

GNWT Wildlife Research Permit Background & Project update

Permit #: N/A

Title: *NWT Biodiversity Monitoring Program: Tibbitt to Contwoyto Winter Road*

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Northwest Territories Biodiversity Monitoring program

Maintaining biodiversity is important for ecosystem health and community well-being. With ongoing impacts of climate change, human disturbance, and industry, long-term monitoring programs are required to understand the current state of and changes in wildlife populations. This is needed to inform sound and collaboratively developed management and conservation actions. Activities proposed under this Wildlife Research Permit form part of a growing Northwest Territories Biodiversity Monitoring (NWTBM) program; a collaborative initiative aimed at enhancing structured, passive wildlife monitoring across the Northwest Territories.

Under the NWTBM, two primary types of sensors are being deployed: acoustic recording units (ARUs) and wildlife cameras. ARUs record the soundscape on a pre-programmed schedule, whereas cameras take photos when triggered by animal movements. Both sensor types can be left out on the land for an extended period of time (typically 1 year) or moved around. ARUs can detect a variety of vocalizing animals, including birds, wolves, insects, and amphibians. Migratory bird monitoring data collected by ARUs helps to fulfill Environment and Climate Change Canada's (ECCC) obligation to conserve migratory bird populations (Migratory Birds Act, 1994) and protect threatened species (Species at Risk Act, 2002). Wildlife cameras can detect a variety of medium to large-sized vertebrates, including large mammals, meso-carnivores, fur-bearing species, as well as waterfowl and other migratory and non-migratory birds. Data collected by cameras and ARUs can support wildlife conservation and management (*NWT Wildlife Act*, 2013), territorially managed species at risk protection and recovery (*NWT Species at Risk Act*, 2009), and protected area planning within the Northwest Territories (*NWT*

Protected Areas Act, 2019). The NWTBM started in Ts'udé Niliné Tuyeta Indigenous Protected Area and has since been followed by programs in the Edézhíe Dehcho Protected Area and National Wildlife Area, Dinàgà Wek'èhodi candidate area, Thaidene Nënë Indigenous Protected Area, in Tulit'a District, around Gamètì and communities in the South Slave Region, along the different winter/ice roads, etc. Guardians and other Indigenous partners have been actively involved in all aspects of development and implementation of these programs (Figure 1). Since 2022, bat meters and temperature loggers have also been deployed/retrieved.

