

Cerulean Warbler (*Setophaga cerulea*)
Occurrence in Relation to Roads and Trails in
Yellow River State Forest
2021 Report

Paul D. B. Skrade, Ph.D.
Dept. of Biology & Chemistry
Upper Iowa University
605 Washington Street | P.O. Box 1857
Fayette, Iowa 52142
skradep74@uiu.edu; (563) 425-5222

Objectives

The objective of this study was to perform a series of unlimited-radius point count surveys to document Cerulean Warbler (*Setophaga cerulea*) occurrence in Yellow River State Forest in Allamakee County, Iowa. Points were placed along roads and trails where access by all-terrain and utility task vehicles (ATVs and UTVs respectively) has been proposed along with additional paired points 400 meters away perpendicular to the roads/trails.

Project Area

This study took place within the boundaries of Yellow River State Forest, entirely in the Paint Creek Unit, as this is where ATV/UTV access has been proposed. Dedicated in 2003, the Effigy Mounds-Yellow River Forest Bird Conservation Area (BCA) in northeast Iowa was created to protect key habitat for dwindling populations of forest birds. At the core of this protected landscape is Yellow River State Forest, approximately 3500 hectares consisting of floodplain and upland sites, large tracts of older forest, and areas of harvested timber of various ages, creating very diverse habitat interspersed with coldwater streams running through steep, rocky ravines. This area was also designated as a Globally Important Bird Area by BirdLife International in 2014, primarily due to the abundance of Cerulean Warblers, a Species of Global Conservation Concern. Our previous surveys have documented several hundred territorial male Cerulean Warblers in Yellow River State Forest over the past decade. In fact, the density of Cerulean Warblers along the Paint Creek Trail within the state forest might well be one of the most concentrated populations for this species anywhere in the Upper Midwest.

Methods

Twenty survey points were produced using ArcGIS software (ver. 10.7; ESRI 2019) and placed along roads and trails throughout the study area a minimum distance of 400 m apart to avoid double counting birds while maximizing area surveyed (Ralph et al. 1993) as well as twenty paired points placed 400 m away from roads and trails. This spacing is consistent with annual bird surveys performed at Effigy Mounds National Monument, an additional portion of the Bird Conservation Area that the proposed study area is a part of.

Ten-minute unlimited-radius distance sampling point counts were conducted for all species that were detected visually, aurally, or flyovers. These counts happened from 15 minutes before sunrise to four hours after sunrise (Ralph et al. 1993). Each survey point was visited for ten minutes and the approximate linear distance to each individual bird was estimated and recorded. Wind speed (km/hr), temperature (°C), and cloud cover (%) were recorded because these are factors known to influence detection probability of birds (O'Connor and Hicks 1980). In addition to Cerulean Warblers, other avian species of greatest conservation need (SGCN, Iowa Wildlife Action Plan, Reeder 2015) were noted to provide additional information about species potentially impacted by the proposed change in road and trail use.

Results

Cerulean Warblers were detected at fifteen of the forty points that were surveyed. Thirteen of the points on roads and trails proposed to be used by ATVs/UTVs had at least one Cerulean Warbler (with one of these points having three different territorial males), while only two of the paired off-road/-trail points had Ceruleans (Figure 1). Twenty-one individual birds were detected from the points, which was not sufficient data to provide reasonable estimates of density or abundance using Distance sampling, and so further funding was requested for a second year of surveying these same points. Additional points will also be added along roads and trails that are located within the study area but were not included in the request for ATV/UTV access. Cerulean Warblers were present at other locations within the State Forest but overall numbers did appear to be down from previous years, with several territories that had been consistently occupied notably quiet.

Yellow River State Forest is noted for its importance to breeding birds other than Cerulean Warblers and this came through in the surveys. Fifty-five different bird species were detected during the point count surveys, thirteen of which were Iowa Avian Species of Greatest Conservation Need. Of these species, 12 were detected from points on the proposed ATV/UTV roads or trails and eight species were detected away from these routes, with seven species detected from both types of points (Table 1). Every survey point had at least one SGCN species with six different SGCN species detected from three different points, all on roads or trails that have been proposed to be opened to ATV/UTV access (Figure 2).

Discussion

ATV/UTV usage has increased dramatically in the past two decades (Williams et al. 2014) with a similar increase in interest in the use of these vehicles on public lands, roads, and trails. The Allamakee County ATV/UTV Club has been pursuing increased access to Yellow River State Forest for the past several years (“Supervisors gather input from the public regarding changes in current ATV/UTV Ordinance that include usage on pair of County roads in Yellow River State Forest”, *The Standard Newspaper*, 18 September, 2019) and so there is need for a better understanding of potential impacts on wildlife in this area. Many studies have documented the negative effects of roads on wildlife (Fahrig & Rytwinski 2009) and road noise has been found to affect avian reproductive success (Halfwerk et al. 2011). The proposed use of ATVs/UTVs along the roads and trails in the state forest will undoubtedly increase the noise in these areas and may impact the avian community. In addition to demonstrating good woodland management, the Iowa state forests are to provide forest products, wildlife habitat and a variety of outdoor recreational opportunities. Sometimes these goals may be in conflict with one another but this site is of particular importance to an avian species of conservation concern. Initial results suggest that the proposed roads and trails are important for many of these species, in particular Cerulean Warblers, but more work should be done to better understand the potential impacts.

