North American Bat Monitoring Program in Blackwater Gold Mine

Manual Verification Data Summary - 2025

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Figure 1: Little Brown Myotis (*Myotis lucifugus*)

1 Land Acknowledgement

Biodiversity Pathways respectfully acknowledges that our work takes place on Treaty 8 and Douglas Treaties Territories as well as the traditional and unceded territories of First Nations and Métis Peoples across all regions of British Columbia, whose histories, languages, and cultures are deeply connected to the biodiversity we monitor. We acknowledge the traditional teachings of the lands that we work on, and that reciprocal, meaningful, and respectful relationships with Indigenous peoples make our work possible. We are deeply grateful for their stewardship of these lands, and we are committed to supporting Indigenous-led monitoring programs, while learning Indigenous ways of knowing, being, and doing.

2 Introduction

2.1 Overview of NABat and the NNW Bat Hub

The North American Bat Monitoring Program (NABat) is a large-scale coordinated effort to monitor bat species across North America using standardized protocols and a unified sample design (Loeb et al. 2015). NABat was established to address the gaps in knowledge and lack of long-term studies of bat species across Mexico, USA, and Canada. The program is administered by the US

Geological Survey (USGS), coordinated by the Canadian Wildlife Health Cooperative (CWHC) in Canada, and implemented by the North by Northwest Bat (NNW) Hub in British Columbia, Alberta, and S.E. Alaska.

2.2 2025 NABat Monitoring in Blackwater Gold Mine

In the field season of 2025, 18 bat acoustic deployments were made at the Blackwater Gold Mine managed by BW Gold. The monitoring stations collected data between 2025-07-15 and 2025-07-31. The recordings were submitted to SENSR for processing and manual vetting to determine species presence or absence at each location. Upon agreement with BW Gold, SENSR can share these results with the NNW Bat Hub for inclusion in the provincial annual report on the state of bat populations within British

Figure 2: Site deployment at Blackwater Mine 73082-NW

Table 1: Acoustic monitoring locations for bat surveys carried out at Blackwater Gold Mine in 2025

Location Name	NABat GRTS ID	Longitude	Latitude	Start Date	End Date	Detector Model	Detector Serial Number
SW2	73082	-124.5093	53.50946	2025-07-15	2025-07-22	NA	2MU09471
SE	73082	-124.5073	53.47983	2025-07-15	2025-07-22	NA	2MU09641
SE	2426	-124.8940	53.20475	2025-07-17	2025-07-17	NA	SMU08992
NW	2426	-124.8273	53.24759	2025-07-17	2025-07-24	NA	SMU09777
SW	2426	-124.8214	53.21103	2025-07-23	2025-07-31	NA	2MU09641
SW2	2426	-124.7894	53.23232	2025-07-23	2025-07-31	NA	2MU09446
NE	2426	-124.8815	53.25836	2025-07-23	2025-07-31	NA	2MU09728
SE2	2426	-124.8493	53.22120	2025-07-23	2025-07-31	NA	Blank2MU09478
NE	73082	-124.4964	53.49445	2025-07-15	2025-07-15	NA	2MU09478
NW	73082	-124.6058	53.49961	2025-07-15	2025-07-22	NA	2MU09471
SW	73082	-124.5321	53.48719	2025-07-15	2025-07-22	NA	2MU9446
SE2	73082	-124.5423	53.45528	2025-07-15	2025-07-22	NA	2MU09641
SW	204154	-124.7942	53.29247	2025-07-16	2025-07-23	NA	2MU09474
SW2	204154	-124.7596	53.31369	2025-07-16	2025-07-23	NA	2MU09473
NW	204154	-124.7809	53.35494	2025-07-16	2025-07-23	NA	2MU09476
NW2	204154	-124.7907	53.38023	2025-07-16	2025-07-23	NA	2MU09639
NE	204154	-124.7098	53.38476	2025-07-16	2025-07-16	NA	SMU09783
SE	204154	-124.7387	53.32086	2025-07-16	2025-07-23	NA	SMU08992

3 Methods

3.1 Field Deployments

In 2025, BW Gold deployed 18 across Blackwater Gold Mine (Table 1) following the standards set by NABat and the North by Northwest (NNW) Bat Hub (Reichert et al. 2018). All of these locations were new deployments for 2025 and collected data for a total of 127 ARU nights. ARU nights quantify the total acoustic sampling effort by summing the number of nights each ARU was deployed and recording. This metric accounts for all individual recorder deployments, such that two ARUs recording for seven nights each would equal 14 ARU nights total, even if deployed concurrently.

3.2 Data processing

Full-spectrum recordings from the sampling periods were collected and processed using two automatic classifiers: Kaleidoscope's Bats of North America 5.4.0 classifier and Sonobat 3.0's northeastern British Columbia classifier. Based on documented species ranges and prior detection data, manual verification efforts focused on the species present at each individual site.