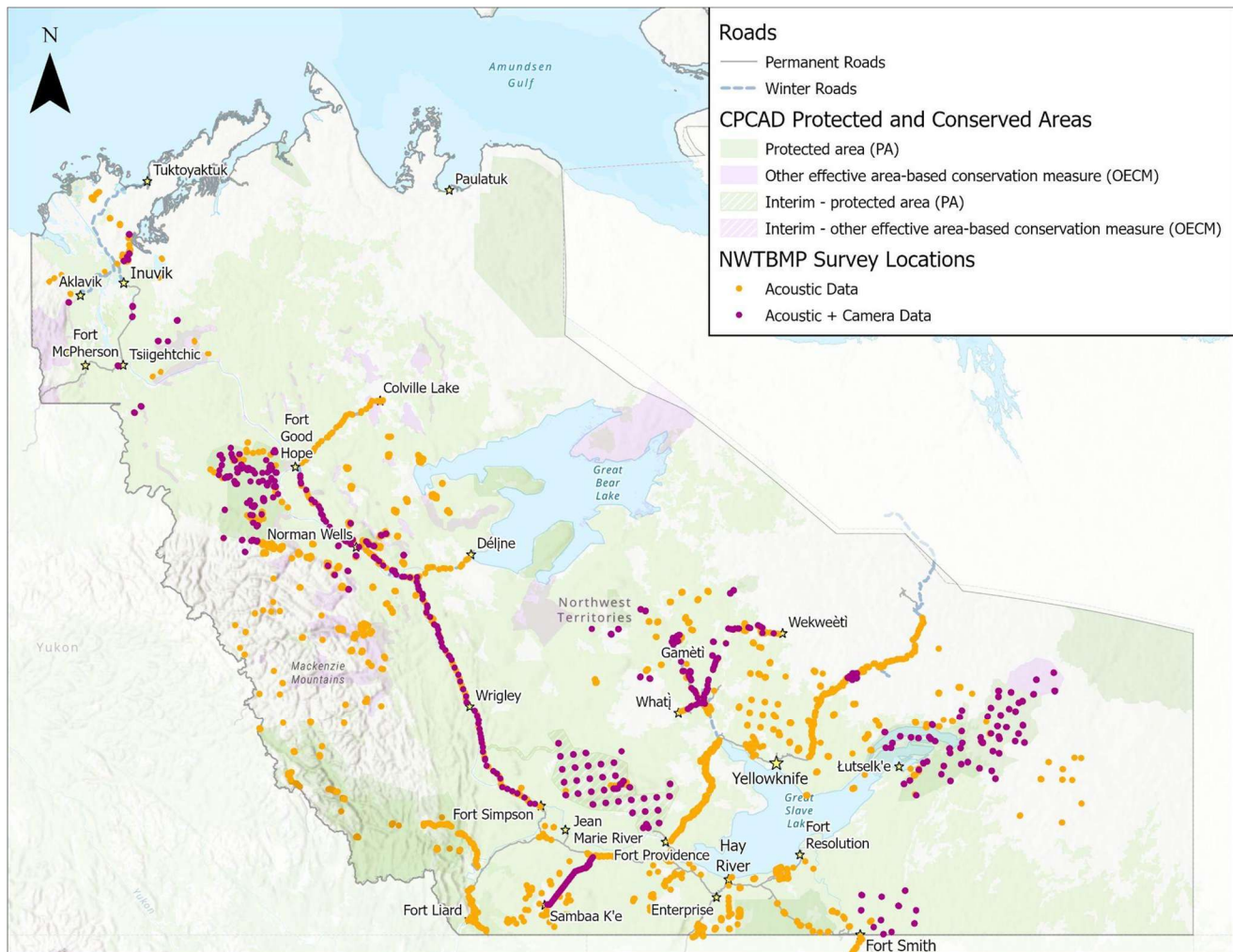


Figure 1: Map of sampling locations across NWT. In **purple** are sampling locations where the NWT Biodiversity Monitoring Program has been successfully implemented to date (deployment of both ARUs and wildlife cameras (>1,300 sampling events) and in some instances bat meter and temperature loggers). In **orange** are sampling locations with ARU only deployments (> 5,000 sampling events) or only human-based avian point count data (~ 7,700 sampling events).

Since 2015, the Canadian Wildlife Service/Environment and Climate Change Canada (CWS/ECCC), in collaboration with a growing number of Indigenous partners, has been implementing a monitoring program along winter/ice roads across NWT to expand monitoring coverage in a cost-effective way (Figures 1). Since 2022, CWS/ECCC and Indigenous partners have been collaborating with ECC/GNWT to include the winter road monitoring to the NWTBMP. Below is an overview of the sampling effort for each winter road:

- **March 2015:** The program was initiated along the Tibbitt to Contwoyto winter road northeast of Yellowknife, where 10 ARUs were deployed as a pilot study. These units were programmed to be inactive throughout the remaining winter and reactivated to record when migratory birds returned to the region (June).
- **February 2016:** after the success of the pilot study, the program expanded to 99 ARUs along the same winter road.
- **March 2017:** program expanded to include the Mackenzie Valley winter road (Dehcho & Sahtú 164 ARUs)
- **March 2018:** program expanded to include the Sambaa K'e winter road (177 ARUs).
- **March 2019:** program expanded to include the Tłı̄chʼó winter road (170 ARUs; Figs. 2-3).
- **February 2021:** 84 ARUs were deployed along the Tibbitt to Contwoyto winter road to revisit some of the sampling stations surveyed in 2016 and 2017, and to increase the number of sampling stations.
- **March 2022:** 177 ARUs and 30 wildlife cameras were deployed along the Sambaa K'e winter road to conduct a second round of surveys for this winter road and start documenting changes.
- **March 2023:** 155 ARUs, 85 wildlife cameras, 16 temperature loggers, and 8 bat meters were deployed along the Mackenzie Valley winter road from Fort Simpson to Fort Good Hope. Note that no units were deployed on Deline and Colville Lake's traditional territory.
- **March 2024:** 159 ARUs, 61 wildlife cameras, 16 bat meters, and 15 temperature loggers were deployed along the Tłı̄chʼó winter road.
- **March 2025:** The units deployed in 2024 along the Tłı̄chʼó winter road were retrieved. 50 ARUs, 50 wildlife cameras, 10 bat meters, and 8 temperature loggers were deployed along the Sambaa K'e winter road.

Proposed 2026 fieldwork along the Tibbitt to Contwoyto Winter Road

In 2026, we propose to deploy acoustic recording units (ARUs) and wildlife cameras at approximately 100 sampling locations located in different habitat types along the Tibbitt to Contwoyto winter road (Fig. 4; Appendices 1-3). We also propose to deploy bat meters and temperature loggers at a subset of sampling locations (~ 30).

