

Executive Summary

Birds as Indicators:

- Bird populations respond to both positive and negative human disturbances such as forestry, agriculture, and industrial development.
- They are also sensitive to pollutants, industrial noise, and climate change (ABMI, 2020).

Use of Autonomous Recording Units (ARUs):

- ARUs are devices that record ambient sounds to monitor vocalizing species (birds, bats, amphibians). They are mounted on trees and programmed to record at set intervals over extended periods.
- Research (Darras et al., 2019) shows ARUs offer better spatial coverage, scalability, and reliability compared to traditional point counts.
- ARUs are generally more cost-effective than relying solely on human field observers.

Study Overview (2020–2023):

- Combined use of remote cameras for mammals and ARUs for birds.
- Up to 20 ARUs per year deployed across five grids within two caribou ranges: Chinchaga and Caribou Mountains (Figure 1).
- Sites covered a range of latitudes and habitat types.

Data Collection & Analysis:

- Recordings were analyzed by expert listeners to identify bird species from ARU memory cards.
- Sampling occurred April–July each year, including:
 - Midnight recordings for nocturnal species.
 - Dawn chorus recordings (3:00–7:00 a.m.) for diurnal species.
- Due to variation in station numbers and recording effort among years, results are expressed as percent of sites with detections per species rather than raw detection counts.
- The Northern Chinchaga grid (RBW) was not refreshed after 2021; no subsequent data was collected from that grid.

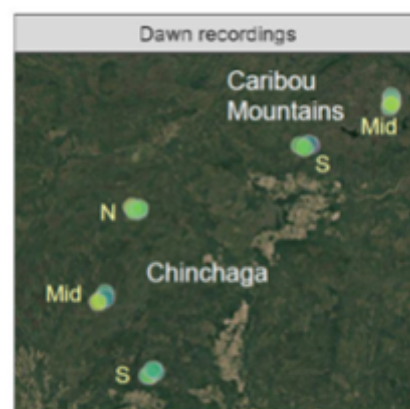


Figure 1. Location of ARU units in Caribou Mountains and Chinchaga caribou ranges.

Results

Overall Species Detection:

- A total of 104 bird species were detected across 20 monitoring sites between 2020 and 2023.
 - Yearly detections:



- 2020: 89 species
 - 2021: 50 species
 - 2022: 50 species
 - 2023: 72 species
- The lower detections in 2021–2022 are likely due to fewer sites sampled and shorter recording durations during those years.

Common and Widespread Species:

- The most frequently detected species across all years included:
 - Chipping Sparrow, Dark-eyed Junco, Hermit Thrush, Swainson's Thrush, Tennessee Warbler, Yellow-rumped Warbler
- These species are generalists commonly associated with upland deciduous forests in early to mid-seral stages.
- The following species were detected in all four grids over the course of the project:
 - Alder Flycatcher, American Robin, Canada Jay, Chipping Sparrow, Dark-eyed Junco, Hermit Thrush, Lincoln's Sparrow, Pine Siskin, Ruby-crowned Kinglet, Swamp Sparrow, Swainson's Thrush, Tennessee Warbler, White-tailed Sparrow, White-winged Crossbill, Yellow-rumped Warbler

Species Occurrence Patterns:

- 31 of 104 species were detected at only one site across all years.
- 32 species were detected in all four years, including the most common species listed above.
- Of the Sensitive, At Risk, and May be At Risk species:
 - 9 Sensitive species in the At Risk, and May be At Risk category were detected in only one year.
 - The Sensitive species: Cape May Warbler, Common Yellowthroat and Sora were recorded in all four years.