

The Oklahoma Ornithological Society
Fall Technical Meeting, October 13-15, 2017
The University of Oklahoma Biological Station, Lake Texoma

Oral Presentation Session, Riggs Library, 2:00-4:00 PM, October 14

1. 2:05-2:20

Northern Saw-whet Owl (*Aegolius acadicus*) fall migratory movements in Oklahoma.

Abbey Ramirez and Mia Revels

Northeastern State University, Tahlequah, Oklahoma

2. 2:20-2:35

Do citizen science methods identify regions of high avian biodiversity?

Christopher J. Butler¹, Chad King¹, and Dan L. Reinking²

¹University of Central Oklahoma, ²Sutton Avian Research Center

3. 2:50-3:05

Advancing severe weather ecology through citizen science.

Jeremy D. Ross

The University of Oklahoma, Oklahoma Biological Survey

4. 3:20-3:35

Dynamic western range limits for forest birds in central Oklahoma.

Emily Sinnott, Monica Papes, and Timothy O'Connell

Oklahoma State University

5. 3:50-4:05

Songbird responses to drought conditions at differing temporal scales.

Samantha Cady and Timothy O'Connell (Advisor)

Oklahoma State University

6. 4:05-4:20

Monitoring Whooping Crane migration through Oklahoma.

Mark Howery

Oklahoma Department of Wildlife Conservation

7. 4:20-4:35

A survey of Black-capped Vireos at Salt Creek Canyon, Blaine County, Oklahoma.

Elizabeth Besozzi, Jeremy Ross, Joe Grzybowski

The University of Oklahoma

Presentation Abstracts

1. Northern Saw-whet Owl (*Aegolius acadicus*) fall migratory movements in Oklahoma.

Abbey Ramirez and Mia Revels

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The Northern Saw-whet Owl (*Aegolius acadicus*) has a very limited history in Oklahoma. They were considered a rare fall visitor with fewer than 10 confirmed state records prior to our study in 2016. These records range from Cimarron to Tulsa Counties and as far south as Oklahoma County. The BNA Northern Saw-whet Owl range map shows that their nonbreeding range goes as far south as central Texas, but they are very scarce past central Kansas. However, efforts to find them in south central United States have been minimal. New banding stations in Arkansas and Missouri have shown that saw-whets may move farther south during their nonbreeding season than previously thought. In fall 2016, we opened Oklahoma's first Northern Saw-whet Owl banding station to document saw-whet movements. This banding station is located in Cherokee County, Oklahoma about 70 miles west of the Arkansas banding station. On November 4th we captured and banded our first Northern Saw-whet Owl. The season resulted in 18 saw-whet captures with two individuals being previously banded. Capture dates ranged from November 4th to November 20th. These results indicate that the Northern Saw-whet Owl may be more common in Oklahoma during the fall than previously thought. Banding efforts will continue this fall beginning in October.

2. Do citizen science methods identify regions of high avian biodiversity?

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Citizen science may offer a way to improve our knowledge of the spatial distribution of biodiversity and endemism, as the data collected by this method can be integrated into existing data sources to provide a more robust understanding of broad scale patterns of biodiversity. We explored whether data collected by citizen scientists agree on identifying regions of high avian biodiversity in a well-studied state. We compiled and examined the number of bird species detected in each of the 77 counties of Oklahoma based on published range maps, museum collections, and by five citizen science methods: the USGS Breeding Bird Survey, the Oklahoma Breeding Bird Atlas, eBird, the Oklahoma Winter Bird Atlas, and National Audubon Society Christmas Bird Counts. We also quantified the number of species of conservation concern recorded by each method in each county. A total of 460 species were reported across the state, with the total number of species detected by each method ranging from 40% of this total (Winter Bird Atlas) to 94% of this total (eBird). In general, species totals were poorly correlated

across methods, with only six of 21 combinations (28.6%) showing significant correlations. Total species numbers recorded in each county were correlated with human population density and county area but not with mean annual temperature or precipitation. The total number of species of conservation concern was correlated with the total number of species detected, county area, and precipitation. Most of the citizen science methods examined in this study were not explicitly designed to identify regions of high biodiversity and so efforts to use these methods for this purpose should be employed only cautiously and with a thorough understanding of potential biases.

3. Advancing severe weather ecology through citizen science.

Jeremy D. Ross

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The welfare of birds in the face of weather extremes is a concern shared by much of the public. However, the nature of such events as rare, remote, unpredictable, and unreplicable has largely relegated the study of such impacts to case-studies or localized anecdotes. With the expansion of rapid information collection and sharing via digital recording devices and internet databases, the field of severe weather ecology has become much more feasible - especially through crowdsourced citizen science data. Here I outline the importance of understanding severe weather impacts on birds and how this science can be advanced by public input. I will highlight the existing local expertise, monitoring networks, and data-sharing portals that are primed to be utilized for biological weather impact monitoring. I will conclude by highlighting how Oklahoma offers promise for the birth and expansion of such citizen science efforts and, particularly, how the regional birding community will be key to this effort moving forward. Organizations such as the Oklahoma Ornithological Society and its established network of expertise and data contributors have a demonstrated capacity to contribute observations of weather impacts on birds, with implications for scientific understanding of the broader ecological damages.