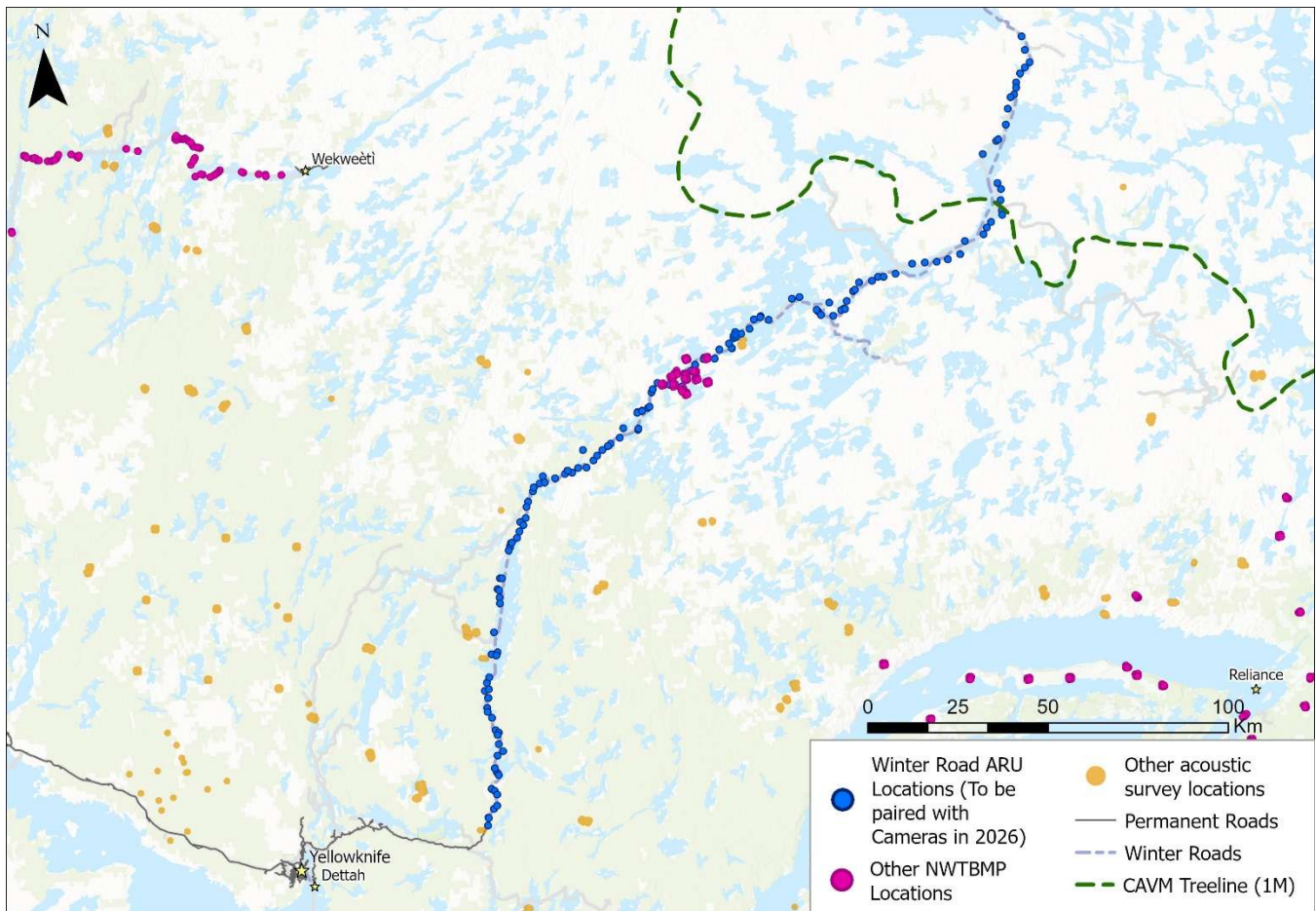


Figure 2: All sampling location previously surveyed using ARUs along the winter road in the Tibbitt to Contwoyto winter road (blue). In pink, are deployments of ARUs and wildlife cameras, including those at near Lockhart Camp ($n = 65$) that took place in June-July 2025, while in yellow are other sampling locations only including ARU or human avian point count data.

