

Rusty Blackbird Survival, Movements, and Habitat Use
During the Non-breeding Period

Report to the Nuttall Ornithological Club and Blake-Nuttall Fund Committee



Carol R. Foss, Ph.D.
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Overview

The Rusty Blackbird (*Euphagus carolinus*) is a medium-sized songbird that spends its entire life cycle in North America. The species breeds in spruce-fir and mixed forests with nearby wetlands from central Alaska to the Maritime Provinces, northern New England, and the Adirondacks, and winters in bottomland hardwood forests of the southeastern United States. Populations of Rusty Blackbirds have declined dramatically across North America during the past 40 years. Historical accounts suggest that this species has been declining since at least the 1920s. More recent data from the North American Breeding Bird Survey and the Christmas Bird Count indicate declines of 85-95% over the past four decades (Greenberg and Droege 1999, Niven et al. 2004, Sauer et al. 2004). Data also suggests a recent range retraction northward and to higher elevations (Francis 2007, Powell 2008) in the eastern population. A full annual cycle model has identified low survival during the non-breeding period as a driver of Rusty Blackbird declines (Rushing et al. 2020).

NH Audubon have been studying Rusty Blackbird breeding populations in northern New Hampshire and adjacent Maine since 2009, including nest searching, VHF telemetry, and annual color-banding of adults and nestlings. While we have previously documented survival, movements, and habitat use of juvenile and adult rusty blackbirds during the breeding and immediate post-breeding period (May – July), we have limited data for the non-breeding period. Recent advances in technology have now made it possible to track large scale movements of songbirds for time periods exceeding a year. PinPoint GPS tags (<https://www.lotek.com/products/pinpoint-gps-store-on-board/>) store precise location data for a select number of programmed dates and times, but do not transmit signals and must be recovered the following year to download the data. Nanotags (<https://www.lotek.com/products/nanotags/>) are detected by Motus receiving stations as tagged birds fly within approximately 10 miles, so provide less specific locations but produce data in close to real time without requiring recapture. The Motus Wildlife Tracking System (<https://motus.org/>) is a collaborative, worldwide network of automated receiving stations for radio transmitters deployed on small animals and large insects. Data from all receivers are processed by Birds Canada and made available online to researchers and the public.

During a pilot study, a PinPoint GPS tag recovered from a male Rusty Blackbird in our breeding population documented 21 post-breeding/pre-migration locations in northern New Hampshire during 6 August – 11 October 2018, eight fall migration locations during 14 October – 4 November 2018, 16 wintering locations during 7 November 2018 – 10 March 2019, and six spring migration locations during 14 March – 3 April 2019. Nanotags deployed on adult males and females in 2019 produced detections at a total of 36 receiving stations: 26 during fall, 11 during spring migration, and none during the winter. The trajectories of the nanotag birds and lack of wintering detections suggest that Rusty Blackbirds from our breeding population winter south of the current network of inland receiving stations, as did the GPS-tagged bird. Thus, we are currently unable to assess habitat and associated survival and movement of nanotagged blackbirds during the winter, usually the most limiting lifecycle stage for songbirds. We have no information on juvenile movement, survival, and habitat during the non-breeding season.

Objectives

2023

1. Locate and monitor Rusty Blackbird nests to schedule banding and tag deployment on nestlings and adults.
2. Deploy 10 PinPoint GPS tags on adult Rusty Blackbirds.
3. Deploy 20 nanotags on nestling Rusty Blackbirds.
4. Monitor nanotag detections on the three Motus receiving stations within our study area and attempt to locate each tagged individual weekly from fledging through August using mobile receiving equipment.

2023-2024

5. Monitor detections of the nanotagged individuals on the Motus network during fall migration, winter, and spring migration.

2024

6. Monitor local receiving stations for return of nanotagged birds to study area.
7. Attempt to locate and capture GPS-tagged adults on their return to the breeding grounds for tag removal and data downloading.
8. Analyze data from tagged individuals and prepare report.

Methods

Field biologists surveyed suitable habitat for Rusty Blackbird activity, observed behavior to locate nests, and monitored nests to determine appropriate timing for banding and tagging. Adults were captured by target netting near the nest and nestlings were removed from the nest for processing. Banders attached PinPoint GPS tags and NanoTags to selected individuals with leg-loop harnesses (Rappole and Tipton 1991). Biologists have attempted to locate each NanoTagged bird at least weekly using a vehicle-mounted omnidirectional antenna and a hand-held, directional antenna. We also monitor the Motus website for detections recorded by the three receiving stations within our study area.

Since fledgling mortality is typically high during the first two weeks after leaving the nest, we will recover tags from predated individuals for redeployment on later nestlings and if necessary, on adults. We will monitor the Motus website for detections of our nanotagged birds during September 2023 – April 2024. In early May 2024, we will attempt to locate nanotagged birds with the mobile tracking equipment. We will also use binoculars to identify birds with PinPoint GPS tags and prioritize them for capture to remove tags and download stored data.

Results

The research team located 30 Rusty Blackbird nests during May and June, of which eight failed before banding. Banders attached PinPoint GPS tags to 14 male Rusty Blackbirds and 13 NanoTags to nestlings and adult females. Nine NanoTags were recovered from predated fledglings and redeployed; two tags were unrecoverable – one in the middle of a large wetland and one in a mammal burrow deep under a large boulder. As of 20 August, the field crew had documented 188 locations of the NanoTagged birds with mobile tracking equipment and knew the locations of seven of these birds. The four Motus receiving stations in our study area also have detected eight of the NanoTagged birds.

Upcoming activities

As time permits, we will attempt to locate the NanoTagged individuals at least three more times before fall migration and will continue to monitor the four local Motus stations for detections of these birds. Once migration begins in early October, we will monitor the Motus website for detections of our NanoTagged birds during the fall, winter, and spring. In May 2024 we will search known and potential nesting areas for the males with PinPoint GPS tags and prioritize their capture to remove the tags and download data. We plan to deploy additional NanoTags in 2024 and continue mobile tracking prior to analyzing post-breeding/pre-migration data and preparing a manuscript for peer review.

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