variation in riparian habitat structure may shape breeding bird communities. The project demonstrates how coordinated volunteer monitoring can expand the spatial and temporal scale of ecological datasets while supporting science-based stewardship of Middle Rio Grande ecosystems.

ORGANIZATIONAL REQUEST FOR EXPERT REVIEW: WILDLIFE, MIGRATORY BIRD, AND DARK-SKY IMPACTS FROM PROJECT RANGER (WEST MESA, NM)

E. Cimino, Common Ground Rising, Rio Rancho, NM

This presentation provides an overview of the proposed hypersonic rocket-motor manufacturing and detonation facility currently under construction. This project is sited at section 36 on the West Mesa of Rio Rancho, and lies within desert grassland and scrub habitat connected to the Arroyo Calabacillas watershed and regional flyway pathways. The project received local approvals in 2024–2025 and site disturbance has begun. However, publicly available materials do not reflect baseline avian surveys, artificial light at night modeling, cumulative blast-noise contour analysis, or cumulative watershed impact evaluation prior to ground disturbance.

The purpose of this presentation is threefold: (1) to summarize what is known about the facility and approval pathway, (2) to outline the ecological questions that remain unanswered, and (3) to identify where scientific expertise from the NMOS community could meaningfully contribute. This is not a legal argument. It is a scientific request for clarity before ecological conditions are permanently altered.

This presentation summarizes three interrelated scientific concerns:

1. The sensitivity of desert scrub specialists, including Bendire's Thrasher (*Toxostoma bendirei*; USFWS Bird of Conservation Concern), to habitat fragmentation and disturbance.
2. Documented ecological effects of high-intensity security lighting and skyglow on migratory orientation, nocturnal behavior, and breeding cycles.
3. The relationship between soil stability, erosion, watershed integrity, and avian food-web support in arid systems.

The goal is not advocacy, but scientific clarity. I seek input from NMOS members on whether baseline avian surveys, artificial light at night modeling, blast-noise contour mapping, and watershed transport studies should precede further site development.

RECENT RAPID INCREASE OF LUCY'S WARBLER (*LEIOTHYLPIS LUCIAE*)
OCCURRENCE IN BERNALILLO COUNTY, NEW MEXICO, DETECTED BY EBIRD

D. Mehlman, Los Ranchos, NM 87107

Lucy's Warbler (*Leiothlypis luciae*) is a regularly occurring and common species in New Mexico, though generally found in the southern portion of the state. Recent observations by many observers suggest that Lucy's Warblers have become quite prevalent and are now found frequently along the Rio Grande in Bernalillo County in contrast to previous decades. This time period overlaps the initiation and rapid growth of the eBird project, so I queried the eBird database for Bernalillo County to determine if a change in frequency of occurrence was detectable. Change was explored by examining the latitudinal progression of locations where Lucy's Warbler was first reported and a more detailed, site-level study of change at four eBird Hotspots. eBird data clearly reveal a rapid expansion of Lucy's Warbler in the County from 2013 to 2022. Lucy's Warbler has gone from not or very seldom reported in eBird prior to 2013 to being readily found on most days and at many sites in its appropriate habitat in the County. The increase in daily frequency of observation is extremely rapid, rising to 95.6% of days by 2020. This increase is supported by the different frequency trajectories over time between Lucy's Warbler and both Summer Tanager and Ash-throated Flycatcher. Potential causes of this increase in Lucy's Warbler frequency of occurrence in Bernalillo County include a moderating climate and increasing suitability of the cottonwood riparian habitat favored by the species in this geographic area, though these data cannot definitively answer those questions.