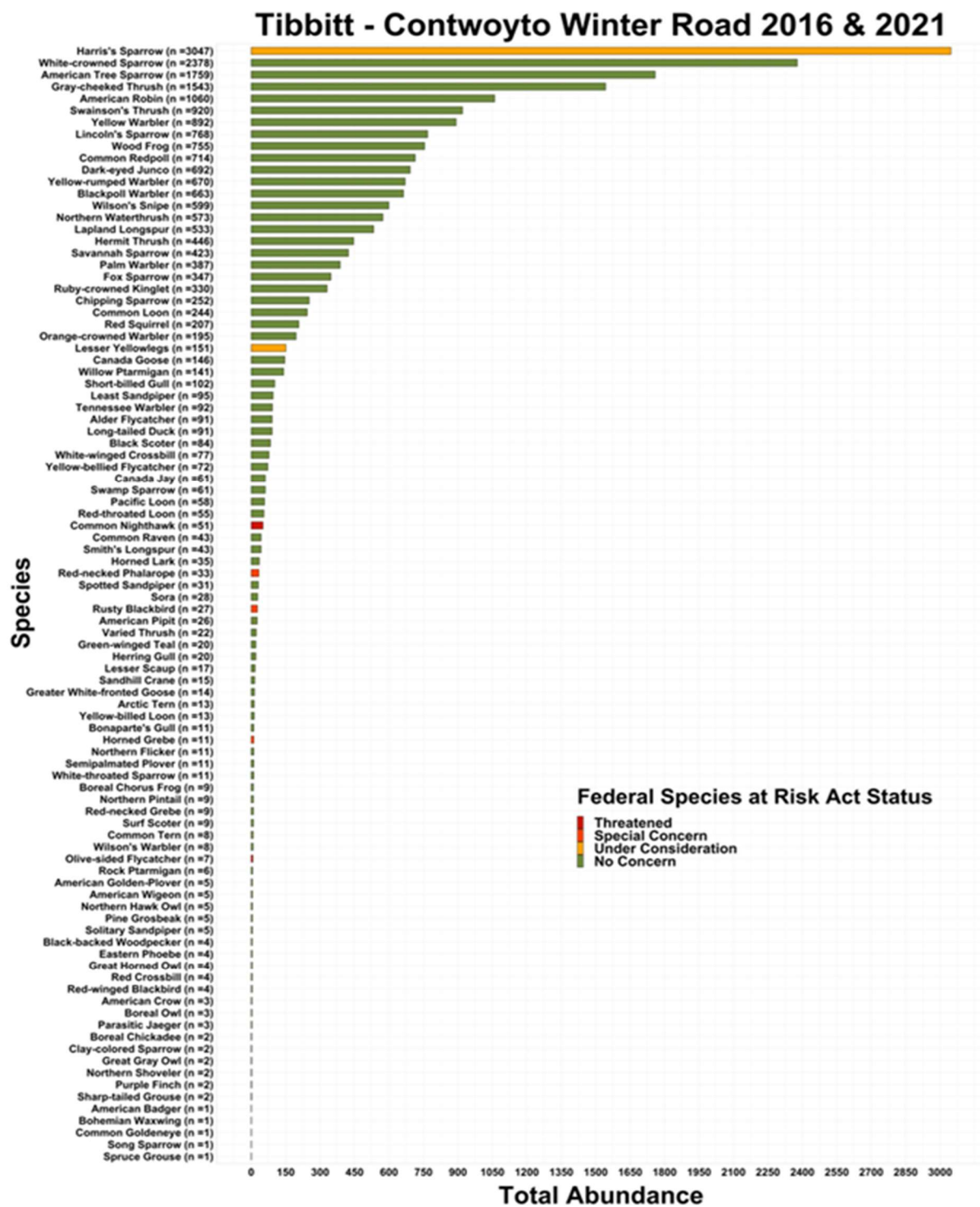


Figure 2: Total abundance for all 90 landbird species detected in 2016 and 2021 (only ARUs were deployed) along the Tibbitt to Contwoyto winter road.

Appendix 1. Proposed *recording schedule for each ARU to be deployed in 2026 along the Tibbitt to Contwoyto winter road.*

April 1st – April 30th

- 1 hour before sunset: 10 mins
- @ sunset: 10mins
- 3 hours after sunset: 10mins
- 1 hour before sunrise: 10mins
- @ sunrise: 10mins

May 1st - June 30th

- 1 hour before sunset to 4 hours after sunrise: 10 minutes/hour

July 1st – August 15th

- 1 hour before sunset: 10mins
- @ sunset: 10m
- 2 hours after sunset: 10mins
- 1 hour before sunrise: 10mins
- @ sunrise: 10m

August 15th –September 30th

- 1 hour before sunset: 10mins
- @ sunset: 10mins
- @Midnight: 10mins
- 1 hour before sunrise: 10mins
- @ sunrise: 10mins

Appendix 2. Proposed *recording schedule for each bat ARU to be deployed in 2024 along the Tłıchǫ winter road.*

Bat Minis: May 1st - October 31st

- 30 minutes before sunset to 30 minutes after sunset

SM4 Bats: May 1st - October 31st

- 15 minutes before sunset to 15 minutes after sunrise

Appendix 3. Proposed *recording schedule for each camera and temperature logger to be deployed in 2024 along the Tłıchǫ winter road.*

<u>Sensor Type</u>	<u>Schedule</u>
Camera	Continuous for motion triggers and timelapse photo daily at noon
Temperature logger	Records temperature every 3 hours