4. Dynamic western range limits for forest birds in central Oklahoma.

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The Great Plains includes a forest-grassland ecotone that marks a western distributional limit for many passerine birds that typically breed in forests of the eastern US. To better understand the influence that climatic instability can exert on broad-scale biodiversity, we explored historical longitudinal shifts in the western extent of eastern forest songbirds' breeding ranges in response to the variable climate of the southern Great Plains. We used climatic niche modeling to estimate current distributions of nine species of forest-breeding passerines from 30-year normal climate conditions (1980–2010) and occurrence data

from the citizen science platform, eBird. Species' climatic niche models were then projected onto two historical climate scenarios: 1966–1972 and 1952–1958, a dry period and a severe multi-year drought, respectively. We obtained evidence of dramatic breeding range contraction and expansion using threshold models for each of the three time periods. Precipitation was the most important climate variable defining distributions of these nine eastern forest songbirds. Range limits extended farther west into Oklahoma during the more recent pluvial conditions of 1980–2010, and contracted during the drier 1966–1972 period and the drought conditions of the 1950s. Periods of lower precipitation in the forest-grassland ecotone are likely responsible for limiting the western extent of breeding distributions of eastern forest species.

5. Songbird responses to drought conditions at differing temporal scales.

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A predicted effect of anthropogenic climate change is an increase in frequency, duration, and magnitude of weather extremes, including drought events. Drought can be assessed at multiple temporal scales, each of which relates to a different water source. For example, drought quantified at an annual scale corresponds with groundwater availability while drought quantified at a monthly scale relates to current precipitation and surface flow. Birds present a unique opportunity to assess wildlife responses to drought-induced stress because they are mobile and easily surveyed. This study leverages Breeding Bird Survey (BBS) to determine whether there are detectible songbird responses during drought conditions. To account for observer bias and differing land cover at route locations, we used generalized linear mixed modeling with a fixed effect of drought magnitude at differing temporal scales, and random effects of observer identification and route location. We applied AIC model ranking to determine which drought scale best explained the distribution of birds at the species level. Drought conditions were quantified using PRSIM data and a standardized precipitation evapotranspiration index. Results show a mixed response among species with the strongest signal at an annual or near-annual scale. Some birds did not show a response to drought conditions at any scale. Results indicate a complex relationship between drought conditions and songbird distribution. We conclude by recommending that, for precise assessment of the effects of drought on bird communities, species should be analyzed separately, due to variation among them.

6. Monitoring Whooping Crane migration through Oklahoma.

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The Whooping Crane is one of North America's rarest birds and one of the most familiar endangered species to the general public. All of the cranes that exist today are part of, or are descendants of, a migratory population that nests in the vicinity of Wood Buffalo National Park in Alberta, Canada, migrates through the Central Flyway, and winters along the Gulf Coast of Texas in the vicinity of Aransas National Wildlife Refuge. Since the 1960s, a coordinated monitoring partnership has existed between the U.S. Fish and Wildlife Service and the state wildlife agencies in the Central Flyway, with a goal of delineating the Whooping Crane's migration route and identifying important migratory stopover habitats and sites. Each year, Whooping Crane observation reports are solicited from the public and waterfowl hunters by the Oklahoma Department of Wildlife Conservation, the Salt Plains National Wildlife Refuge and the Washita NWR. Approximately 20 to 25 reports are received annually, but only one third of those can be classified as confirmed sightings. Spring migration occurs more rapidly than fall migration and less than 20% of the crane reports occur during a four-week period in the spring. Salt Plains NWR is the most consistently used stopover site and accounts for more than half of all reports. Most of the remaining reports occur in scattered locations near rivers and wetlands across western Oklahoma between roughly I-35 and US 283.

7. A survey of Black-capped Vireos at Salt Creek Canyon, Blaine County, Oklahoma.

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The Black-capped Vireo (*Vireo atricapilla*) is a small migratory songbird, listed as endangered by the U.S. Fish and Wildlife Service on the Endangered Species Act (1987). Habitat conversion to rangeland and concomitant increases in Brown-headed Cowbird (*Molothrus ater*) prevalence have restricted *V. atricapilla's* historical range, establishing a modern northern margin in north-central Oklahoma. Salt Creek Canyon in Blaine Co., Ok, accommodates a relatively isolated population of *V. atricapilla*, which has been monitored inconsistently since its discovery, with the last available data derived from a project ending in 2004. I spent May-July of 2017 surveying *V. atricapilla* territories, monitoring nests, and managing cowbird traps in Salt Creek Canyon. Between 27 and 30 distinct males were identified, roughly half of which were accompanied by females. Encouragingly, this constitutes an increase over previous years, which with implementation of appropriate conservation strategies, could translate to more effective management of this population.