ELEVATIONAL VARIATION IN DENSITY AND ENERGETIC CONDITION OF BREEDING AUDUBON'S WARBLERS (*SETOPHAGA CORONATA AUDUBONI*)

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Understanding how breeding populations are structured across climatic gradients provides critical context for linking population biology to genetic and environmental drivers. We investigated age structure, morphology, and population density of Audubon's Warblers (*Setophaga coronata auduboni*) breeding along a ~1000m elevational gradient on the eastern slope of the Sandia Mountains, New Mexico. Elevation corresponded to substantial climatic differences, including a 10% decrease in air pressure, a 6°C decline in temperature, and a ~357 mm increase in annual precipitation from base to crest. To test for elevational effects on demography, we banded 100 individuals along the gradient. We found no significant relationship between age class and elevation. Structural morphometrics (wing, tail, tarsus, culmen) exhibited expected sexual dimorphism but showed little variation across elevation. In contrast, body mass increased significantly with elevation after controlling for structural size and sampling date, with an estimated ~0.5 g increase across the full gradient (~4% of body mass). Using a one-occasion mark-resight framework (Chapman estimator) with color-banded birds, we estimated site-level density at seven breeding locations. Density increased strikingly with elevation (~8 breeding pairs ha⁻¹ per 1000m), which explained 65% of site-level variation, and was not strongly associated with survey effort. Together, these results suggest that while structural morphology remains relatively invariant across the breeding gradient, condition and local density increase with elevation. The elevational gradient appears to be a gradient of habitat quality for this species. These baseline patterns provide a foundation for ongoing work linking breeding elevation to migratory behavior and its genetic underpinnings.

ELEVATIONAL NESTING METRICS OF AUDUBON'S WARBLERS (*SETOPHAGA CORONATA AUDUBONI*)

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Elevational gradients allow us to test environmental effects on behavioral phenotypes. Abiotic factors such as temperature and partial pressure of oxygen (PO_2) change quickly with increasing elevation—temperature decreases by $\sim 6^\circ\text{C}$ and PO_2 diminishes by $\sim 10\%$ per 1000 m—creating thermal and respiratory challenges for small birds. Additionally, lower temperatures at higher elevations cause shorter growing seasons, reducing the suitable breeding period for insectivorous birds. Avian life histories may vary with elevation because of striking changes in climate and ecological pressures; on the other hand, local adaptation in life history traits is constrained by gene flow along the gradient. The relationship between elevation and reproductive timing is poorly described—onset of breeding tends to be delayed at higher elevations, but it is not known whether this is optimized to match insect abundance or limited by cold tolerance. We also expect clutch size to increase with elevation in our study; in the Southwestern U.S., higher elevations have higher productivity due to increased precipitation. Here we tested elevational effects on breeding biology in an abundant montane breeding songbird, the Audubon's Warbler (*Setophaga coronata auduboni*), in the Sandia Mountains. We found a 10-day difference in breeding phenology across ~ 1000 meters of elevation. Neither clutch size nor fledging success varied with elevation. Lack of variation in clutch size may be due to extensive gene flow across the elevational gradient that prevents local adaptation from occurring. Clutch size declined with breeding season in our study. This may be caused by renesting birds laying fewer eggs.

KEYNOTE ADDRESS: THE IMPALING HABITS OF LOGGERHEAD SHRIKES

DAVID LEATHERMAN

Forest Entomologist, Colorado State Forest Service (Retired)

David Leatherman, born and raised in central Ohio, is a life-long birder who moved to Fort Collins, Colorado in 1974. He is former editor of “Colorado Birds”, the quarterly publication of the Colorado Field Ornithologists. Now retired from a 32-year career as forest entomologist for the Colorado State Forest Service, he is a frequent public speaker on birds, insects and wildlife gardening. An award-winning photographer, his hobby within birding is learning the specifics of bird diets in hopes such information can inform their conservation. His spark bird as a 9 year-old was a Blackburnian Warbler. Among his other favorites are shrikes, of course, any warbler, crossbills, “solitary” vireos, Merlin and Northern Pygmy-Owl.

This presentation documents the impaling habits of Loggerhead Shrikes in all seasons, with most examples coming from the eastern plains of Colorado. Beyond food caching/storage of prey and mate attraction, what else is going on here?