The analysis workflow followed processing standards established by the North American Bat Monitoring Program (NABat) (Reichert et al. 2018). Only recordings that received automated species classifications from either Kaleidoscope or Sonobat were selected for manual verification. For stationary acoustic monitoring sites, recordings were manually vetted until at least one recording per species per site per night was confidently identified. Species identifications were validated using reference call parameters described by Szewczak (2018), Slough et al. (2022), and Solick (2022), in accordance with NABat manual vetting protocols. A full list of species names and codes can be found on Appendix A

All recordings with their associated tags have been uploaded to Wildtrax to the project named Blackwater Gold Mine NABAT Monitoring. All the associated tags have also been uploaded to NABat undet the project name Blackwater Gold Mine NABAT Monitoring.

4 Results

Following manual verification, Eastern Red Bats (*Lasirus borealis*), Silver-haired bats (*Lasionycteris noctivagans*), and Little Brown Myotis (*Myotis lucifugus*) were detected at all surveyed locations (Figure 3). Long-eared Myotis (*Myotis evotis*) was detected at all surveyed locations except for at BAT20, their presence at this site remains plausible given regional distributions. Hoary bats (*Lasirus cinereus*) were detected at all sites except BAT18 and BAT8; however, their presence at this site remains plausible given regional distributions.

Figure 3: Species confirmed through manual verification across monitoring locations in 2025. Blue tiles indicate species presence; gray tiles indicate absence.

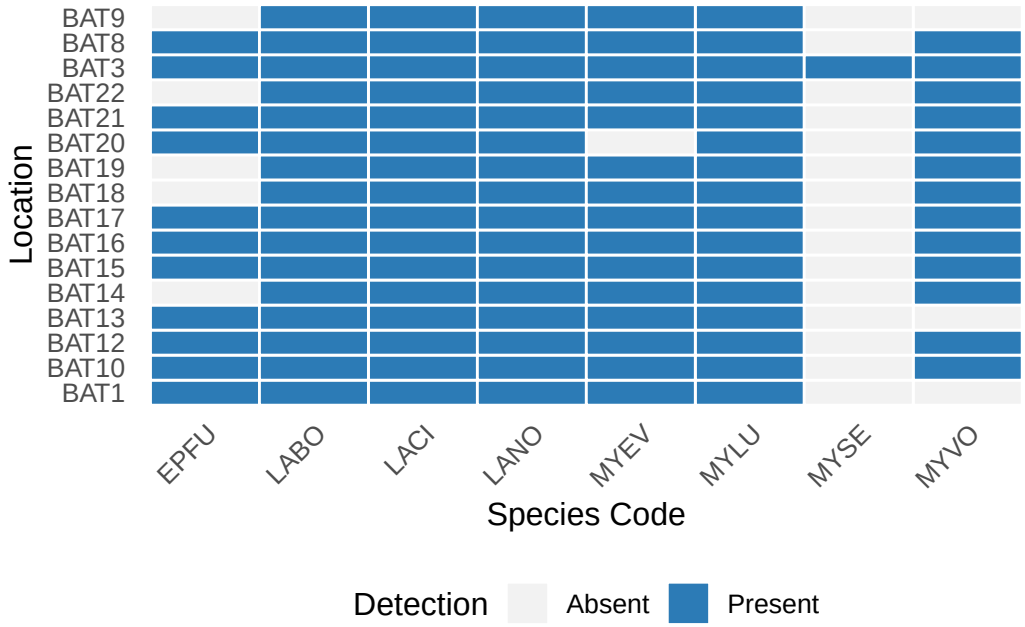

Figure 4: Species detected by Kaleidoscope AutoID across monitoring locations in 2025. Blue tiles indicate species presence; gray tiles indicate absence.