Table 1. List of Avian Species of Greatest Conservation Need (SGCN) detected during 10-minute point counts conducted in Yellow River State Forest, Allamakee County, Iowa in 2021. Point counts were conducted along roads and trails where ATV/UTV access has been requested (ON) and 400m away from proposed roads and trails (OFF).

SGCN Species	ON	OFF
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	X	X
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	X	
Red-shouldered Hawk (<i>Buteo lineatus</i>)	X	
Belted Kingfisher (<i>Megaceryle alcyon</i>)	X	
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	X	
Eastern Wood-Pewee (<i>Contopus virens</i>)	X	X
Acadian Flycatcher (<i>Empidonax vireescens</i>)	X	X
Wood Thrush (<i>Hylocichla mustelina</i>)	X	X
Field Sparrow (<i>Spizella pusilla</i>)		X
Baltimore Oriole (<i>Icterus galbula</i>)	X	X
Kentucky Warbler (<i>Geothlypis formosa</i>)	X	
Common Yellowthroat (<i>Geothlypis trichas</i>)	X	X
Cerulean Warbler (<i>Setophaga cerulea</i>)	X	X

Figure 1. 2021 avian survey points on and off roads and trails in Yellow River State Forest, Allamakee County, Iowa where use of ATVs/UTVs has been proposed. Small red dots are points where no Cerulean Warblers were detected and the size of the blue dots indicates the high count of Ceruleans detected during a single 10-minute point count.