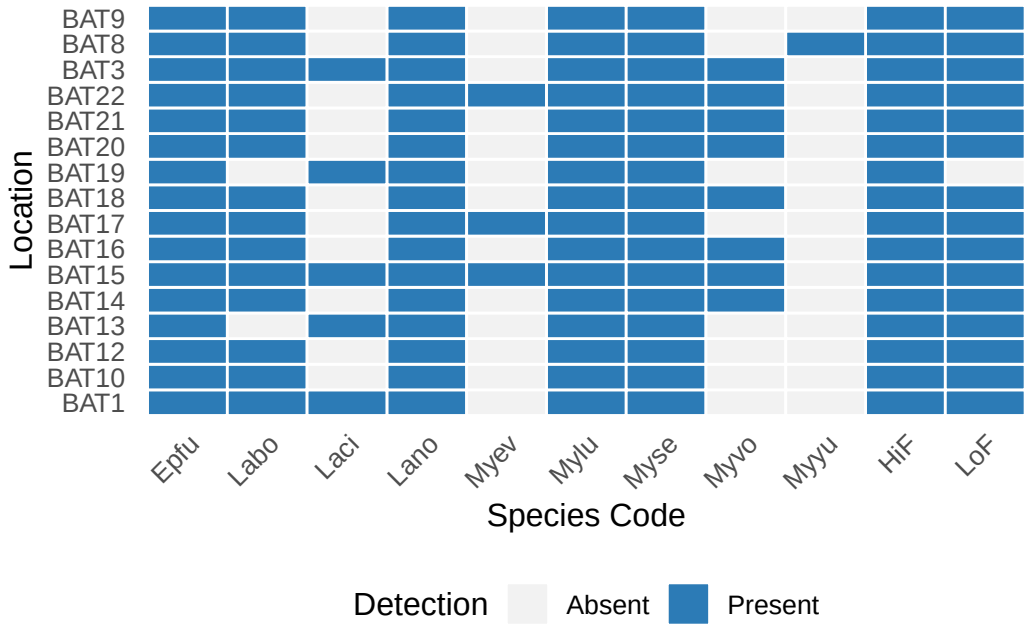

Figure 5: Species detected by Sonobat AutoID across monitoring locations in 2025. Blue tiles indicate species presence; gray tiles indicate absence.

5 Recomendations

Overall, deployments performed well. We recommend verifying deployment settings, as the unit BAT14_73082 appeared to collect a high volume of noise files at regular 15-minute intervals. This pattern suggests that both triggered and scheduled recordings may have been enabled. Running both modes concurrently can deplete batteries quicker; therefore, we recommend using triggered recordings only when the objective is bat monitoring.

This represents the first year of acoustic bat monitoring in this region, and continued monitoring is strongly encouraged to establish a robust baseline for long-term assessment. Sustained data collection over multiple years is critical for evaluating temporal patterns for bat species in the region. After a minimum of five consecutive years of monitoring, the dataset will be sufficient to support meaningful trend analyses and habitat association assessments, enabling more reliable evaluation of the persistence and distribution of bat species across the landscape.

6 Appendix A

Species codes and their definitions

CommonName	ScientificName	Code	Definition
Big Brown Bat	Eptesicus fuscus	EPFU	Calls that have diagnostic features identifying it as Eptesicus fuscus
Big Brown Bat / Hoary Bat	Eptesicus fuscus / Lasiurus cinereus	EPFULACI	Calls that could be attributed to either Eptesicus fuscus or Lasiurus cinereus
Big Brown Bat / Silver-haired Bat	Eptesicus fuscus / Lasyonicteris noctivagans	EPFULANO	Calls that could be attributed to either Eptesicus fuscus or Lasyonicteris noctivagans
Eatern Red Bat	Lasiurus borealis	LABO	Calls that have diagnostic features identifying it as Lasiurus borealis
Eastern Red Bat / Little Brown Myotis	Lasiurus borealis / Myotis Lucifugus	LABOMYLU	Calls that could be attributed to either Lasiurus borealis or Myotis lucifugus
Hoary Bat	Lasiurus cinereus	LACI	Calls that have diagnostic features identifying it as Lasiurus cinereus
Bat from the Lasiurus genus	Lasiurus species	LASIURUS	Calls that have diagnostic features identifying it as Lasiurus species
Hoary Bat / Silver-haired Bat	Lasiurus cinereus / Lasyonicteris noctivagans	LACILANO	Calls that could be attributed to either Lasiurus cinereus or Lasyonicteris noctivagans
Silver-haired Bat	Lasyonicteris noctivagans	LANO	Calls that have diagnostic features identifying it as Lasyonicteris noctivagans
Western Small-footed Myotis	Myotis ciliolabrum	MYCI	Calls that have diagnostic features identifying it as Myotis ciliolabrum
Western Small-footed Myotis / Little Brown Myotis	Myotis ciliolabrum / Myotis lucifugus	MYCIMYLU	Calls that could be attributed to either Myotis ciliolabrum or Myotis lucifugus
Western Small-footed Myotis / Long-legged Myotis	Myotis ciliolabrum / Myotis volans	MYCIMYVO	Calls that could be attributed to either Myotis ciliolabrum or Myotis volans
Long-eared Myotis	Myotis evotis	MYEV	Calls that have diagnostic features identifying it as Myotis evotis
Little Brown Myotis	Myotis lucifugus	MYLU	Calls that have diagnostic features identifying it as Myotis lucifugus
Little Brown Myotis / Northern Myotis	Myotis lucifugus / Myotis septentrionalis	MYLUMYSE	Calls that could be attributed to either Myotis lucifugus or Myotis septentrionalis
Bat from the Myotis genus	Myotis species	MYOTIS	Calls that have diagnostic features identifying it as Myotis species
Northern Myotis	Myotis septentrionalis	MYSE	Calls that have diagnostic features identifying it as Myotis septentrionalis
Long-legged Myotis	Myotis volans	MYVO	Calls that have diagnostic features identifying it as Myotis volans
Unknown Bat		NOID	Bat calls but no grouping category applies
No Bat		NOISE	No bat recorded
40kHz Frequency Myotis		40KMYO	Various species of Myotis that have a characteristic frequency in the range of 35-40kHz
High Frequency Bat		HighF	Various species with pulses having a characteristic frequency higher than ~35kHz

(continued)

CommonName	ScientificName	Code	Definition
Low Frequency Bat		LowF	Various species with pulses having a characteristic frequency lower than ~30kHz

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