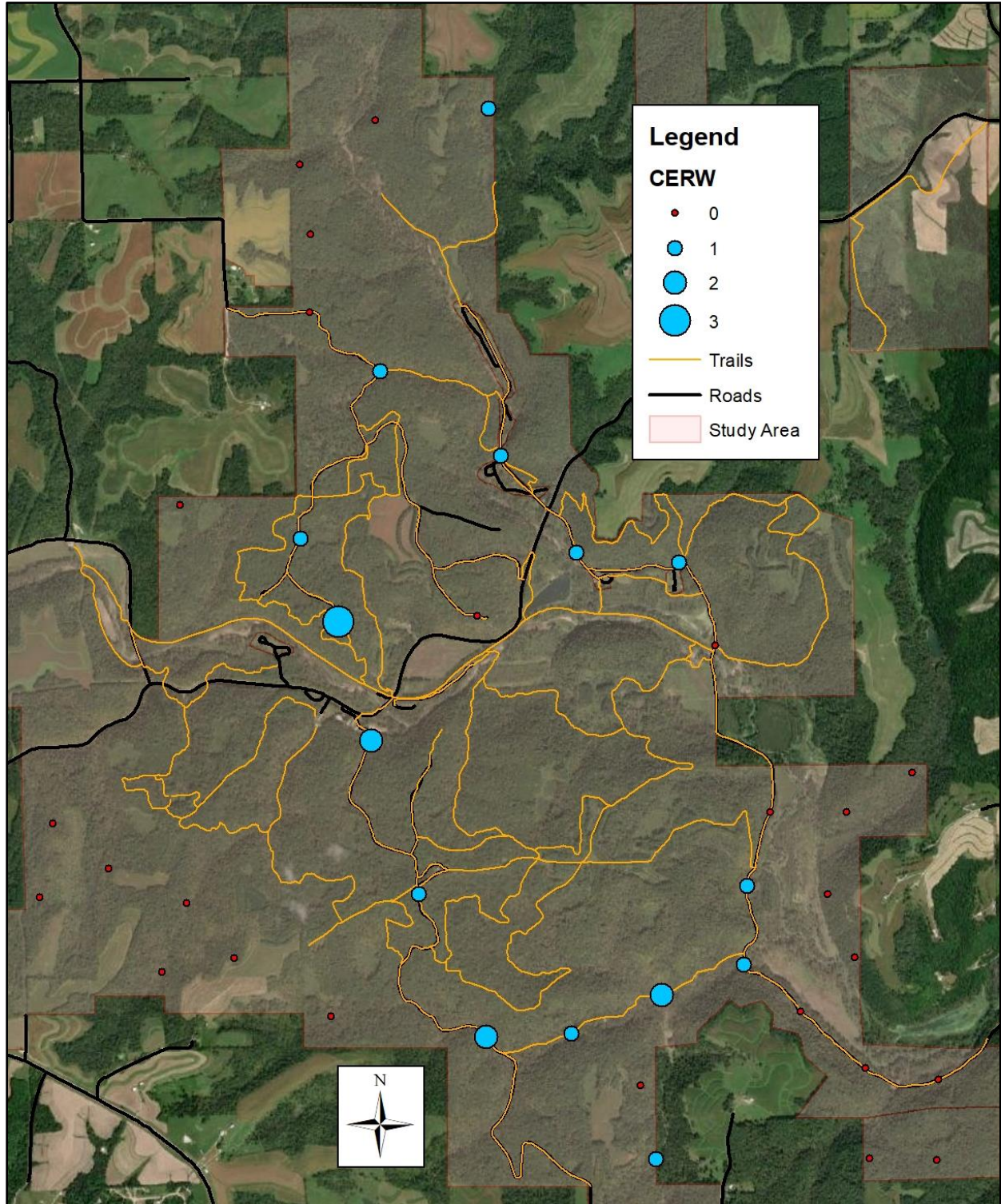
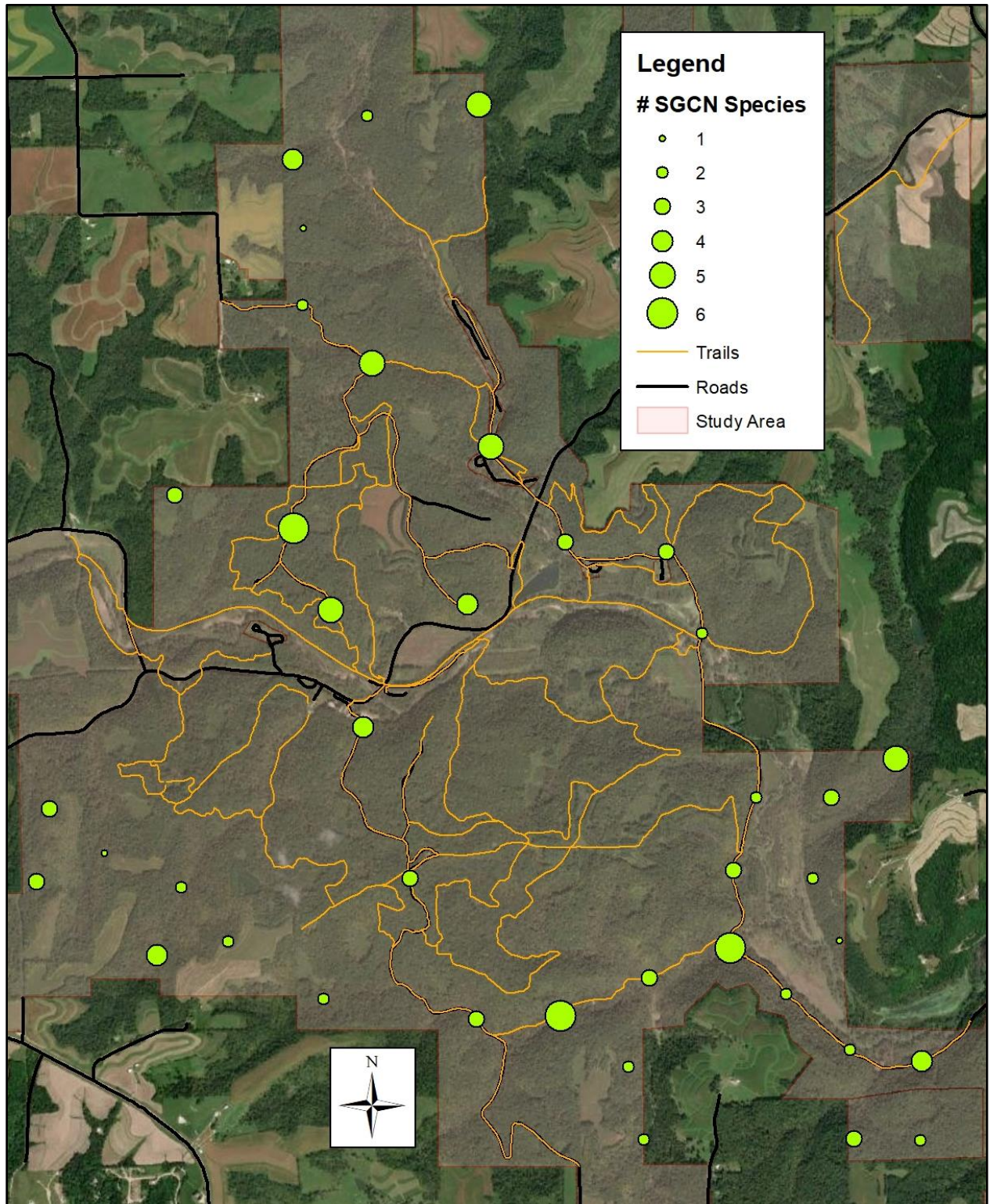


Figure 2. 2021 avian survey points on and off roads and trails in Yellow River State Forest, Allamakee County, Iowa where use of ATVs/UTVs has been proposed. Dot size indicates how many Avian Species of Greatest Conservation Need were detected at that point during 10-minute point counts.



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